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Personal Computer World

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VNU Business Publications

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Celeron, Cyrix & AMD compared

WINDOWS 98
Worth the wait?

Group Tests STORAGE

Zip vs Jaz vs Syquest

GET ORGANISED!

Pick of the PIMs

£1000 to spend?

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Editorial

Intel has always been good at producing fast PC processors. But many of today's buyers are more interested in the best value, and cheap chips is where the processor giant has lost out to its competitors. Now Intel



is fighting back with its new budget Celeron processor, which allows manufacturers to build cheap PCs with the label "Intel inside". Intel has saved money by removing the expensive Level 2 memory cache from its Celeron chips; but at what overall cost? The cache may be the priciest part of most processors, but it's there for a good reason. Remove it, and, well... check out this month's PC

group test to see what happens. Let's just say that we couldn't find one single PC manufacturer happy to send us a Celeron-based PC for review. In fact, the only way we could get any Celerons at all was to allow each company to also submit either an AMD or Cyrix-based PC.

Even more interesting was that several manufacturers were happy to go on the record with their feelings about Intel and Celeron. Their comments, and the results of the three entry-level processors pitched head to head, makes for great reading. Check out page 160 to see if it's still best to have Intel inside.

Today's powerful but affordable PCs are allowing anyone to start up their own small business, but what about getting connected? There's a plethora of communication options to choose from, including ISDN, cable, leased lines or just plain old modems. With this choice today, and a wealth of options just around the corner, which communication technology should you choose for your small business? We've done the legwork for you. In the first of a regular small-business section, we look at the pros and cons of each communication technology for the single user or small workgroup [p130].

This month also sees the start of a new front-end column about life on-line [p61], and as the icing on the comms-cake we've got a special Hands On Workshop on getting the most out of Microsoft Outlook 98 [p220].

And speaking of 98, this issue sees our in-depth review of Windows 98 [p122]. We've had short previews and tasters in previous months, but with the arrival of Microsoft's feature-complete final-release candidate, we knew it was time for the full monty. Along with explaining the features and checking out performance, each member of the PCW team has been using Windows 98 for several months and wants to tell you all about it.

This issue also sees our annual shopping spree, where five PCW people discovered what £1,000 could get them from different sources. They even let me have a go, but didn't say anything about having to buy a conventional PC system...

Gordon Laing
Managing Editor

Next Month

P400s



The best of both worlds: we look at ten power-packed dual-boot Windows 95/NT4 machines for under £2,000.



Utilities

Everything you need to soup up and manage your PC and your applications.

Colour printers

The proof is the printing: the latest colour inkjets, plus a look at proofing printers.

Plus...

Eight scanners from just £70, and how to set up a small-business network.

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September '98 issue

■ On sale Thursday 23rd July 1998

* Next month's contents subject to change.

August cover disc

Our choc-full *PCW* CD carries 10 featured games and applications, including three full versions and an extensive multimedia preview of 'X-Files: Unrestricted Access'. Our software library has more than 30 utilities and applications, plus the return of Netscape Communicator.

Important notice

The publisher, VNU, has checked the *Personal Computer World* CD ROM for known viruses at all stages of production but cannot accept liability for damage, caused either to your data or to your computer system, which may occur while using either the disc or any software contained on it. If you do not agree with these conditions you should not use the disc. It is good practice to run a virus checker on any new software before

Getting software on to the CD

Personal Computer World is keen to promote quality software and would like to hear from you if you are interested in having your product included on a future cover disc. For cover-mount enquiries, please telephone Afshan Nasim on 0171 316 9761 or email afshan_nasim@vnu.co.uk.

running it on your computer and to make regular backup copies of all your important data.

Unless otherwise stated, all software contained on the CD is for demonstration only. This means it may be restricted in some way. For example, it may be time limited or have certain functions disabled.

How to use the CD-ROM

Quit existing applications (if you have 16Mb or more of memory you don't have to do this but will still get better performance if not many other apps are running). Put the disc into your CD drive:

Windows 95 If you've got Windows 95 the *PCW* interactive loader will appear on your screen. If your CD doesn't autoloader, go to Start/Run and type in `<CD Drive>:\pcw.exe`

Windows 3.1 From Windows Program Manager choose File/Run, then type in `<CD Drive>:\pcw.exe` and press enter.

System requirements

You will need a PC with Windows 3.1 or later. Please check individual products for specific system requirements. For best results run the CD on a Pentium PC with at least 16Mb of memory.

CD ROM Problems

The technical helpline is open weekdays from 10:30am to 12:30pm and from 1.30pm to 4:30pm on **01274 736990**. If you experience problems with the CD-ROM (such as a message like "Cannot read from drive D:."), return the disc with a covering note bearing your name and address and clearly marked "PCW CD AUGUST 98" to:

TIB plc
TIB House
11, Edward Street
Bradford, BD4 7BH
A replacement disc will be sent to you by post.

Outwars

As a Dreadnought soldier, you must lead a team of space troopers against an alien insect force in a planet-by-planet battle to save the universe, and it takes more than a lethal arsenal and a high-tech battle suit.

Every mission requires you to learn a new skill, adopt a new tactic, learn from the cunning madness of your enemies and change your approach. It takes a sound combat strategy to defeat the hordes of merciless aliens. In the Solo Campaign you will run, jump-jet, and glider-wing your way through 26 wildly diverse missions across five planets. You are one mean space marine. Succeed in your mission objectives and everyone survives — fail, and everyone is condemned.

Outwars includes single and multiplayer functionality as well as a variety of gameplay missions. It is your challenge to master these missions and prepare for the time when your exercises are no longer a drill. In the single player missions you strap on a jetpack and engage in fierce aerial duels on the planets Anubis and

Oasis. In multiplayer, you will have both the glider-wing and jetpack at your disposal to ward off human opponents with a full arsenal of weapons. Additionally, you will be able to choose multiplayer games: either Free for All (Deathmatch), or Capture the Flag.

If you buy the full version you get 11 multiplayer worlds, each with five gameplay varieties, so there are 55 ways to waste your friends.

To play a multiplayer game, you must have Direct Play 5.0a or a later version. You can play the Outwars Trial version over a LAN, modem, serial connection, or on the net at the Internet Gaming Zone at www.zone.com, in the Outwars Trial Version Lobby.

Outwars works best with the following 3D chipsets: Riva 128, 3dfx, or Renditions. It is designed to run optimally on cards with 4Mb of



RAM. Note that some non-Intel processors may cause occasional performance problems.

PCW Details

Operating System	Windows 95
Limitations	Two full levels only
Sales Contact	0345 002000
Technical Support	None available

CD-ROM Helpline 01274 736990

X Com

It's the year 2067, and Earth's resources are all but depleted. To avert the slow decay of civilisation, the major corporations of Earth have turned to the Frontier to find the raw materials they so desperately need.

As X-COM's commander in the Frontier, you must maintain your financial standing, manage your bases and increase X-COM's presence in the area. In the latest installment to the X-COM series there are some big changes, most notably that X-COM has left Earth and taken to the stars to fight the alien threat. As the X-COM Commander-in-Chief, instead of managing terrestrial bases and commanding ground



troops, you manage star bases and hop right into the cockpit of X-COM fighter craft, where you go head-to-head with the alien menace.

The demo gives you a taste of what to expect during your tour of duty. Things are kept relatively easy as you are only able to look at those strategy screens which enable you to manage your bases and perform your research in the actual game.

PCW Details

Operating System	Windows 95
Limitations	Limited levels and resources
Sales Contact	01454 894102
Technical Support	None available

Monster Truck Madness 2

Monster Truck Madness 2 is the sequel to one of the best-selling auto-racing games for the PC and combines outrageous attitude, unrestrained racing and real monster trucks to provide a fun and exhilarating off-road driving experience.

There are new tracks, new trucks, improved graphics and sound, and variable weather conditions. For more traditional drivers, there are also 11 of the original trucks from Monster Truck Madness. You'll find a variety of environmental conditions and challenges but for a more challenging game players may also face variable road conditions. There are special games available (over the internet) to multiplayer, which allow drivers to fight for the title of "king of the hill".

Up to eight players can challenge other drivers in a multiplayer environment over a LAN, or modem-to-modem, or via Microsoft's Internet Gaming Zone at www.zone.com/.



PCW Details

Operating System	Windows 95
Limitations	Limited tracks and vehicles
Sales Contact	0345 002000
Technical Support	None available

Redline Racer

A spectacular and challenging motorcycle racing game that brings pure, unadulterated, arcade racing to the PC for the first time.



This demo is only a taste of a game that demands you pick the flies from your teeth, flip down your visor and blast through ten stunning tracks from around the world. Select the visor-cam view to discover the amazing visual effects employing ultra-realistic 3D graphics at speeds exceeding 60fps. The full version includes six unique racing environments, three levels of difficulty and three gameplay modes (Arcade, Time Trial and Multiplayer) across a network, the internet or a modem. There's a choice of eight huge superbikes with dynamic real-world physics and 16 fully-animated male and female characters. In addition, there are ten challenging, detailed, tracks and two secret ones, six astounding secret bikes, a multiplayer reverse mode and new bikes to download.

PCW Details

Operating System	Windows 95
Limitations	One track/one bike
Sales Contact	0181 944 9000
Technical Support	0181 944 9000 (9.30am and 5.30m Mon-Fri)

Castrol Honda Superbike

Officially licensed and developed with the 1997 World Champions, Castrol Honda Superbikes is a blistering motorcycle racing simulation emulating every aspect of the World Championship-winning bike, the 190mph 160bhp Honda RVF-RC45.

To win the championship you must master the bike and its setup for every track. Multiple options allow complete control of the simulation environment, from the level of your computer opponents to tyre wear and whether or not an accident will put you out of the race. Among the main features are multiple game modes (including world championship simulation, practice and trainer modes) customisable difficulty levels, split-screen and network play, full control of bike setup using real data supplied by Honda Race Engineers, and world tracks featuring 190mph bends, chicanes, hump back bridges, kerbs, tunnels and pit lanes.



PCW Details

Operating System	Windows 95
Limitations	Single track with limited options
Sales Contact	0181 293 7110
Technical Support	None available

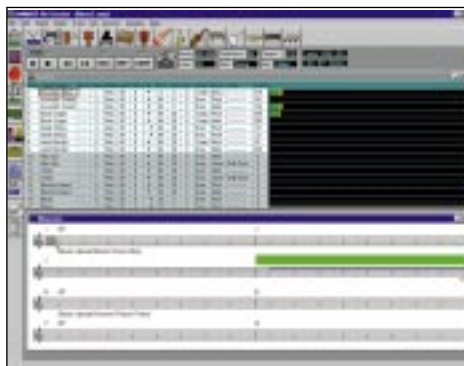
CD-ROM Helpline 01274 736990

Jammer Hit Session

Jammer Hit Session is a variation on a regular MIDI sequencer and is designed for creating full arrangements of music on your computer in just minutes. It is simple enough for you to be able to create finished songs the first time you use the program.

It's greatest strength lies in being able to quickly lay down the framework for a song by entering the chords and then choosing a style against which to play the chord sequence. The program will then create a full arrangement of drums, bass, rhythm, percussion, harmonies and melodies based on the chosen style and chord pattern.

Supplied with the program are 100 assorted grooves, intros, breaks, stops, holds, and endings for you to create your own masterpiece in just minutes. You can also create your own customised accompaniments to use as a style. Output quality is good enough to create professional-quality recordings.



PCW Details

Operating System	Windows 95 and Windows 3.1
Limitations	Full Version
Sales Contact	01706 228039
Technical Support	None available

Upgrade Offer

You can upgrade from Jammer Hit Session to Jammer Professional V3 for £49 (incl VAT & shipping) — see our demo of Jammer Professional V3 on this CD.

With this more powerful program you will get a 256-track studio for arranging, editing and mixing your tracks and the option to add extra, professional, band and drum styles.

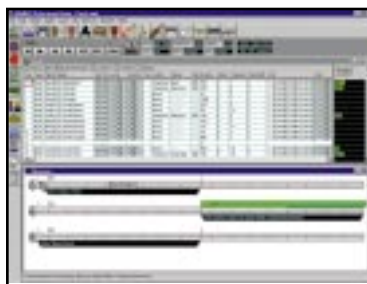
There are 200 Jammin' Band Styles including dynamic intros, grooves, breaks, stops, holds and endings for rock, upbeat blues, slow blues, fast jazz, slow jazz, funk classical, pop, dance, waltz, country swing, Latin and bluegrass. There are 50 drum styles and XG instrument support.

● For further information, call Et Cetera on 01706 228039 or fax 01706 222989.

Jammer Professional v3

Jammer Professional v3.0 is a natural progression from Jammer Hit Session (above) and adds more dynamic features to suit the demands of a professional musician.

Drag-and-drop Style Arranging allows stored styles to be applied to your song by dropping them into the right place, using the mouse. To preserve memory these can be copied or linked so that a change to the original style will affect all instances. Chords can be directly played into the lead sheet in the Measures window using a MIDI keyboard or MIDI guitar. Jammer analyses the notes you played and writes the name of the chord into the Measures window at the current cursor position. The program will even calculate and implement a chord progression in the Measures window from an imported standard MIDI file. Other features include SMPTE synchronisation, support for long filenames, Cakewalk and multiple ports. There are easier patch and drum configurations and style patch configuration editing.



PCW Details

Operating System	Windows 95 and Windows 3.1
Limitations	Cannot save or print
Sales Contact	01706 228039
Technical Support	None available

Final Reality

Final Reality, from VNU European Labs (developed in association with Remedy Entertainment) has become the *de facto* 3D graphical benchmark. It offers full support for MMX and AGP technologies and uses a real-world 3D engine, created in assembler, to form the heart of the benchmark. Game scenes and information are sent to the engine for real-time rendering, emulating what happens when you actually play a game. This makes Final Reality the most realistic gaming environment to be seen in a benchmark, to date. The demonstration, of which John Meegan from Psygnosis said "...is the benchmark for both the layman and the technician," also includes an original soundtrack and transparent desktop interface making it an entertaining package as well as pushing graphics capabilities to the limit.



More than 25 of the world's top graphics card manufacturers participated in the testing of Final Reality. It runs under Windows 95 and the most current version of DirectX. In addition to support for AGP and MMX, the benchmark also examines image processing and 3D rendering.

PCW Details

Operating System	Windows 95
Limitations	Full version
Sales Contact	0171 316 9655 www.finalreality.com
Technical Support	(as above)

CD-ROM Helpline 01274 736990

SuperPrint 4.0

SuperPrint serial number:
400-401-00999

This full version of SuperPrint 4.0 is a set of advanced printing tools for all Windows versions, designed to provide faster, better, smoother printing. SuperPrint transforms the printing architectures of both Windows 95 and Windows 3.1x into true 32-bit printing

Zenographics

sub-systems, replacing Windows 3.1's 16-bit and Windows 95's 16-bit and 32-bit hybrid technology. Through a 32-bit queuing architecture and 32-bit "SuperDrivers," it produces more efficient background printing and smoother multitasking.

SuperPrint 4.0 also helps to improve the output quality of graphic and image files. It outputs internet-ready files from any Windows application and lets you view and print web images in GIF, JPEG and PostScript formats. It is also possible to perform PostScript Level 2 printing to non-PostScript devices.

PCW Details

Operating System	Windows 3.1 and 95
Limitations	Full version
Sales Contact	01420 83811
Technical Support	arthur_bit@compuserve.com or phone the above number between 9.00am and 5.30pm

SPECIAL UPGRADE OFFER FOR READERS

Upgrade from SuperPrint 4.0 to Version 5.0 for £34.00 (inc VAT and delivery).

Extra benefits include:

- Support for a wide range of printers, with downloadable driver updates for registered version 5 users.
- Full 32-bit printing on *all* Windows operating systems — even Windows 95 is only 16-bit.
- "Drag and drop" printing of bitmap and postscript files including "preview function".
- Colour correction and hue matching.
- Advanced halftoning capabilities to enhance print quality.
- PostScript printing capabilities, Level 1 and Level 2.
- Output PostScript files from programs like CorelDraw, PageMaker or Quark Xpress to many non-PostScript printers.
- Embedded EPS files can be printed on non-PostScript printers

For all upgrade information, and to order, call the SALES HOTLINE on 01420 83811 or email 100111.3424@compuserve.com

The X-Files: Unrestricted Access

You've hacked into a highly classified secret government website, giving you unrestricted access to the X-Files. You can take control of a powerful search engine to browse and comb through dossiers assembled

on characters in Mulder and Scully's continuing investigations. Examine newspaper clippings, crime scene photographs, police photographs and hundreds of 3D images of evidence. Utilise advanced FBI equipment to analyse fingerprints

and voice patterns, and watch streaming video of memorable scenes from X-Files episodes.

The X-Files: Unrestricted Access is the essential interactive reference source for every true Xphile. This CD contains just a sample of what you get with the full version: on the

bought program you will get a powerful search engine to comb through top secret information contained in case files and assorted dossiers. Each case file provides links to other documents and evidence, and can also be cross-referenced to related cases. You will be able to analyse, interpret and draw your own conclusions about every X-Files case there is. There are complete case files and dossiers on every event or individual that's ever appeared in the programme. Photographs, documents, and audio/visual evidence are also yours to inspect at will. FBI hi-tech tools such as Fingerprint Analysis, Voice Analysis, and Image Enhancement are included in your wide range of investigative assets. And that is just a taste! Using Microsoft Internet Explorer 4.0, you will be able to update The X-Files Unrestricted Access as each new episode is broadcast (an internet connection is required to use this feature).

X-Files Unrestricted Access was developed in close co-operation with The X-Files creator Chris Carter and Ten Thirteen Productions.



PCW Details

Operating System	Windows 95
Limitations	Interactive preview of application only
Sales Contact	01753 860415
Technical Support	None available

CD-ROM Helpline 01274 736990

Software Library

Essential Utilities

NEW Add/Remove 4Good 1.0 (Win95)

The utility that helps rid you of those unwanted entries in Control Panels' Add/Remove list. (Limited-use shareware)

Adobe Acrobat Reader 3 (Win3.1/95)

The free Adobe Acrobat Reader lets you view, navigate and print PDF files across all major computing platforms. (Fully-functioning reader)

DirectX 5.2 (Win95)

Latest set of essential video and audio drivers that are required to run some of today's processor-hungry games and applications. (Fully-functioning drivers)

EzDesk for Windows 1.8 (Win95)

A utility that manages the desktop icons' layout and restore it to a previously saved arrangement. (Limited-function shareware)

Fontastic 3.6 (Win95)

A powerful font management tool. It allows quick and easy access for viewing all of the fonts stored within your system as well as providing printed samples. (31-day evaluation)

GIF Construction Set 1.0Q (Win3.1/95)

The quickest and most professional way to create transparent, interlaced and animated gif files for web pages. (30-day shareware)

Graphics Workshop 1.1Y (Win3.1/95)

A superlative image management package that allows you to view, convert and catalogue your images in a wide variety of formats. (30-day shareware)

Microsoft Internet Explorer 4.0 (Win3.1/95)

Surf the internet with the latest versions of Microsoft's Internet Explorer for Windows 3.1 and 95. (Fully-functioning unregistered version)

Microangelo 2.1 (Win95)

Provides access to icons of all sizes and colour formats used by Windows 95. Browse, manage, create, and edit icons from 8 x 8 to 64 x 64 pixels in size and up to 256 colours. (30-day trial)
N.B. *The Microangelo installation in the Software Library will not work. Run from Explorer instead:*
<CD>:\SOFTWARE\LIBRARY\GRAPHAPP\MICROANG\SETUP.EXE

MIRC 5.31 (Win3.1/95)

Provides a user-friendly interface for use with the Internet Relay Chat network. The IRC network is a

virtual meeting place where people from all over the world can meet and talk. (30-day shareware)

NEW NearSite 6.1 (Win95)

Retrieve and store internet files in the background and spend less time online. NearSite bookmarks can be set to automatically retrieve web pages from the internet and keep them refreshed as often as you wish. (30-day evaluation)

Net Toob 3.5 (Win3.1/95)

Net Toob Stream enables playback of online streamed and online and offline downloaded MPEG-1, Video for Windows (AVI), QuickTime for Windows (MOV), QuickTime VR object files, Autodesk Animations (FLC/FLI), WAV audio and MIDI audio. It is reliable, easy to use and integrate, and works with multiple browsers. (Evaluation version)

NEW Netscape Communicator 4.05 — Standard Edition (Win3.1/95)

It has been a while since Netscape last appeared on our CD but now it's back, and better than ever. One of the premier internet suites, including Netscape Navigator. (Free version)

Paint Shop Pro 3.11 (Win3.1)

Fully-featured painting and image-manipulation program. Features include powerful painting tools, photo-retouching, image enhancement functions, batch file format conversion and support for over 30 different file formats. (30-day shareware)

Paint Shop Pro 5.0 (Win95)

Paint Shop Pro 5 is the latest version of this popular graphics editor, with powerful new features such as complete layer support, Picture Tube brushes, CMYK separations and pressure-sensitive tablet support. It also includes enhancements to Paint Shop Pro's flexible painting and retouching brushes, adjustable cropping and selection tools, and image enhancements. (30-day evaluation)

• *Apologies to those readers who found this latest version wasn't actually on the CD last month.*

SpellWrite for Windows 1.6/2.1 (Win3.1/95)

A unique utility that can spell-check any Windows program instantly (e.g. email, accounts, database etc.) from a designated hot-key. It has an 85,000-word dictionary in UK format. (30-day shareware)

NEW VuePrint Pro 6.0c (Win3.1/95)

One of the most widely used Windows programs for viewing images. You don't need to know anything about images or file formats to use VuePrint — just tell it to open a file and it

automatically displays any images it finds in the file. (15 day evaluation).

WinZip SR 6.3 SR-1 (Win3.1/95)

Industry-standard compression/decompression utility for Windows 3.1 and 95, with automatic built-in disc-spanning support for multi-disc Zip files. (21-day evaluation version).

New This Month

Lycos Internet Explorer 4.0 (Win95/NT)

The Lycos Internet Explorer is a specially-customised version of Microsoft's Internet Explorer 4.0, the most recent and secure Microsoft browser available. In addition to all the cool features and security enhancements of



Microsoft Internet Explorer 4.0, Lycos Internet Explorer includes:

- **Lycos Search.** Lycos Internet Explorer uses Lycos as its default search engine.
- **Favourites.** Lycos Internet Explorer enhances your existing favourites with a comprehensive set of productivity-enhancing navigation services.
- **Quick Links.** The most commonly-used search and navigation services are only a click away on the Quick Link bar.

3D Wild Diamonds 1.0 (Win3.1/95)

This multi-feature slot machine game features true colour-rendered graphics, real-time animation and crisp, clear, classic slot machine sound effects. (Limited demo)

ABC for Junior (Win3.1/95)

A simple, effective, alphabet and colour teaching program for children aged 2-5 years. For every full copy of the program sold, Kids ABC will donate £5 for school computers. (Limited demo)

BlackWidow 3.61 (Win95)

An off-line browser, site scanner, site mapping tool, site Ripper and site mirroring tool. It will scan a web site and present found files in an Explorer-like window. You can view various information on each file (e.g. size and date) and select files to download from the site. (15-day evaluation)

Bubble Puzzle (Win95)

Shoot coloured balls to the top of the screen by adjusting the angle of the ball canon. Three balls

CD-ROM Helpline 01274 736990

Software Library (continued)

of the same colour which touch each other will be removed from the playing field. Your goal is to eventually remove all balls from the level. (Freeware)

Business Card Designer Plus (Win95)

Create stunning business cards on any Windows-compatible printer. With this software you'll be creating your own business cards in minutes. (30-day shareware)

CWP — Chinese Word Processor (Win3.1/95)

A unique method of Chinese character entry designed to be easy to learn and use. All character entry is carried out from the screen using a mouse to select the different characters. There is a full range of word processing facilities available. (Limited demo)

Dance eJay demo (Win3.1/95)

An 8-track studio where you can produce your own dance music with ease — even without any musical knowledge or experience. (Limited demo)

Dolphin Smalltalk (Win95)

Build robust, scalable, complex and yet exciting software using pure object-oriented programming techniques. (Free, base version)

International Test Cricket 1.23 (Win3.1/95)

A statistical-based Cricket Test Match simulator. (Shareware)

Lottery Computa-Picka (Win3.1/95)

A large range of methods for selecting your National Lottery numbers, as well as many

features accessible from the stored past draws and user entries databases. (Unregistered shareware)

Microsoft IntelliPoint 2.2 (Win95)

Latest version of driver software for the Microsoft Intellimouse. (Freeware)

Scan2CAD (Win3.1/95)

A useful raster-to-vector converter that works with any scanner, any size of drawing and any CAD program. It makes you more productive by quickly converting scanned drawings (raster files) into easy to edit DXF (vector) files. (Limited demo)

Swarm 4.5 (Win 95)

Fast-paced, adrenaline-pumping action in an explosive shoot-em-up style. Be warned — it's very addictive. (Limited demo)

CD OnLine CompuServe

Clicking on the web link banner at the top of the main screen will give you the opportunity to run your browser and access PCW CD OnLine.

CD OnLine is an extension of the normal CD giving you up-to-date access to sites and information relating to the actual content on this month's disc. Besides direct links to the PCW web site, Vnuset.com and Jobworld.co.uk, there is a directory linking you to the websites of the companies who have software on this month's CD-ROM. There is a continually updated Technical Info page (for problems that may come to light after the CD has gone to press) and a preview of what will be on next month's CD. Plus full contact information and on line subscription.



CompuServe is the UK's leading Online Internet Service offering fast and



easy access to the internet and its own exclusive online services. Install CompuServe now and enjoy one month's free trial including:

- FREE 650 hours' online time*
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PCW Details

Operating system Windows 95 and Windows 3.1

Limitations One month free. 650 free hours to be used within one month.

Contact 0990 000200

Jobworld.co.uk is a free service which gives you access to thousands of new IT, business and finance vacancies every day. All you have to do is browse the site by job sector or search on a specific set of job skills or requirements.

The Jobworld Email Alert service offers extra freedom by sending only details that match the job seeker's preferences, allowing the recipient to control what information is sent and when. Jobworld also offers links to job sites overseas, a guide to IT contracting, and comprehensive lists of jobs from the top recruitment agencies in the UK. Jobworld.co.uk — be the first to know!



Vnuset.com offers speed of delivery, accuracy and breadth of

coverage from five market-leading weekly newspapers: *Computing*, *Accountancy Age*, *PC Dealer*, *Network News* and *PC Week*, generating up to 50 stories every working day. With correspondents in Europe, the US and Asia contributing daily to the VNU Newswire, a round-the-clock news service is available exclusively at vnuset.com.



Detailed information is available from in-depth articles, covering news analyses and product reviews, from VNU's stable of monthly publications, including *Personal Computer World* and *Management Consultancy*.

CD-ROM Helpline 01274 736990

Newsprint

BT declares death of the modem

New comms technologies are poised to make audio modems as dated as the 386 PC — still used, but only if you can't afford a little more for far better.

Cable and satellite companies and British Telecom all have services on offer, or about to come on stream, that will change by an order of magnitude the speed

at which most of us transfer data on remote links. Digital TV, which can carry web data, is also about to hit a mass market, changing forever the pattern of online activity.

Next year BT will introduce two high-speed Digital Subscriber Line (DSL) services, which piggy-back its existing structure with a high-frequency data signal.

One will be Asymmetric DSL (ADSL), already piloted twice in the UK. It offers more than 2Mbit/sec downstream. ADSL is costly, as it requires an engineer to install it at the user's site, so BT will also offer

a option called DSL Lite, or Universal ADSL, which can be installed by a user. This offers 1Mbit/sec downstream and 300Kbits/sec up, and follows a standard agreed by industry heavyweights.

Meanwhile ComTel, Britain's fourth largest cable franchise, has launched a cable modem service offering up to 20Mbit/sec. But unlike

DSL, which guarantees bandwidth, this is split among local users (see p27). These systems are likely to cost about £30 to £40 a month initially but prices will probably fall.

The DSL and cable systems provide a permanent web link, which will be as revolutionary in its effects as the high data rates. A permanent link turns the web into an extension of your hard disk and makes far more feasible the delivery of news, music and other continuous data streams.

This could boost web traffic by an order of magnitude, which is one reason why BT has been sitting for so long on ADSL.

David Smith, BT representative on the Universal ADSL

● Continued on page 26

New Comms special

Clive Akass presents a special two-page report on the latest new comms announcements.

See pages 26 and 27



■ Device intelligence is evolving in parallel with new comms, because one appliance needs to talk to another.

Cameras were among the first to have intelligence built in. But now Kodak has produced the first of a range that are computers in themselves. It claims the DC220 and DC260 match the feature-set taken for granted in cheaper, traditional cameras.

The DC260 has a 3X optical and 2X logical zoom and a 1.6 megapixel sensor, claimed as the best yet in a sub-£1,000 model.

Other features include a motor driver mode to allow a rapid sequence to be taken — most digicams are slow on the draw. But what really sets the 260 apart is

Smarter cameras click in

that it has its own operating system and scripting language, allowing you to set up configurations for particular tasks and even include LCD messages to guide amateur users.

The basic DC260 costs £899 (inc VAT). Its sibling DC220, which has a 1-megapixel sensor and 2X optical zoom, costs £699.

Kodak 0800 281487
www.kodak.com

Wait for it...Windows 98 is in the stores now

■ Windows 98 is here... but does anybody care? After months of legal brouhaha, the launch looked like it would be a bit of an anticlimax.

Microsoft planned a launch party but had no plans for mega-hype. "Windows 95 was a much bigger step for us, so this launch isn't going to be as noisy," said its PR people.

Several stores planned to open at midnight on 24th June to meet the rush. They included PC World, which was also

offering half-price RAM upgrades to '98 buyers.

Martin Gollgoly, senior Datamonitor analyst, did not expect users to be rushing to buy. But Win98 product manager,

Two-page special analysis on Microsoft Pages 40/41

David Weeks, said there were a host of reasons to upgrade. "It's faster and more robust...than Windows 95."

He admitted that some people would wait until they bought a new PC to get the product. He described early reaction

to the operating system as "phenomenal".

Aimed primarily at the home and small office market, Windows 98 costs £161.50 (inc VAT) or £85.50 to upgraders.

Some PCs are still being sold with Win95 but usually with an offer to upgrade for the price of postage and packing.

Some vendors, including Gateway and IBM, are offering to set Netscape's browser, rather than Microsoft's, as default on selected PCs.

Susan Pederson

DiViDed we stand

Gordon Laing tells why he is buying a DVD drive from the US p50

New Acorn

...in mellow yellow p31

Virgin's free net access

...if you can afford it p36

Porn to be wild?

Most people in Britain believe internet content should be controlled p38

News edited by Clive Akass; news@pcw.co.uk ● Internet News edited by Susan Pederson; susan_pederson@vnu.co.uk

Intel fights back as courts and chip cloners close in

Intel is facing the double threat of antitrust charges and increasingly serious competition from cloners.

In fact, the word "cloner" hardly covers AMD, which announced a new K6-2 range with its own extended 3D instruction set.

AMD claimed Microsoft is supporting the extensions. More worrying for Intel is the fact that both IBM and Compaq are offering K6 PCs in their new consumer ranges.

These are entry-level PCs which far outsell costlier models, says Compaq consumer marketing manager, Hamish Haynes. "Buyers at

this level worry more about the price than about who made the processor."

IBM Microelectronics kept up the pressure with new 6x86 chips rated at 300MHz and 333MHz. These are Cyrix designs made and branded by IBM. Curiously, they are not used in Aptivas.

Intel responded by cutting chip prices by between 12 and 32 percent and launching a 300MHz version of its much criticised Celeron (see *our group test*, p160).

Intel also said it would fight charges that it pressured Compaq,

Intergraph and Digital to grant it patent licences.

Intel is itself piling pressure on high-end chipmakers with a 400MHz PII called the Xeon, designed for 4- and 8-processor servers and workstations of a class usually using expensive specialist RISC chips. **Clive Akass**



IBM and Compaq have unveiled consumer PC ranges with an emphasis on net access and multimedia performance. All models include a 56K modem, surround sound and 3D graphics as standard.

The Aptiva range starts at £799 (inc VAT) with the E51, including a 24X CD and 2Gb hard drive, and driven by a

Entry-level PCs aim to net new users

233MHz AMD K6. The same chip drives Compaq's entry-level Presario 2254, costing £100 more but giving you a 3.3Gb drive and a 32X CD. IBM 0870 6010136, www.ibm.com/pc/uk/aptiva.html. Compaq 0845 270 4000, www.compaq.co.uk

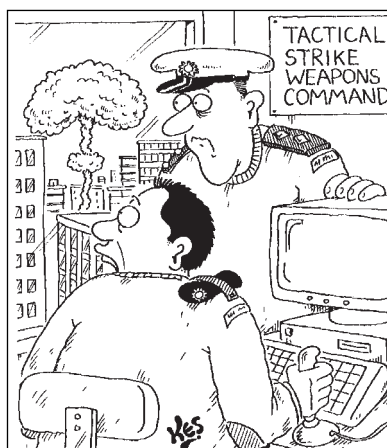
Army recruits video gamers

■ Ronald Reagan once said youngsters playing video games were honing skills for future wars. The Army has taken his words to heart with a promotional CD called First Contact.

In addition to the usual Girl's Own stuff (this is the modern, emancipated army), it includes five games based on real-life army

training. Armed Forces Minister, Dr John Reid, reacted testily when asked if the CD would not glorify war. He said the army held the highest ethical standards. "There are times when if you wish to have an ethical foreign policy, you have to use force," he said.

The CD will be distributed free to libraries and schools.



"Whoops! I thought I was still playing Doom!"

Short stories

Omega launches £89 Zip kit

■ Omega has slashed the price of its removable drives in face of tougher competition from Syquest and superfloppies. And it has launched a £89 (inc VAT) internal ATAPI Zip drive with a video explaining how to fit it.

The company says big high-



street stores will fit the drives for free if users bring their PCs in.

The prices of its internal and external 2Gb Jaz drives fall from £449 and £519 to £399 inc VAT for either; 2Gb cartridge prices fall from £149 to £99 inc VAT; 1Gb cartridges now cost £79, a 34 percent drop.

These prices are still twice the cost per megabyte of Syquest's SparQ 1Gb cartridge. ● See *group test*, page 116

Smart updates for roving users

■ Symantec has launched two products for an expected boom in remote access. Mobile Update, which has server and client modules, monitors specified files and directories and uses email to update copies on remote PCs. No user input is required and the system avoids perilous direct links to the host network.

A second product, Norton Mobile Essentials, claims to be able to troubleshoot connections from anywhere in the world.

Symantec 0171 616 5600
www.symantec.com

Slanging match

■ UK antivirus specialist Dr Solomon has been bought by bitter rival Network Associates, formed last year by the merger of McAfee Associates with Network General. The \$640 million deal may end rivalry which has led to law suits and personal insults.

Online Macs

■ You can buy a built-to-order Mac online 24 hours a day at www.apple.com/store

Clive Akass presents a special two-page report on the New Comms revolution that is set to transform computing. See also comms feature on page 130.

BT declares death of the modem

● *continued from page 24*
Working Group (UAWG), which is developing the DSL Lite standard, said BT has tried to ensure content is available for delivery by the new systems. One way is to mirror popular US sites in Britain. "There would be no point in everyone getting online and clogging up the transatlantic links."

Smith said of DSL: "This is the end of line for the [audio] modem. It's as simple as that."

Eutelsat, which is part owned by BT, is offering a rival 40Mbit data delivery service using Digital Video Broadcasting (see *opposite*). And the New Comms revolution is also about to hit local links between smart devices.

● Rockwell, which makes the processors driving most of the world's modems, is hedging its bets with a chip that supports both the V90 56Kbps modem standard and ADSL links of up to 8Mbit/sec.

Universal ADSL Working Group
www.uawg.org

Rockwell www.rockwell.com

Two-way radios put smart devices on speaking terms

Major manufacturers are backing a wireless technology called Bluetooth that could revolutionise the way we use intelligent devices.

PCs, mobile phones, notebooks, palmtops and other devices will be fitted with tiny radio transceivers costing around \$10 initially. The price could fall to as low as \$5 as sales rise.

They use spread-spectrum radio (see *box, above*) to deliver up to 721Kbit/sec over a range of up to 10 metres. The maximum data

The Bluetooth system transmits tiny data packets at up to 100 milliwatts on 79 frequencies between 2.402GHz and 2.48GHz in 1MHz steps.

Up to 32 frequencies are assigned to a particular device. The active frequency changes 1600 times a second as each data packet is sent.

Neighbouring systems will rarely use the same frequency at the same instant (unless a

Jumping Jack Flash keeps data flowing

communications link has been established), allowing the same bandwidth to be shared by many users.

When contention does occur, the data packet is simply resent.

Security measures include built-in encryption and device authentication.

rate is expected to double with later implementations.

If Bluetooth lives up to its promise, it seems likely to replace infra-red ports, which deliver 4Mbit/sec but require line-of-sight communication.

But the concept goes beyond simple comms. Bluetooth is designed to allow smart machines to interoperate without user intervention.

For instance, you could tap out a letter on a notebook and send it by cellphone without taking the handset from your pocket. Bluetooth

modules in each device will take care of the transmission for you. Or you could update data on your palmtop simply by walking within range of the office network (see *Tim Bajarin, page 48*).

There are three basic operating modes, designed for flexibility. All use hyper-fast packet switching to achieve duplex (two way) transmission over a single channel:

● Data only, asynchronous (not time dependent like, say, a video stream). Operation can be symmetric at 432.6Kbit/sec in each direction, or asymmetric at the maximum 721Kbit/sec, and 57.6Kbit/sec on the return channel.

● Voice only, with up to three 64Kbit/sec synchronous voice streams.

● Mixed voice and data. The synchronous stream is supported by allotting regular time slots to it.

Early backers include Ericsson, IBM, Intel, Nokia and Toshiba — all of whom have working silicon. Many of them had been working on similar schemes and came together when it was realised that some kind of open standard was needed.

The first Bluetooth devices are expected to appear next year.

www.bluetooth.com



Home roving datacomms hits the DECT

You can get a feel of Bluetooth by using one of the new Digital Enhanced Cordless Telephone (DECT) handsets. Samsung has taken to handing these to

journalists to try out and I have to say, they have me hooked.

DECT also uses spread spectrum but at a slightly lower frequency and with a higher range — a claimed 300 metres.

DECT gives you freedom of movement like any cordless phone, but is interference free and each handset can be used as an intercom.

In an office it could put you at your own extension wherever you are in a building.

Next-generation

models are expected to be able to support both DECT and GSM, so you can use them for both home and mobile links.

Cambridge-based Symbionics, recently taken over by Cadence, has developed DECT-based systems for wireless data transfer and is a member of both DECT and Bluetooth forums.

It would be feasible for a device to use both technologies. But Symbionics marketing director, Henk Koopmans, said: "It is too early to say how they will both be used."

Samsung 0800 391 0168

Symbionics 01223 421025



DECT allows you freedom to phone from the garden but could also be used for data calls.

Snapshot taken with a Sony Mavica digicam.



40Mbit satellite service opens

Sky TV is due to launch its digital TV service amid much fanfare this month. But pictured is the

control room at Eutelsat, part owned by BT, which already has digital channels and is way ahead of Sky in promoting data services. Now it has launched a system called Convergence1, which uses the Digital Video Broadcasting (DVB) format to deliver web and other digital content at 40Mbit/sec.

Like the DirectPC system, which also uses a Eutelsat link, it requires a land-based web connection for the back channel. Convergence1 differs in that it uses the DVB signal as a carrier. DVB is packetised, rather like ATM, and so can easily be used in conjunction with the web's TCP/IP, says Eutelsat's Mike Lodge.

Pricing is unclear and may include per-megabyte charges. But this could produce a new sphere of economic activity where, say, a concert promoter might charge punters for a webcast. Eutelsat has done trials with Software Warehouse for software distribution. "We can download all the files for WordPerfect in about three minutes," said Lodge.

The digital jukebox company Cerberus is already available under the system.

The basic system consists of a dish aerial and a PCI card. First trials used the Adaptec card highlighted in February's Newsprint. But the first version does not have an MPEG decoder and so you need a set-top box to receive Eutelsat's 40 TV channels and 24 radio channels — many in English and most free.

Eutelsat is testing boards with an MPEG decoder which will link to your graphics card to enable viewing on your PC. DVB is an open system, so many manufacturers are likely to offer hardware. By using a twin-LNB dish you can catch both Sky and Eutelsat broadcasts, as well as the BBC digital when it starts this autumn.

Lodge said: "People don't realise that Europe is five years ahead of the US in all of this."

PCW will be trying out the Convergence1 system, so watch this space.

Eutelsat 0117 921 0117, www.convergence1.com

Cable company begins 20Mbit modem rollout

Nearly a million homes are to be offered internet access at speeds of up to 20Mbits in the first commercial rollout of cable modems in Britain.

The service comes from ComTel, the fourth largest cable franchise in Britain, which covers the Thames Valley area, Coventry, Oxford, Salisbury, Swindon, and parts of Northants and Staffordshire.

It uses the US @Home cable modem system, which improves delivery speeds by caching popular content on local servers — few servers on the net will deliver at anything like these high data rates.

Alex Zwissler, ComTel's director of business development, said pricing has yet to be set but it would be of the order of £30 to £40 a month for a permanent connection, equivalent to a leased line.

He could not say if this includes the cost of the modem. "Users may have the option of buying one outright," he said.

The modems will be up against competition from British Telecom's ADSL, which is ostensibly slower but guarantees bandwidth. Cable data rates, like those on local-area-networks, depend on the number of active users on a loop.

Zwissler said each 20Mbit/sec loop is likely to be shared by up to 600 users. These are highly unlikely to be online all at the same time, but it remains to be seen whether average data rates can top those of BT's new DSL services. Asked how the @home system will stack up, Zwissler said: "It depends on the economics of how BT implements ADSL."

Comtel www.comtel.com

£50 cards a sound investment

Digital radio cards costing as little as £50 to £100 will be available within months.

Digital Audio Broadcasting (DAB) is set to replace current analogue radio services. It was developed to make maximum use of frequencies and to provide country-wide interference-free reception in cars.

It can also be used for data, either as a separate stream or to complement a radio programme.

The BBC already DAB-casts its five main channels

to 60 percent of the UK.

Receiver prices have fallen from around £2,000 but still cost at least £500. Now London-based RadioScape has developed software to enable signal processing to be done on the PC, reducing the hardware to a simple tuner and digital converter.

The device uses about 15 percent of the processing power of a Pentium MMX. "This means you can run it as a background operation. You can have

CD quality sound on tap as you work," said managing director Peter Florence.

"You could also have a small window open on screen to view any information that may be broadcast at the same time. Also, you will be able to receive running information such as sports scores."

Bosch in Germany has an all-hardware PC DAB system. But a UK spokeswoman said: "There are no plans to sell it here."

RadioScape 0171 387 4440

Blue Laser challenge to DVD for video recording

Analysts believe that read-only DVD will replace CD drives in PCs by mid 1999 in the US. But a technology called Blue Laser could derail the rollout of read-write DVD. Blue Laser, a phase change technology, stores 12Gb per disk side, in contrast to DVD RAM's 2.4Gb and DVD RW's 4.7Gb.

A top vendor suggests manufacturers might skip trying to make DVD read/write drives mainstream and instead move towards Blue Laser in 2000.

It had been thought that DVD read/write drives will serve as the heart of the digital video-recorder. But Blue Laser drives would clearly provide much more recording space.

Tim Bajarin's letter from Silicon Valley

● Microsoft's eCommerce is to launch an online super-mall this year, partly because its MSN has failed to grab market share. The idea is to create a place where people can shop, chat and share mail.

Microsoft will aggregate its feature sites (Car Point, Investor, MSNBC, Slate, Sidewalk, Expedia and Hotmail) under a site codenamed "Microsoft Start".

It will match the Netscape Net Center site, which has become a cornerstone of that company's eCommerce

program. The aim is to make it the start page of choice for PC users.

Netscape has an important agreement with Yahoo! that serves this start-page purpose, and will use this relationship to expand the role of NetCenter over time.

Microsoft hopes a consumer emphasis at its site will serve companies who want to do business-to-business selling as well.

● See analysis, page 50



Psion has added two financial packages to its Series 5 software range. Expense Manager lets you track costs and then port the information to a PC, and even print out an expense form that matches their company's. Financial Calculator can evaluate financial problems such as depreciation. Both cost £49.95 inc VAT.

Psion 0990 143 050, www.pSION.co.uk

New OS for Amigas and PCs

Amiga is promising a new operating system and a new PC in November.

The Amiga OS 4.0 will have a new user interface, but will support old Amiga software with an integrated emulator. The company says

the OS will be cheaper, faster and smaller than Windows and will also run on Intel PCs.

Netscape is already developing a browser for the new platform.

Full details at www.amiga.de.

ICL rides Microsoft bandwagon

A new alliance between Microsoft and ICL will create an estimated 1,000 new jobs and extend the US software giant's hold on government and business systems.

ICL, once Britain's flagship computer company, is now owned by Fujitsu and develops enterprise-level solutions. Chief executive Keith Todd said Microsoft software will help cut development times. Some

4,000 engineers will undergo a training programme for seven new "solutions centres" worldwide.

One aim of the partnership will be to build kiosk systems to enable people to get and use information on government services.

There are fears that the deal will squeeze other technologies. Marks & Spencer, for instance, uses ICL for its point of sales

systems which use British-made Psion devices with their own operating system — not Microsoft's Windows CE.

Bloor Research chief analyst Ron Hailstone, while welcoming the new alliance, said he was concerned that network devices of all flavours should be catered for.

But Todd said the new alliance did not tie ICL exclusively to Microsoft software.

ICL 01753 604737

Short stories



■ Dr Dyrk Halstead [above], of Computer Sentry Software, believes his new CyberAngel 2.0 can deter theft and unauthorised PC access. When it detects an intrusion, it quietly calls the CSS security HQ. It can also lock your com ports and track down a stolen PC. It costs £69.95 ex VAT with one year of monitoring. CSS 0800 783 4655

Chill out and speed up

■ Shipping your processor to the Arctic could net huge performance gains, says "cool computing" specialist KryoTech. It has cooled a 333MHz AMD K6-2 to -40°C, allowing it to clock up to 450MHz. Cooling cuts resistance and slows molecular vibration, allowing electrons to move more quickly. The technology doesn't come cheap — KryoTech says it will cost you about US\$500.

Tulip UK seeks buyer

■ Administrators had high hopes as we went to press that a buyer would be found for Tulip Computers UK, which went into administration in May after its Dutch parent hit problems. The company is still trading.

Administrators Deloitte Touche said a new buyer would not be obliged to honour previous warranties but would be likely to do so as a goodwill gesture.

Trade-in scheme

■ Gateway will this year launch a trade-in scheme called Your :Ware to help people buy PCs without fear of obsolescence. It will offer a PC plus net access on monthly payments with an option to trade it in after two years.

www.gateway.com

Bug report

■ The Advertising Standards Authority is investigating a complaint about Compaq claims of millennium bug compliance.

Prove It 2000, which sells Y2K software, claims Compaq's Real Time Clock failed tests. Compaq says the problem stems not from the PC but from the application running on it.

Acorn takes a RISC on new mellow yellow PC

Acorn has announced a replacement for its four-year-old Risc PC. The Phoebe 2100 is designed to be noticed, with its mustard yellow case from the designers of Iomega's Zip drive. It is aimed at Acorn enthusiasts, schools and other niche markets.

The Phoebe 2100 runs a StrongARM at 233MHz, the same clock speed as the current Risc PC. But the internal bus speed is four times greater at 64MHz, eliminating bottlenecks which cramped the old Risc PC.

Acorn is sampling 300MHz StrongARMS and 360MHz is expected soon after the launch of Phoebe 2100 in September. Ironically, using StrongARM counters the

Acorn tradition of eschewing Intel products. StrongARM was developed with Digital Semiconductor, which has been acquired by Intel.

Faster processors are good news to Acorn users. Acorn has been using easily-swapped PII-style slot-in processor cards, making CPU upgrades an easy DIY job.

Phoebe users could upgrade to multiple CPUs, as support is embedded in the motherboard. Acorn needs only to tweak its OS. Acorn has adopted standard PCI expansion slots, though three proprietary



Acorn cards are retained. PC and Windows compatibility will be provided by a third-party company which is designing a Pentium PCI card.

The Phoebe 2100 is expected to sell for £1499 + VAT sans a monitor. **Ian Burley**
Acorn 01223 725000, www.acorn.com

ARM appears to be sitting pretty. It can offer a low-consumption, low-cost, high-performance microprocessor just as the convergence of digital TV, mobile telephony, multimedia appliances and communications has become hot.

No competitor can match its tools, all-round software, training and backup; and among the latest ARM licensees are Matsushita (Panasonic), Sony, Intel and IBM.

Investors are also feeling smug: newly listed ARM's first quarter results are up on last year, and its flotation in April was more than 25 times over-subscribed. ARM is now valued at some £350 million.

It is growing, with 300 staff in eight offices globally, and it is on the hunt on for more staff, including design engineers.

ARM chief, Robin Saxby (*right*) sees each of his 29 licensees as equally significant. But Intel, which came aboard by acquiring ARM partner Digital, could help him achieve his aim of make ARM-embedded RISC technology a global standard.

"Having the world's biggest semiconductor firm as a partner will add to the momentum," he says.

With the move to digital consumer electronics and digital TV in the wings, ARM is

Investors up in ARM's after £350m flotation

Caroline Swift continues her reports from Silicon Fen



in its natural habitat — in mobile phones, web access, handheld devices, smart phones, set-top boxes and Internet TVs. Saxby



says ARM's open business model as well as its technology has contributed to its success. "If a company needs to be strong in consumer electronics, ARM can supply all that is required — design consulting, applications software, tools and training," he says. "If you're building a product, being able to depend on a third party for all that is a bonus."

All ARM chips consume less than a watt of power and performances vary from 4 to 300MIPs. ARM has just announced a collaboration with Mentor Graphics of the US on tools to speed development of applications for the ARM 940T processor core.

This the first of the ARM9 Thumb, a new generation of 32-bit systems-on-a-chip which offer 100MIPs at a cost lower than many 16-bit solutions. March saw the announcement of two new ARM9 members, the ARM920T and ARM910T, optimised for handheld devices, network computers, smart phones and Windows CE.

In the same month, Sony licensed the ARM 740T high-performance core; Philips chose ARM for its Smart-phone, and IBM took the ARM TDMI core for advanced custom

microchip products. Saxby knows of no direct competition.

"There are 100 different 'flavours' of microprocessor at the moment — in reality, ours is different," he says. "Time to market is the biggest challenge for everyone in the industry: this is where we can show the way."

● Virata, formerly known as ATML (Asynchronous Transfer Mode Limited), won a "most exciting deal" accolade at the Red Herring conference in London, for raising \$30m venture capital. That's a massive vote for approval of UK technology. Like ARM, Virata is from Acorn founder Hermann Hauser's stable.

This is not the HH fan club. But this mild-mannered Austrian, who made Cambridge his home after graduating from Kings back in 1973, does seem to be one of the most visible venture capitalists and active hi-tech entrepreneurs on the UK stage today.

www.arm.com

Database giants face the Gates squeeze with SQL Server 7.0

Microsoft is targeting version 7.0 of its high-end SQL Server database at the mass market.

It will add a raft of new features to the product, code-named Sphinx, to entice small and medium-sized companies into data warehousing — holding data in a way that supports decisions.

Microsoft plans to make the product as easy to install, deploy and use as possible.

William Baker, Microsoft's product unit manager for the decision support product unit, explained: "Our aim is

Cath Everett in New Orleans

to make it easy to design, build, manage and use cost-effective data warehouse solutions using SQL Server and Windows."

A key plank to this strategy of proliferating the data warehouse is Microsoft's Zero Administration Server initiative, which involves trying to automate all routine operations in the database, or when this is not possible, to provide 25 wizards to make writing routines easier. New features of Sphinx,

which is a complete rewrite, include dynamic memory and disk space management, and an improved Enterprise Manager for multiserver installations.

Meanwhile, our sister paper *PC Week* reports that Microsoft is incorporating part of the SQL Server engine into Access, the database in its bestselling Office suite. The idea is to cure incompatibilities with high-end databases.

Both moves will be viewed with alarm by high-end database companies.

New workstations

Intergraph Computer Systems is extending its range of TDZ 2000 ViZual NT workstations. The high-end TDZ 2000 GT1 uses a single or dual 400MHz or higher Pentium II processor to achieve I/O bandwidths of close to 1Gbps and peak memory bandwidth of 1.6Gbps. Prices start at £5,385 including VAT. The entry-level TDZ 2000 GL1 starts at £1,785 for a 266MHz PII configuration.

Intergraph 01793 619 999
www.intergraph.com



Samsung predicts desktop LCD boom

LCD screens will increasingly displace CRT displays from desktops, Samsung believes.

It has introduced two second-generation TFT models boasting 1024 x 728 resolution in 16.7 million colours.

The 15in SM520TFT has a view area equivalent to a 17in monitor and costs £1,119 ex VAT. The 13.3in 320TFT costs £798 ex VAT. Both have USB ports.

Product manager Aaron Fright said he reckoned such

screens would be selling 400,000 a year by the year 2000.

Samsung also expects 19in CRT screens to become popular as prices fall. Its 19in 900P is the flagship of a new seven-strong Syncmaster range.

Samsung also launched the SmartJet, which combines the functions of a 24-bit colour scanner, a fax machine with a 70-page memory, a colour copier and printer with a resolution

of 1200 x 1200.

It prints seven pages per minute mono and three in what is claimed to be photo-quality colour.

The SmartJet, which is controlled via a Windows interface, costs £329 ex VAT. ● PC World is giving 2,500 sheets of paper to buyers of the £229 Lexmark Colourjet 5700 1200 x 1200 colour printer in an exclusive deal.

Samsung 0800 521652;
www.samsungelectronics.co.uk
Lexmark 01628 481500

Short stories

MIDI Vision in Opcode package

Mac MIDI specialist Opcode has bundled three of its most popular products, Vision,



Overture and Galaxy Plus, into a £499 (inc VAT) package called SoftStudio. The package combines MIDI sequencing, score writing and synth editing.

Vision is a powerful (Power Mac native and OMS compatible) recording/editing package which integrates MIDI and digital audio.

SCV 0171 923 1892

Psion Dacom launches five-way PC card

Psion Dacom has introduced a new NetGlobal range of multifunction PC cards. One incorporates five functions: a 56K global modem, fax, ethernet, ISDN and GSM.

The basic three-function NetGlobal card retails for approximately £299 excluding VAT. You can upgrade to ISDN for £169 and to GSM for £119.

Psion Dacom 01908 261686
www.psiondacom.com

Business guide

The DTI is giving away a guide to how information technology can make small businesses more productive and profitable.

Doing Business in the Information Society covers nine business functions including marketing, training and exporting. To get your copy, call 0345 152000.

£85 flatbed

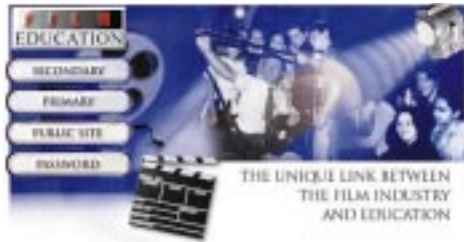
You can pick up a 36-bit, 68-billion-colour scanner for only £85 plus VAT at Watford Electronics. The Aries 1236P colour flatbed scanner



features single-pass scanning and a cold-cathode lamp, and is fully TWAIN compliant. It also comes with Micrografx Picture Publisher and Xerox Textbridge OCR.

For more information, call 01582 745566.

Internet shorts



New on the scene

If you think your child could be the next Scorsese, tell their teacher to check out the Film Education web site at www.filmeducation.org. The site provides primary and secondary school teachers with ideas for lessons about film and TV, and gives students the chance to try special projects or enter competitions.

'Elo, 'ello, 'ello...

Meet the Old Bill at CompuServe's UK Police and 999 Emergency Services Forum. The forum allows professionals the chance to exchange information with colleagues, as well as giving the public a chance to find out more about crime prevention and chat with police officers. To access through CompuServe: GO.UKPOLICE.

A get-away goodie

Lycos UK and travel specialist Leisure Planet is giving holidaymakers the chance to book flights, hotels and car hire over the internet. By clicking on the Book Travel button at www.lycos.co.uk users can get free access to image-rich travel guides and an easy-to-use booking facility.

Free internet access Virgin on ridiculous

Virgin Net is defending its free internet service against critics who say it's only for the well heeled. It is offering free internet access for a year to anyone opening a Citibank current account. To get an account, however, applicants have to deposit at least £2,000 and prove that they earn at least £30,000pa. They must also register for Citibank's forthcoming net banking service, Direct Access.

Virgin Net says the deal is the first step to free access for all. Commercial director, David Johnson, said: "Within a few years, maybe sooner, internet access will be free. It is up to us to get other revenue streams and work with other people such as Citibank."

He played down suggestions that people qualifying for a Citibank account might not need free internet access. "About half of our subscribers would be eligible for an account," he says. "And I don't think many people earning over £30,000 do have internet access already."

Free access for all, subsidised by banner advertising, is already available

from X-Stream (www.x-stream.com). Advertisement sales director, Paul Myers, described Virgin's deal as the worst PR move Richard Branson ever made. "It's a relatively low-cost exercise for Citibank to get new customers. If you get a customer locked into your banking service, they can be worth thousands of pounds to you." But he added, "It's given us a lot of credibility."

X-Stream had hoped to attract 10,800 customers by the end of June. By 1st June, it already had 28,500.

AOL said a free-for-all service would change the entire market for the worse. A spokesman commented: "What sort of quality are you going to get from a free service? Are you going to have to click 23 advert banners to get to your email?"

But X-Stream's Paul Myers claimed few people object to its banner advertisements. "I can't see why free access should run out of steam, as long as there's the revenue to provide good service," he said.

Susan Pederson

Money wise

■ If, like many people, you find that your money runs out before the month does, you should check out www.ftquicken.co.uk, the personal finance web site from the Financial Times, Excite and Intuit.

FTQuicken offers jargon-free news and advice on all aspects of business and personal finance. You can find out more about your investments, mortgages, taxation, pensions, saving and borrowing, then try out some of the practical aspects including a personal portfolio tool to track your investments.



Get into e-commerce with VNU

■ Get the definitive guide to e-commerce with a new e-zine from VNU New Media. Sponsored by corporate internet service provider Quza, www.vnucommerce.com offers in-depth reports, case studies and features about every aspect of online trading.

The site gives tips about how to choose the best hardware and service provider and how to attract customers, and provides a blow-by-blow account of how to set up your site. Users can also debate the issues and trade experiences in the forum.

Majority believes the internet threatens nation's morality

A claim that six in ten people in Britain think internet smut threatens the nation's morality has been played down by a leading content provider and an anti-pornography watchdog. The figure came from a MORI survey,



commissioned by Which? Online, which also found that 22 percent saw the net as a grave threat to traditional family life. One in three saw it as a threat to national security.

Of the 2,657 people questioned for the survey "Conspiracy, Controversy or

Control", only 533 actually used the net. And of those, nearly a third said it had improved their quality of life.

The internet industry must work to put across accurate information, according to Dominic Riley, head of marketing at BBC Online. "Clearly, parts of the media only focus on negative stories about the

internet. And there are some small parts of the internet which, because of the lack of censorship, present material that might not be suitable for everybody." He says we have to focus on the positive reality of internet usage.

David Kerr, chief executive of the internet Watch Foundation, agrees. "It has been a concern that all some people know about the internet are reports of pornography and violence," he said.

But he points out that there are ways for users to insulate themselves. "I think it's worth going back to basics and saying that only a very small percentage of sites have material like that," he said.

People's perceptions of the net are based on their exposure to it and their level of competence in using it, according to Dr Mark Griffith, psychologist and senior lecturer in Psychology at Nottingham Trent University. He pointed out that over half of today's internet users were not online a year ago. "It's still a relatively unknown medium, hence the 'doom and gloom' view," he said. "People need to know that they are protected from evil in our society, and the unregulated internet challenges that comfort zone."

Susan Pederson

(additional reporting by VNU Newswire)

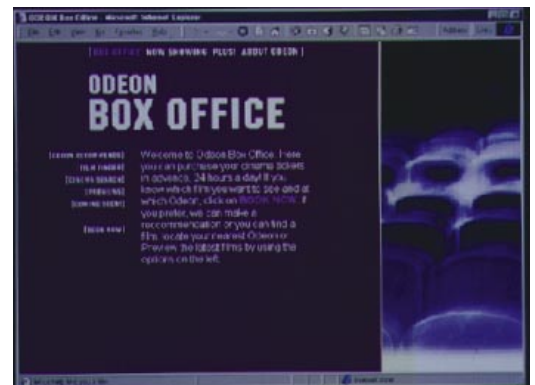
UK Top Ten web sites



If you haven't lined up a place to stay for the Edinburgh Festival by now, the chances are you'll spend a lot of your time getting better acquainted with their 24-hour cafts. But hey, sleep is overrated, OK? It's no reason not to check out everything this fabulous city has to offer. You can find out why it's justly called The Festival City at www.go-edinburgh.co.uk, which gives information on the best

entertainment options all year round, including the Fringe. Who knows? There might still be a broom cupboard available.

- | | |
|-------------------------|--|
| 1. ACDO Laundorama | www.acdo.co.uk |
| 2. Animal Hospital | www.bbc.co.uk/animalhospital |
| 3. Cornwall Online | www.cornwall-online.co.uk |
| 4. Go Edinburgh | www.go-edinburgh.co.uk |
| 5. Health Gate | www.healthgate.co.uk |
| 6. Mathmos | www.mathmos.co.uk |
| 7. The National Gallery | www.nationalgallery.org.uk |
| 8. MSN Online Tonight | specials.uk.msn.com/public/tonightuk |
| 9. Science Agogo | www.scienceagogo.com |
| 10. Ticket Master | www.ticketmaster.co.uk |



Looking and booking

■ Odeon's new online cinema box office at www.odeon.co.uk can help you avoid the "everything else is sold out so I guess I'll see Howard the Duck" scenario. Book tickets from the comfort of your PC, or try out the Odeon Recommends service which keeps track of your preferences and then suggests films you might like. You can also do searches on film and cinema listings.

p40 >

Games people play

Microsoft's victory in the early rounds of its battle with the US government may turn out to be hollow. As Graham Lea reports, the tables are turning.

The first two rounds in the games between the US government and Microsoft have been won by Microsoft. Round one started in 1989 when the US Federal Trade Commission (FTC) thought that IBM and Microsoft were illegally colluding to carve up the operating systems market by deciding that DOS+Windows would be for consumers, and OS/2 for business users. IBM and Microsoft became divorced, but the FTC found some illegal licensing practices. The politically-appointed FTC Commissioners failed to act, so in 1993 the Department of Justice (DoJ) took over the investigation.

A year later, Microsoft agreed to a very mild consent decree in which it agreed to stop the licensing practices. Judge Stanley Sporkin examined the decree to check it was in the public interest, and refused to countersign it, making him a folk hero in the eyes of many Microsoft critics. The DoJ appealed, and Judge Jackson was

instructed to sign the decree in 1994.

Round two began in August 1996 when Netscape complained to the DoJ that Microsoft was locking it out of the browser market by illegally tying the sale of Windows 95 and Internet Explorer: only IE was being included on new PCs. It took the DoJ until October 1997 to bring an action against Microsoft for what it regarded as

contempt of court — not obeying the terms of the consent decree.

Judge Jackson thought there was insufficient evidence of this, but did decide to order a temporary injunction to stop Microsoft insisting that PC makers had to distribute IE if they wanted Windows.

Microsoft claimed the two products were integrated, but few people believed this. Microsoft had to give way on this point, but continued its appeals on related matters, winning a concession from the appeals court that it could go ahead with Windows 98.

The DoJ realised that tougher action was needed, so in May, after some abortive negotiations were called off

by Bill Gates personally, and without waiting for the final whistle from round two, the DoJ filed a new, broader anti-trust suit against Microsoft "for unlawfully monopolising computer software markets".

The DoJ demanded that Microsoft either include Netscape's browser with Windows 98, or allow PC makers to offer which browser they chose — or both. This made Microsoft furious, but it was not all: the DoJ wanted PC makers to be given the freedom to decide on the first screen after booting, so stopping Microsoft's nice little earner for advertising by its friends.

The DoJ also wanted to stop contractual provisions that forbade internet service providers and content producers from being restricted by Microsoft as to where they offered their products or services. The DoJ's evidence came largely from Microsoft's own emails and documents, and was damning. A similar complaint from 20 US states and the District of Columbia, with the additional charge of monopolisation of the office suite market, was merged and is now set for trial on 8 September.

If Microsoft does not win, it is almost certain that it will appeal, to the supreme court if necessary. There Microsoft is assured of a sympathetic hearing by justices who are known to be politically in favour of monopolists, and American competitiveness. This is likely to take three years, at least.

Users are likely to be benefit, whatever the outcome. Already, several PC makers have decided to offer Netscape's browser as well as Microsoft's. Power users frequently need more than one browser, because some web sites foolishly favour one browser and prevent proper display by others. More and more users are turning to the Norwegian Opera browser www.operasoftware.com which was developed from scratch following standards, rather than being derived from Mosaic.

The consequences for Microsoft are not good, whether it wins or loses. The action will take much management time and staff are likely to become disillusioned — especially if Microsoft's share price drops and they can no longer dream with their share options.

And public opinion is firming up against Microsoft. Users will become more and more aware of the extent to which they have been manipulated by Microsoft's heavy marketing, and how they have been denied choice. Microsoft's operating systems now account for around ten percent of the cost of an entry-level PC, whereas less than ten years ago this was closer to one percent.

Meanwhile, it's a case of play on — but at least there is more chance that the pitch is becoming level. Microsoft is playing the second half into the wind. ■

The moment Bill Gates became a victim of the Phantom Flan Flinger: Gates surely hopes to emerge from his legal tussles a little less embarrassed



Office politics

What do you give the desktop applications suite with everything? How about web integration so tight, it hurts. Clive Akass opens up Microsoft's new Office.

You could be forgiven for thinking that Microsoft Office would burst if any more features were packed into it, and that there must surely come a point when Bill Gates will run out of reasons to persuade users to buy upgrades.

But Microsoft is about to unveil yet another version — and whatever you think of the company's business practices, you have to admire its bottle. Office is far and away the most used desktop applications suite in the world. Most companies with that class of winner would be content with nurturing it gently; yet the new Office is a major revamp, binding it ever more tightly into the web.

The concept is both brilliant and menacing: Microsoft wants to use Office to turn the web into as routine a medium of communication and human interaction as paper. With Microsoft fighting anti-trust suits partly based on the integration of browser facilities into Windows 98, some are bound to see this as yet another example of the company muscling in to gain on the web the kind of near monopoly it has on the desktop.

Fundamental to the new Office is the web *lingua franca*, HTML, which Microsoft is making its new standard format. But the webbing of Office goes much further than that. Users will be able to publish web documents, on an intranet or the internet, as easily as saving them to disk or printing them. Moreover, Office features like editing will be available from within a browser, turning the web into what Dennis Tevlin, director of marketing for desktop applications, calls a tool for collaborative working.

"The web will become a true two-way experience. There will be no worries about file formats. The web will become a workspace where users can come together to collaborate," he said in London.

The collaborative features should work with Netscape's rival browser but they will not cross hardware platforms. They rely on Windows-specific features like ActiveX, which will not work on non-Intel platforms. This makes them far more suitable for company-wide rather than public use; but there will be nothing to stop you using Word to publish in straight HTML for the wider web.

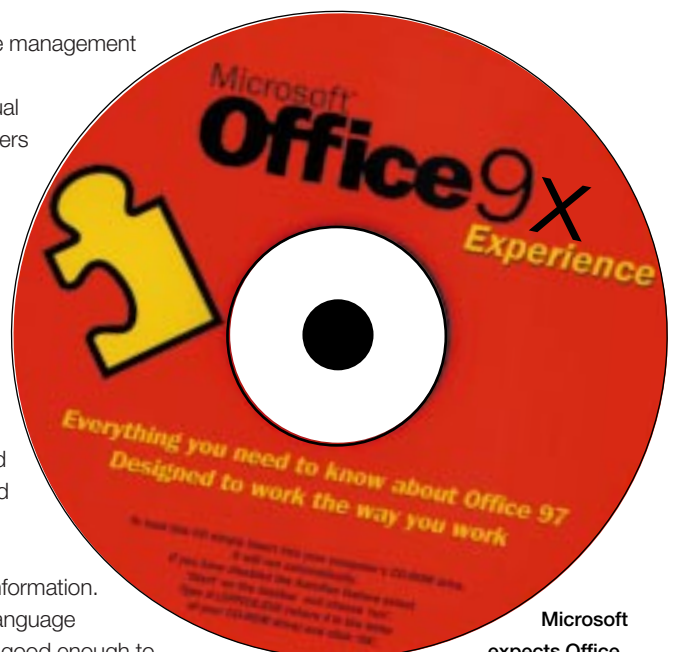
Microsoft is codenaming the new edition Office 9x, indicating that it will be released this year or next. A version will be delivered to more than 20,000 betatesters in July as part of Microsoft's biggest-ever early tryout.

"The release date will depend on how it is received. The timing will be quality driven, not time driven," said Tevlin. He promised a big improvement in Word's handling of HTML. "The current version [in Office 97] is

not good," he admitted. "It was put in at the last minute and I know a lot of people refuse to use it."

Office 9x will offer what he calls WYSIWEB — what you see is what every browser gets. In other words, the page you design in Word will be what will appear in your browser, though to what extent that will apply to alien platforms is not clear. Features in the pipeline include:

- HTML file management facilities.
 - Multilingual spell-checkers that will distinguish foreign words without prompting.
 - Multi-level clipboard support and an improved Spike for collecting scattered information.
 - Natural language processing good enough to catch the sense of a document, allowing automatic background searching of relevant material on the web.
 - Improved Intellisense — Microsoft's word for its oft-irritating "smarts" that will, for instance, automatically capitalise the first letter of a sentence (even if you don't want it capitalised). Tevlin admitted the current version had its faults, but he said it was evolving into something much more useful. "We are getting better at it," he said.
- One new "smart" feature looks like a sop to those who complain about being obliged to load bloated ware. It will automatically tailor menus and toolbars to the features you most use; companies delivering applications centrally will be able to deploy only those components that individual users need.
- How much all this will live up to promise remains to be seen. Lotus and Corel are also targeting web users with their rival suites and they are far more Java friendly. Microsoft phobics can take comfort from the fact that the powerful proprietary features that lock customers to its technology now could be a handicap in the long run, when true cross-platform technologies mature. ■



Microsoft expects Office 9x to become the last word in web communication and interaction, in a move that is both brilliant and menacing

The shape of things to come

The ergonomics of desktop computing are in a state of flux — witness the new iMac, and the Bluetooth initiative. Tim Bajarin predicts an imminent revolution.

Executives at Apple told me last Autumn that they were taking a hard look at redesigning the Mac. They pointed out that the shape of computers will change dramatically as we move into the next century: we are already seeing the PC integrated into a set top box; soon powerful processors will be added to various “info” appliances.

Ergonomic designers are now working on machines that will replace today’s desktops and the new iMac is a good example of this re-thinking. Apple took the radical step of leaving out the floppy drive but the integration of the monitor and system box into a single package is a major trend. It has been done before, of course, notably on the original Compaq computer and the first Mac. But the new iMac suggests a more space-age look.

This is only the tip of the iceberg. Next-generation desktops, being designed today, will use flat-panel TFT displays with touch-screen navigation. I have seen a couple of designs and while I cannot give you details, I can say



The new, all-in-one iMac is an example of a coming revolution in ergonomic design which will affect our approach to computing

that there is a lot of creativity going into them.

This new approach is quite important to many segments of the industry. Most of today’s flat-panel displays are used in portables. But if desktop use pushes up demand, the current glut in flat-panel displays could quickly be turned into shortages and higher prices.

Some vendors are already phasing out 12.1in screens and moving their production to the more profitable 13.3in and 14.1in displays. Some are even thinking of phasing out 13.3in models to capitalise on

an expected demand for 15.3in screens from desktop PC makers. This factor alone will keep notebook prices higher during a time when desktop prices are falling. Design sources tell me that all major PC players will offer high-end and consumer desktops with integrated flat-panel displays by late next year.

The Bluetooth initiative (see page 25) will produce another twist in ergonomic thinking. It is a spread spectrum radio module that will be designed into PCs, laptops, PDAs, cell phones, pagers, and other devices for basic data transfer.

It aims to become the *de-facto* standard for short-range wireless data transfer. Your Palm Pilot handheld, for instance, might synchronise data with your desktop whenever you walk close to it.

In essence, the Bluetooth chip in the PC senses any data changes in the Palm Pilot and through the Bluetooth chip it changes and synchs it together on the desktop PC, automatically and seamlessly.

The range is officially about ten metres but I suspect that in practice it will be about five feet when the technology actually hits the market in mid-1999. A more interesting way to deploy Bluetooth is in a cellphone, making it a kind of wireless router and thus creating a global wide-area network (WAN).

The idea behind this deployment is fascinating. Supposing a fax or email message is sent to your Bluetooth cell phone, where it is stored for reading when you have time. The tiny cellphone screen does not make for easy reading but if you are also carrying a Bluetooth notebook or palmtop, the message is automatically forwarded to the device.

I have seen a demo of this concept and it is really cool. When Bluetooth chips are integrated into a lot of devices and the right software and device IDs are in place, seamless data integration between devices could finally become a reality.

All of which points to the fact that yesterday’s approach to PC design will not be acceptable by the millennium. The iMac is just the beginning of a revolution in ergonomic design that will carry over to desktops, laptops, PDAs, palmtops, cellphones, webphones and PC/TV combinations.

PCs of all types will take on new dimensions and be used in ways we probably haven’t even thought of yet. While they will still have the basic insides of the PC, the way they are used will be very different. ■

Lawyers and site hosts in a quandary over net libels

A spate of internet libel suits has UK legal experts quarrelling over how the government and service providers should deal with the problem.

The chief lawyer for AOL UK says that the government has to clarify internet service providers' responsibilities for libellous content on customers' web sites. But a London barrister who specialises in criminal computing says that it should leave well alone.

In May, AOL won a US court case brought by a former customer who claimed he had been libelled in a newsgroup. The court ruled that AOL was not liable for the content, but it recommended that service providers voluntarily remove such material. AOL had already won two similar cases in America. In the UK, Demon Internet is being sued by a user who claims it failed to remove libellous content after he had informed them of it.

David Phillips, chief lawyer for AOL-Bertlesman in Europe, said: "The 1996 Defamation Act needs to clarify the rights and responsibilities of ISPs. They have a

different relationship to content than the traditional media." But Alistair Kelman, barrister and visiting fellow at the London School of Economics, disagrees. "The fact is, if an ISP is informed about this kind of material, it has the responsibility to remove it," he says. "There's a great danger in legislating too soon."

Kelman says there is an argument, however, for placing a statute of limitations on newsgroups. "Archive services are ensuring these things hang around forever," he says. "They were never intended to be around in perpetuity."

● A judge shocked both prosecution and defence lawyers by handing down a two-year suspended sentence to the CompuServe manager accused of spreading child pornography over the internet. Both sides had urged the German court for leniency after the landmark ruling against Felix Somm, who was held responsible for material on the CompuServe web site.

Internet shorts

Good news for intranets

Companies looking for a bandwidth-friendly alternative to traditional "push" news updates should try Netpresenter 3.0. Aimed at corporate intranets, this Dutch product takes up only 220Kb of memory. The starter pack includes a content editor and 20 players and costs £949 (ex VAT).
Accurate Technology 0118 977 3889
www.netpresenter.com

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Get some qualifications online with BT HomeCampus, a home education service for adults. Learners can take full courses leading to NCQ Level 2 in subjects like IT Studies and Business Administration, and will soon be able to study non-certificated subjects like photography. The service normally costs £4.99 a month.
BT HomeCampus 0345 678 578
www.campus.bt.com/homecampus

Managing alright

If your boss learnt his people skills at the "Machiavelli School of Business", give him a subtle nudge towards the Institute of Management web site. Covering issues such as how to manage people, projects, finance and quality, the site includes links to government and educational organisations.
Management Link www.inst-mgt.org.uk/external/mgt-link.html



Got a lot of bottle

■ An amusing little ale... bold, but not pretentious. If you have difficulties telling your pilsner from your pale ale, you can find out more from the Oxford Bottled Beer Database at www.sparks.co.uk/beer/. The database has information on hundreds of beers, including the Beer of the Week, as well as news updates and reviews. There's also a selection of Javascript drinking games to try out — if you can still figure out how to use the mouse at that point.



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Atlantic crossing

DVD launched quietly into Britain, long after its take-up in the US. Once again, says Gordon Laing, UK users must look to America for products and players.

Remember the launch of Compact Disc? Pretty big, I'm sure you'll agree. What about when Windows 95 came out? You couldn't escape it. Media hype is the backbone of any product launch.

So, imagine the UK launch of possibly the most important technology since the CD. A device which will be standard on all new PCs by the end of the year, taking a disc which could beat the CD in terms of sound quality. A format which could tie consumer electronics and PCs in a marriage of convergence.

A pretty significant launch, right? Apparently not; for DVD was released in the UK a couple of months ago... at least, I think it was. The crop of UK domestic DVD

players and movies crept into our shops without a whisper.

It's not as if DVD appeared from nowhere. Domestic DVD movie players and titles are already

a success in the US and Japan, and here we've been waiting our turn. The UK launch was delayed partly because we have been caught up in a debate between Philips, pushing for MPEG 5.1 audio to be standard on European DVD titles, and the rest of the world, which has voted for Dolby Digital (a.k.a. AC3): this at a time when there is a huge number of Dolby Digital decoders on the market. The number of MPEG decoders can be counted on the fingers of one hand.

Someone came to their senses and decided Europe should go with Dolby. And lo, the first handful of UK DVD movies were released with Dolby Digital accompanied by an optional MPEG soundtrack. Polygram followed with its first batch of UK titles including *Fargo*, *Dead Man Walking* and Michael Flatley's *Lord of the Dance*, but neglected to include Dolby Digital. So, while your UK DVD player will decode the MPEG audio signal, the best you'll get in the likely absence of an external MPEG audio processor, is stereo analogue audio out the back.

The first UK titles are pretty good but there aren't many of them, and there is paranoia that future ones may be NTSC-to-PAL transfers or not match the standard set by our experienced American cousins. The result is that most early adopters in the UK have imported US players, knowing that modern televisions

can accept American NTSC video signals. DVD regulars know that in an attempt to control movie releases around the world, Hollywood has encouraged the adoption of regional coding: players are designed to reject titles not hailing from their home region. There are six regions, with North America being Region 1 and Europe being Region 2.

Imported US DVD players may only play back Region 1 titles, but that gives us access to more than 1,000 titles *and* the ability to stick two fingers up at Hollywood by importing films that are still only on cinematic release in the UK. There is a black market in modified DVD players which play titles from multiple regions, but be warned that modified players set for Region 0 (all regions) will not play some US titles that look for Region 1 flags. The players with some kind of manual regional switching are better.

Some players cannot be modified for multiple regions — namely, those on which I had my eye. I had waited for the superior but hopelessly marketed DTS sound system to be implemented on DVD. Then Panasonic produced a pair of DTS-compatible players and the \$600 A310 even boasted component video output, which is essential for seeing DVD at its best. Unfortunately, the all-regions modification neatly disabled the DTS options.

Adding to the confusion are countless new extensions to the DVD standard, particularly the recordable and rewritable formats, that won't work on older drives. All employ the same-looking 5in shiny discs and are described as part of the big DVD family, so we subsequently expect them to play on existing machines and consider it unreasonable that we may have to buy a new device. To be fair, many DVD developments could be described as new formats in their own right, but ironically, standardising on the same-looking disc could end up working against DVD. We accept that a Zip drive won't read Jaz cartridges; but what if they shared the same name and shape?

Never before have I felt more thwarted in making a purchase. I've got £500 to spend on a DVD movie player. Hardware problems have so far kept me away from DVD; but I can get hold of a decent range of US titles today for only a couple of quid more than the proposed UK pricing. I'd like to support the British market, but I can wait no longer. Once again, I have been forced to invest across the Atlantic. ■



Look — no Dolby Digital! Polygram's first UK DVD titles feature MPEG digital surround only

New X-Files game will have mystery enough to fox Mulder

Two great games are due out soon. David Duchovny and Gillian Anderson are due to star in a version of the hit TV series, The X-Files. It will be a live-action adventure game featuring VirtualCinema technology, a multi-platform engine that supports full-screen video and simultaneous video and audio playback.

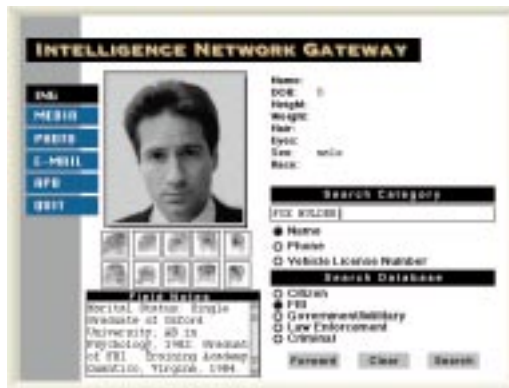
X-Files players can team up with agents Mulder and Scully in an investigation that features 30 locations including FBI offices, morgues, motels, residences, labs and warehouses. They will have to examine evidence, interview witnesses and piece together facts with the goal of solving the case.

The X-Files is available in June. Watch out for a review in next month's *Personal Computer World*.

Grim Fandango, from Lucas Arts, is an adventure game about crime, corruption and greed in the mythical Land of the Dead. The story, inspired by Mexican folklore, covers a four-year search for redemption by Manny Calavera, a travel agent.

Manny, a true working stiff, is employed by the Department of Death. He has to pick up people in the Land of the Living, bring them to the Land of the Dead and set them on an excursion that all souls must make before they come to their eternal resting place.

Due for launch in September, Grim



Fandango features more than 50 characters and 90 locations, rendered in 3D animation.

Would you believe it? Another Mission

Pack for Quake II is being made. The second pack, called

Ground Zero, will have new regions to explore including five new hubs with 15 additional levels and will be available in the summer.

● Games reviewed in our Screenplay section (p301) this month are: Urban Assault, Monster Truck Madness II, Ultimate Soccer Manager, Hexen II - Mission pack, Jonah Lomu Rugby and Castrol Honda Superbikes.

STATE OF PLAY

Games news from Etelka Clark

Short stories

PC charity appeal

■ A charity is recycling PC equipment for developing countries. ComputerAid International donated 150 PCs last year and expects to send 1,500 this year. It needs Windows-capable (386 or later) PCs, storage space and volunteers to collect, repair and cannibalise.

ComputerAid International
0171 281 0091, www.cit.org.uk

Euro-SCSI

■ Adaptec is selling its AHA-2910 and bootable 2920 PCI SCSI cards (published in major European languages) for a suggested £69 and £89 (ex VAT).

Adaptec 01276 854500

Matrox cuts the cards

■ Matrox has cut the price of its Productiva G100 8Mb AGP graphics card by £11 to £64.

Matrox 01753 665500

Pace video camera

■ The new USB video camera from Pace costs £119 (inc VAT), not £199 as stated in last month's Newsprint.

Pace 0990 561001

Top 10 Games

			Last month
1	World Cup 98	E.A.	-
2	Forsaken	Acclaim	9
3	Lula: The Sexy Empire	Take 2	5
4	Star Wars Supremacy	Virgin	3
5	Ultimate Soccer Manager 98	Cendant	1
6	Tomb Raider "Unfinished Business"	Eidos	2
7	Grand Theft Auto: Special Edition	BMG	7
8	Championship Manager 2 97/98	Eidos	-
9	Quake 2	Activision	-
10	Starship Titanic	Ablac	4

Top 10 Windows software

			Last month
1	Nuts and Bolts (3.1 + 95)	Xatlantic	3
2	Win 95 U/G and IE 4	Microsoft	2
3	Office Pro + Bookshelf U/G	Microsoft	1
4	Taxcalc 98	IDP	-
5	Paint Shop Pro V5 FP CD	Digwork	-
6	Office 97 Std C/VUP U/G CD	Microsoft	4
7	Partition Magic V3	Powerquest	8
8	Publisher 98 FP CD	Microsoft	9
9	Norton Antivirus V4 DELUXE	Symantec	5
10	Autoroute 98 UK/EU Bundle	Microsoft	-

Top 10 DOS software

			Last month
1	DOS 2 Win95 U/G with Internet	Microsoft	1
2	DOS v6.22 U/G	Microsoft	9
3	Supercalc v5.5	CA	-
4	Mail PC Remote 3.2	Microsoft	6
5	Back office SVR v4	Microsoft	-
6	WFWG 3.11 Base	Microsoft	-
7	Intranetware 5 user	Novell	-
8	Turbo Pascal v7.0	Borland	7
9	Corel WP 6.2 U/G	Corel	10
10	Nov. Any. 25 U/G 3.12 50 USR	Novell	-

Top 10 CD-ROMs

			Last month
1	The X-Files	Fox Interactive	-
2	Virtual Springfield	Fox Interactive	1
3	Simpsons Cartoon Studio	Fox Interactive	2
4	3D PC Pup Pet	Neechez	3
5	Encyclopaedia Britannica	Acclaim	6
6	Monty Python's Meaning of Life	Take 2	-
7	Davi Music 98	Davilex	-
8	AA Pass First Time	MacroMedia	-
9	Dance eJay	Fast Track	4
10	Easy Language: 25 World Languages	IMSI	-

Top 10 peripherals

			Last month
1	Astra 610p	UMAX	1
2	Astra 1210p	UMAX	2
3	3Com 56K v90 voice/fx ext	3Com	-
4	Wheelmouse PS2/serial	Microsoft	-
5	HP ScanJet 5100C	Hewlett-Packard	3
6	Sidewinder gamepad	Microsoft	7
7	Natural Keyboard Elite	Microsoft	-
8	AWE-64 Value ISA	Creative	10
9	MS Sidewinder Precision Pro	Microsoft	9
10	MS Intellimouse V3.0 (95)	Microsoft	6

● Top ten Windows and DOS software, and peripherals charts, supplied by Software Warehouse. Telephone 01675 466467

Wednesday, 13th May, and the highlight of the Spring social calendar: the Internet World Show, at Olympia. A very exclusive gathering. So much so, in fact, that none of the major ISPs had been invited. Or if they had been, they hadn't bothered turning up. Which, at an event calling itself Internet World, is perhaps a trifle odd. Rather like going to the Earl's Court Motor show and finding that the only exhibitors present are manufacturers of beaded seat-covers and those model dogs that nod in the back window.

Crowded it was not. There was therefore a palpable sense of desperation among the functionaries manning the stands. They weren't so much begging for custom, as demanding it with menaces.

The golden rule for navigating one of these dead-on-its-feet gatherings is the same as that for when you encounter a drunk at the bus-stop: whatever you do, never make eye contact. Failure to obey this simple precept can result in all sorts of incoherent, one-sided conversations. "Oi, pal! Yeah, you, pal! I'm talking to you! You're a diamond geezer. My mate. You want to see my HTML editor with integral Java suite?" The effect is compounded and multiplied if they catch sight of anyone wearing a press badge. Imagine chucking a handful of fish-food into a pond of coy carp.

To escape molestation I headed for the press office — a somewhat less-than-good idea. Not only was it full of journalists, but they were working. This is always a bad sign. At an organised, serious show, the exhibitors like to ply members of the press with booze. So, for instance, you'll get a gin and tonic at the IBM stand, something vaguely exotic — Malibu, maybe — at Compaq, before moving on to a Heineken chaser with the marketing manager of Microsoft UK. By around 4pm, natural homing instinct guides everyone back to the press office, where they can have more drinks and finally, sated, be shovelled into a low-loader and deposited back in central London. Clearly though, this hadn't been happening. And worse, the League of Temperance had obviously got the franchise to run the press office. It was extra dry beyond even the dreams of Sure and Arid.

Freebie acquisition time, then. If you can't get a drink out of these people, you may as well at least try for some free hardware and software. On this occasion however, I wasn't exactly spoiled for choice. Think last day of an End of Year Sale at Ikea, and then some.

A pretty girl dressed in a bikini made from plastic leaves pounced from behind a stand that looked like a jungle hut. "Would you like to have a banana?" she asked. Was it frames enabled, I asked? Apparently not. Whatever, I took the banana, unzipped it, and chewed, while she explained to me what her company did. And explained. And explained. And explained....

Three bananas later, I was still none the wiser nor even better informed. But the gist of it seemed to be that,

whatever she was trying to flog, it was a "complete solution" to something or other. (As, indeed, they all seem to be. One of these days, I must find a company that's offering a half-arsed solution so I can compare and contrast.) So I thanked her, took a sample CD and a beta-banana, and headed off once more into the fray.

To be perfectly fair to the lady, none of the other stands were much cop either. There was nothing life-enhancing, stimulating or groundbreaking here. I'd have been better off reading the highlights in *PCW* or just logging on to one of the company's web sites. Which, perhaps, is indicative of the way things are going.

I daresay at one stage there used to be a show called Egg Timer World. Very necessary, too, when mechanical egg timers were innovative and a status symbol. But now they're everyday household objects that don't merit a dedicated show to themselves. If you want to see the latest in egg timer technology, you head off to the Ideal Home show. Methinks this is happening with computers and the internet. They too are becoming common household objects that don't warrant a solo performance.

Remember I said none of the major ISPs had turned up at Internet World? Do you know where they actually were this year? At the GQ Activ Show at Earl's Court, together with Psion, Dell and several other computer



Michael Hewitt

Sounding Off

Michael Hewitt's plans for a day at the Internet World show, being wowed with technological advancements and plied with free drinks, go badly wrong.

manufacturers. And a much better, much more rounded show it was for this. Drinks flowed freely, the stands were lively, and everyone, even the press, seemed to enjoy themselves. Not only could we get the low-down on technological developments, but a haircut and makeover too. Together with ten percent off a Hugo Boss suit.

So next year, if I want to find out what developments are new in technology and the internet and I have to choose between the Widget World Show and the Flash Ponce in a £1,000 Designer Suit Show, I'll know which one I'll go for.

■ Mike.hewitt@mjh1.demon.co.uk

We should be protected from company managers and PR people who feel obliged to show how high tech they are, by switching to electronic communication without stopping to think what it means to the people at the receiving end.

Once upon a time, all information came on paper by snail mail. Then firms started to send advertising messages and invites on audio cassette. Then they started using video cassettes. American companies routinely dispatched NTSC tapes, because they are blissfully unaware that Europe uses PAL. The tapes dried up when the message got through that few people bothered to listen or watch, and people were just putting sticky tape over the erase tabs and using the cassettes as blanks. Then we got press releases on floppy disks. To read them you need a PC, and it's far slower to load and search than speed-read paper. PC users worry about viruses. Some offices ban floppies. So most publicity disks get re-formatted as blanks.

Now we also get CD-ROMs. You have to load the CD and navigate through a jungle of multimedia puff. You can't read a ROM over breakfast and you need a power-hungry laptop to read it on a train or plane. Sony recently sent me a multimedia CD about new digital products. I dipped into it for long enough to see that it would take me half an hour to plough through it all. Hi-fi company Mission sent me a gold CD, without any label. Was it music? No, my CD player rejected it. I used a PC to scan the disc and found a bunch of files with meaningless names. Clicking on the first file sent the PC into a spin, hunting for any software that could read whatever the file contained. After literally minutes of hard-disk whirring and chugging, "illegal operation" and "cannot find file" error messages, a Lotus Image View screen popped up to show a pretty picture of some loudspeakers.

This nonsense wasted me at least 15 minutes, and the CD went straight into the bin with the rest of its files unread. More and more companies send press releases by email. But they insist on dressing up the plain text with fancy formatting, usually bloated by Word, and sending it as a binary file attachment which then downloads in a different directory. This takes longer online, which can be a major issue when accessing email by GSM mobile phone from abroad. Once the files have downloaded, I have to switch out of email, open Word (which I don't normally use) and load each file to read. All this takes time and is wholly unnecessary, because it's the words that count, not the binary dress-up.

And macro viruses can be buried in Word files. Sending plain, ordinary ASCII text is so much easier all round. Arianespace, the French company that launches many of Astra's satellites, proudly announced that it is no longer sending out news information by mail. If I want it, I must either have it by fax, get it from Arianespace's web site, or wait until it is published in a glossy monthly

newsletter. The monthly glossy will always be hopelessly out of date. If I let everyone send me all their non-urgent info by fax, my machine would run out of paper or ink while I am out for the day. I'd then risk missing something genuinely urgent. If I were to look at every company's web site even once a day in case there was some news, I would spend all day and a small fortune online.

New digital broadcaster, BDB, will only send out information by fax, even when it's just a reminder of what BDB's 15 channels will offer. Lotus, the software company now owned by IBM, has just sent me information about electronic messaging. I wanted to reply out of office hours but there is no fax number, post or email address on the paper — just a phone number. That's not high-tech, that's just daft.

SES, the company that launches the Astra satellites used by BSkyB, recently held a press conference in Luxembourg. We were given a CD, but no guidance on how to use it. Microsoft Word gave only text symbols; Adobe Acrobat refused to read it. Lotus Image Viewer chugged and whirred a lot and finally put some images on-screen. What a ridiculous waste of time and effort, which someone, somewhere in Luxembourg got paid for. JVC's professional division, which handles computer equipment, recently announced a web site which "gives an insight into the scale of the company's activities" in



Barry Fox

Straight Talking

Electronic communication and the delivery of information is one thing; people's inability to do it properly is quite another. Barry Fox gets bogged down by blundering PR.

sectors such as multimedia. The web site address looked a bit strange, though. "Error! Bookmark not defined". JVC blames "corruption by a software problem", not the multimedia company's inability to use Word.

At least email and faxes cut across time zones. Last night, I'd just crashed into a deep sleep when the phone rang. It was a PR man from California. He was phoning round Europe to promote some audio tests being run in Amsterdam by a DVD Working Group. Do you know what time it is in Europe, I asked politely? No idea, he said snootily, obviously thinking I wanted him to help set my watch.

■ 100131.201@compuserve.com

A long, long time ago, in an office far, far away, I remember being disturbed by an advert in a computer magazine. It was for a product called “The Last One”, which, it was claimed, was the last bit of software you’d ever need to buy. Programmers were no longer necessary; it was a brave new world.

This came back to me recently courtesy of the 20th anniversary issue of *PCW* [May 98] which mentioned The Last One in its retrospective. My worry is easily explained: after spending most of my time at university avoiding computers, I started work in a corporate, only to discover a certain aptitude for the beasts. And by the time The Last One appeared, I had become a reasonably accomplished programmer. Here was me, with my new-found delight in the pleasures of crafting tight code, and along came these upstarts with the suggestion that I was about to be made redundant by clever software.

Looking back on the *PCW* feature of the time, there was a very different message. But of course I didn’t see it, because we were professionals, so we didn’t play around with toys like personal computers. One thing that came across in David Tebbutt’s fascinating piece is a pride in the fact that this was a British product; even back in 1981, this was a novelty. Here was an opportunity for Britain to take the software world by storm.

Mr Tebbutt confidently expected The Last One to become an international bestseller, and to be the first of a string of successes from the dynamic team of David James and Scotty Bambury. Sadly, it was not to be the case. In fact, it’s hard to think of a UK business software product that has become a bestseller. Perhaps the closest we can boast is Lotus Organizer, and that is now thoroughly Bostonised.

So why didn’t we see the programming world transformed? Could it be a conspiracy? The big-name software companies had too much business to lose; the data-processing departments had too much mystique to lose. Between them, they ganged up and squashed The Last One. I don’t think so. Despite Mr Tebbutt’s assertion that “those in the DP industry who fail to adapt to the new approach may find themselves out of work”, it’s an unlikely possibility.

I don’t know what actually happened (no doubt a *PCW* reader does). Perhaps the product never reached packaged production. Perhaps the cut-throat software market proved too much for the software’s authors. But it seems most likely that the program was one of those classic over-simplifications, which seem perfect when dealing with small examples but get overwhelmed by a greater amount of detail.

Products like Visual Basic have taken a lot of the pain out of software development, but they still require a degree of expertise; they also run out of steam faced with a full-sized corporate application. The fact is, a spreadsheet will do as much as most simple jobs require,

and once you need more programming, gross simplifications will never succeed.

The corporate market has seen something similar with 4GLs (fourth-generation languages) which were supposed to replace the need for detailed programming, but never caught up with the introduction of PCs. It’s a shame, but I needn’t have worried in 1981. My job was safe.

● On a totally different topic, I have recently had a salutary experience around the nature of the words “free” and “lifetime”. Many people have taken up free email addresses, some of which are apparently “for life”. As a journalist I get similar offers from ISPs for internet connection. Despite already having a couple of accounts, I accepted one with Global Internet because the lifetime tag made it a useful fallback.

I found the internet connection to be reliable, but a year later Global pulled the plug. It insists, in an irritatingly smug manner, that it couldn’t possibly have offered me *anything* for life: it was just for a year. I protested that I would have no interest in taking up an account for a year; it was the lifetime nature that attracted me.

The person (here comes the moral) who made the offer has now left the company, and all the communication was by email, which has since gone to the great trashcan in the sky. I can’t prove anything. Good customer-service practice might say I shouldn’t



Brian Clegg

Business Matters

The Last One was software that claimed to be the last you’d ever need. It was British, and it bombed. And the words ‘free’ and ‘lifetime’ take on a whole new meaning.

need to prove anything, but customer service is rarely an ISP strength. It’s no big deal for me, but if this had been my only email address it could have been a real pain.

The moral? Always keep a hard copy of key emails (where promises are made) and, if possible, use a redirecting email address so you can change your service provider as often as you like without it causing inconvenience.

It shouldn’t surprise me, really. After all, what does an immature business like the internet know about lifetime?

■ brian@cul.co.uk

It was hardly my intention to start this column with a whingeing rant. Goodness knows, there's plenty of that around if you need it (cf. anything by Barry Fox). But as this is supposed to be about life online, and since my so-called life online is currently dominated by feelings of bitter, pustulant carbuncles of rage, and since neither Del — I should tell you, this being an introductory column, that Del is my wife — nor Edward, the cat, are the slightest bit interested, I thought I'd take it out on you. Familial support, you see, is limited to me swearing away at the computer in the middle of the night, followed by a weary "Well, you could just come to bed, instead", to which I reply something like "Hush, you'll wake Del".

I know you understand me. You see, you and I, we're pioneers. We're out there on the frontier, thanklessly carving out a new life for everyone else, slashing away at the cybergrowth with our 56K machetes. (Well, 38K machetes actually, but I'll come back to that.) We're the ones exposing ourselves to the dangers of this uncharted world, travelling the datasphere, finding out what can and cannot be done, making it a safer place for those who follow.

Every now and then I have to ask myself (you do, too): "Why am I putting myself through this? Surely, there's a better way of spending my time." Because, to anyone who uses the net, it's so obvious what the problems are.

For one thing, there's this whole speed issue. I used to work for a big company ("big", of course, is defined not so much by turnover or number of employees, but by the size of a company's internet pipe). I had a goodly share of a nice T1, which I thrashed for all my direct connection to the internet was worth.

Now, I have been thrown out into the real world, a world of... dial-up connections. And what an ugly place it is. Let's start with this whole 56K thing. This has got to be the most brazen marketing scam since Pet Rocks. Or at least, New Labour. I mean, really. Where do they get off, selling us a technology that only works under laboratory conditions, and then only if both the modems are in the same room, attached directly to each other, with a following wind, and only in months ending in a "y"? I propose we rename the whole thing "40K, sometimes, if you can find an ISP that supports it properly and don't even bother asking for a flash upgrade because we haven't got one yes yes I know the standard was ratified months ago" technology.

And another thing: ISPs. Don't even start me. I primarily use Demon. Now, you'd think that the name Demon was designed to conjure up images of speed — as in, you know, "speed demon" or something. Actually, it is because the company is, as it happens, the devil's own ISP (although recently sold to Scottish Telecom).

Every other dial-up attempt I make ends in failure, probably because my modem is set up to expect too fast a connection. It's either busy or "Failed to connect" or "Disconnected by remote computer". I mean, really:

"Disconnected by remote computer"? Don't they have any idea who I am?

"Ah, well," they tell me, "it's always busy after 6pm or at weekends." It reminds me of British Airways. No matter what time you turn up for a flight, you always have to stand in a long, snaking queue for an hour and a half to get up to one of the two manned check-in counters that they've managed to rescue from the sea of empty desks. It's as if the popularity of every single flight comes as a surprise to them. "Gosh," you can hear them saying to each customer, "I never expected it to be *this* busy. Again."

Thusly with Demon. Cliff Stanford — and I might as well tell you now that he is *not* the devil, nor has he ever, to my knowledge, been involved with the devil; I just made that bit up — recently told me that, as far as he was concerned, one-to-one modem ratios are the way to go. So why is it a shock, every weekday evening at 6pm, that people want to log on to the internet?

And another thing... Each failed connection attempt costs me five pence. That's BT's minimum charge for a local call. Even if the number is part of your Friends & Family scheme (and make of it what you will, Demon is my Best Friend), there's still an unconscionable five pence, just for call setup and disconnect.

Now, you may be surprised to hear that there is a cost associated with each and every call connection. I was, but it's true. However, the actual cost to BT is a tiny fraction of a penny. Nevertheless, every time I log on for a quick email blink, or get a failed connection, it costs me



Paul Smith

Out of Site

Welcome to the wired web world of Paul Smith, our new columnist. In a spirit of pioneering enthusiasm, he tackles the internet issues that bother us all.

five pence. But I know what the solution is, at least in BT's eyes. It's called ADSL, and it means a permanent connection, calls charged not by time but by data. And it means 150K whenever I want it. Or so I'm told.

I propose an additional Friends & Family-type number for approved ISPs. If it can't be free, it should be half a penny per minute all the time. With no minimum cost. Then we can begin to remove one of this country's biggest barriers to the take-up of the internet: BT.

Cyberpioneering begins at home. Just don't forget to go to bed occasionally.

■ Paul Smith lives at www.paulsmith.com



Letters

Each month we are offering a 17in Taxan Ergovision 750 TCO95 monitor to the winner of the Star Letter. So, why not write to us? You could be the winner. You won't regret it!

Send your letters to:

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World
VNU House
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London W1A 2HG**

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letters@pcw.co.uk

or fax 0171 316 9313

For the complete range of Taxan monitors, call 01344 484646 or visit the web site at www.taxan.co.uk



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T O K Y O , J A P A N
You won't regret it.

Getting ahead of the game

In your article on the next-generation processors [PCW, June] you stated that Intel would bring out Merced in the second half of 1999. But will Microsoft be able to release a "fully" 64-bit version of Windows NT *within* 1999?

With all the millions of lines of source code that go into making an operating system, and Microsoft's reputation for never releasing a product without incurring major delays, I don't think anyone expects Microsoft to deliver the goods.

Wouldn't this be a golden opportunity for Be and major Unix versions to release Merced-optimised versions of their operating systems and grab a market share? I would love to see Netscape releasing a version of Merced-optimised Linux, integrated with Navigator.

Damindu Jayaweera
damindu@bigfoot.com

Out of mail order

I have just taken delivery of a small package weighing 400g with a three-day delivery schedule costing £5.81 (including VAT) for the carriage.

Having checked with the local post office, I find the charge with guaranteed next-day delivery would have been £3.50 for first class post, which I am sure would have been delivered within three days.

Maplin always uses postal deliveries for most items, guaranteeing next-day delivery if ordered by 5pm on the day of

USB joking

Following Tim Nott's article on USB availability [PCW, June] I noticed that my local Dixons has a Logitech Pagescan USB scanner on its shelf but states that Windows 95 version 4.00.95B is needed to use it (I'm on 95A, of course!). A phone call to Microsoft directed me to its web site for updates, but none bring 95A up to USB ability. A return call then told me that I needed the 95B CD to do the job. Now here, it gets tricky. Since the 95B CD is only supplied with new PCs, 95A does not support 95B's USB patch. Worse still, 95B is not an upgrade, so I would have to reinstall all my software if I managed to get a CD anyway.

I am left with the following options:

- Do nothing and abandon USB.
- Wait for the Windows 98 upgrade which will support it, even though I don't otherwise need it.
- Find somebody who will break Microsoft's licensing and sell me a 95B CD and then reinstall all my software to use it (groan!).
- Borrow the 95B CD from somebody who has just bought a new machine, and thereby break the law.

Believe it or not, the last item was the course I was recommended to take, even though I am trying to do the legal thing and buy the upgrade.

Chris Lees
Chris_Lees@compuserve.com

Yes, horrendous as it may seem, it would appear the only way to officially have USB support under Windows 95 is to buy a new PC just to get your mitts on the required 95B CD. Infuriatingly, the only route for existing 95 users seems to be the incessant wait for Windows 98 to lighten their wallets. Perhaps Microsoft should never have got our hopes up with USB support on interim versions of 95.

We hope your prize of a brand new monitor, complete with an absence of USB ports, makes you feel better.

the order. It does not charge for the service if the order is over £30 and charges only £3 if the order is below this level. Isn't it about time all mail order companies got their acts together and provided real service to customers?

R Moyes
Moyseal@aol.com

Information upload

In May's PCW I noticed a comment relating to lack of information on databases on the web. My site <www.hipstream.force9.co.uk> contains my final year dissertation related to the interconnectivity of database and internet technologies, i.e.

**STAR
LETTER**

how to write an interface for any database to enable it to be accessed over the web or an intranet. I have published it as an easy-to-follow tutorial with good examples of the following topics: HTML / CGI / ISAPI / ODBC32 and ActiveX.

I also give free support on the above and other computing-related topics at www.hipstream.force9.co.uk/help.html.

Kevin Staunton-Lambert
kevin@hipstream.force9.co.uk

Spectrum analysis

I read with interest your group test of PDAs in your anniversary issue [May 98]. I have toyed with the idea of buying a Psion 3c for some time but concluded that I would not make sufficient use of it to warrant the outlay. In the review of the 3c, you mentioned the Spectrum emulator and it quite interested me.

Unfortunately, having visited various web sites including Palmtop BV's, it appears that the emulator is available only for the Series 5. For information, see the web sites www.palmtop.nl/spectrum.html and www.gumbley.demon.co.uk/psixzx.html

Adrian Bradshaw
realw@globalnet.co.uk

Sorry for any confusion, Adrian. We are only aware of a Spectrum emulator for the Series 5. One of our 3c case studies expressed a desire for one, but this looks unlikely given the 3's limited greyscales and processing power.

Lust in the dust

There is no question that Apple's new Mac is an excellent-looking machine. But has anyone thought what that translucent case will look like in 18 months' time, after it goes the way of every other PC and fills with dust?

Simon Bramfitt
Simon@travelogue.demon.co.uk

Java palaver

Your review of Visual J++ 6.0 [June] starts with: "This is a strange product to assess because it is a Java development tool, and Java is the property of Sun Microsystems." This is two falsehoods for the price of one.

Firstly: "...Java is the property of Sun Microsystems". No, it isn't. Sun may have developed Java, but it has since given it to the ISO. It is a public standard and anybody can write their own implementation — several groups have.

The second blunder is describing J++ as a Java development tool. No, it isn't. J++ contains proprietary extensions and, as a result, whatever it is, it isn't Java. The whole article continues in this vein, suggesting that there's an "official Java" and a "Microsoft Java". There isn't. There's Java, and there's some other language Microsoft has devised and for which it is currently being sued for passing off as Java.

Next time you comment on a topic as contentious and FUD-infested as this one, Tim Anderson, please check the background first.

Will Dickson
wrd@glaurung.demon.co.uk

Tim Anderson replies: Java is certainly the property of Sun Microsystems. Sun owns both the trademark and, more significantly, the sole right to amend Java's specifications. If you look at the source code for the core Java libraries you will see Sun's copyright line prominent at the top of each file. Nor has Java been given to the ISO. What has happened is that Sun has been approved as a submitter of a Publicly Available Specification (PAS) for Java. This means that Java should in time become an ISO standard, although I am not aware that any specifications have yet been >

No accounting for taste

- David Carter is unnecessarily dismissive of personal finance packages as a tool to keep the accounts for a business [PCW June]. Horses for courses, of course, but for a limited company which is used as a vehicle for a contract worker, Quicken is quite adequate. I also use it happily to run the accounts for rented properties. I must admit, though, that I am using Quicken 4.0, having seen no need to "up"grade. Oh, and I've had no complaints from my accountant: I just send him a Quicken disk and he sends me the company accounts and fills in my corporation-tax return.

Tim Ward
The_Monster_Family@compuserve.com

- I'm not a Y2K fanatic, but I was gobsmacked to see not a mention of Y2K compliance in your group test of accounting software. Surely half the small businesses in the country are looking at their accounting packages right now and asking whether their current package is compliant, and if not, to what they should be upgrading. Small businesses can live with a poor GUI, but they cannot survive with an accounts package that is going to let them down badly some time in the next 24 months.

Bill Powell
poco@poco.co.uk

David Carter replies to Tim Ward: It depends on what you mean by "business". If you are a sole trader, a personal finance package is fine. Like Mr Ward, I am a sole trader and I have used Quicken for my business accounts for several years now, and it's perfect, especially as I am on the VAT Cash Accounting scheme. As you say, it is a matter of horses for courses. One thing to consider is the number of transactions the business has per month, because a personal finance package lumps them together on the one screen (the "register"). With up to about 30 transactions per month, a personal finance package should be okay, but any higher and you need to start grouping them into separate customer and supplier accounts with a conventional accounts package. One point I was making was that Quicken and Money are no longer aimed at the business market, and things like VAT are not even mentioned in the Quicken manual.

David Carter replies to Bill Powell: Although the Government and the media are encouraging everyone to run around like headless chickens about Year 2000, there's nothing for the users at this end of the market to worry about because everyone uses pre-written standard packages. Vendors like Sage and Megatech make money from annual maintenance contracts with the customer. In return, the customer gets technical support and free upgrades. Do you think Sage and Megatech will allow that nice source of income to dry up after 1st January, 2000?

To be safe with Year 2000, make sure you have a current maintenance contract with your package vendor. Then ring to confirm that this package will be supported after 2000: if you're on the current version of the software, it will be. If you're on an old version, ask them for an upgrade to the current version.

submitted. Regardless, Java will remain the property of Sun.

Your second point concerns whether J++ is correctly described as a Java development tool. In my experience, J++ complies pretty well to Sun's JDK 1.1, the notable exception being JNI (Java Native Interface); an ironic point of contention since Sun is aiming to reduce the use of native methods. Java was designed to be extensible, and J++ has a new class library which makes heavy use of native methods. This is legitimate, although there are some contentious low-level

changes Microsoft has made to the Java language and Virtual Machine. I think it is reasonable to categorise J++ as a Java development tool, although it does not bother me either way.

The real point is that Microsoft intends J++ to be solely a Windows development tool, while Sun is anxious to make Java run cross-platform. Developers should make their choices accordingly.

Away with the birds

For readers who are also keen gardeners, I have found the perfect solution to the question of what to do with all the CDs



that offer hours of free online access. My solution also works with the cover discs of software that is now time-expired.

First, stack all the discs face down on a firm, hard surface. Then, with a power drill with a 3mm drill bit fitted, drill a single hole through the stack approximately 5mm in from the outer edge. Next, cut a length of string (600mm should do), then tie a piece of string to each disc in turn. The string, plus disc, is then tied to any fruit tree or bush that has previously been the subject of unwanted attention from birds.

The disc bird-scarers work simply by being rotated in any breeze, the flash of reflected light thus produced has the desired effect. At present I am using the system in three fruit trees, and yes, they are Apple trees. Happy gardening.

Roy J Bartlett

RoyAndVivBart@compuserve.com

Seeing infra-red

I purchased a Libretto last month and I am overjoyed with it. However, a key selling point was the ability to maintain synchronised files with my "desktop" computer using the infra-red port. I am able to do this with other laptops with infra-red ports but have been unable to obtain an infra-red port for my desktop. A trawl around the internet produced a

number of possibilities, but on contacting the suppliers, the products are either unobtainable or they have been deleted.

And a warning to all fellow users of Puma TranXit 2: although this program is loaded with Windows 95, by Toshiba, it has the unfortunate effect of truncating all my long filenames to eight characters when used to transfer files.

Chris Hall

chall111@aol.com

Gordon Laing replies: *Infra-red on desktops must be one of the most useful yet tragically under-implemented of all connections. Just about all notebooks and handheld PDAs have infra-red fitted as standard, yet they're forced to talk only to fellow portable users.*

The trickiest part of preparing for time away from the office is transferring data between desktop and portable. The ability to dispense with cables and use infra-red makes sense, but few companies have done anything about it. Ironically, most motherboards feature infra-red connectors, merely requiring a cheap LED to get going. A search through the back of PCW revealed that Watford Electronics sells a serial-to-infra-red adaptor for £81.08. Check out our shopping spree on page 146 to see my infra-red solution! ■

Poetry corner

I am 77 years of age and recently moved from WordPerfect to Windows. I wrote this poem to show that an old dog *can* learn new tricks.

Violet Langskail Buchan

I thought...

Gardening in Spring when the pace is brisk
The likely result was a floppy disc
Creeping, stooped over, the aftermath
To make that appointment with the osteopath.

I thought...

A furry rodent was called a mouse
No-one wants them loose in the house
A hurried hunt for some smelly cheese
Plus the old mouse-trap got rid of these.

I thought...

A bullet was something one put in a gun
Not to enhance the work just done
Drive, a pleasant jaunt in a car
A header was done by a football star.

Now I know...

But now I know a whole lot more
Might even become a computer bore
As tabs and bold I do with ease
Change the font just as I please.

Now I know...

I even highlight and cut and paste
Centre, retrieve and all the rest
The mysteries of modern technology
Revealed to the ignorant — even me.

Gadgets

Compiled by Adam Evans. Photography by David Whyte.

Does your wife like photography?

Eh, squire? The smooth-looking COOLPIX 900 is Nikon's latest digital camera. It has a high performance 3X Zoom-Nikkor lens, three metering modes, precise 945-step autofocus and high-speed shooting for up to two frames per second. Image size is a whacking great 1280 x 960 pixels, which Nikon reckons is good enough for 8in x 10in prints. It also features a nice big TFT LCD screen for checking out your shots and comes with all the bits and pieces for connecting to your PC, along with a copy of Adobe PhotoDeluxe 2.0 for touching up your pictures, which are stored on removable Compact Flash cards.

Price £759 (£645.96 ex VAT)

Contact Nikon 0800 230220 www.nikon.co.uk



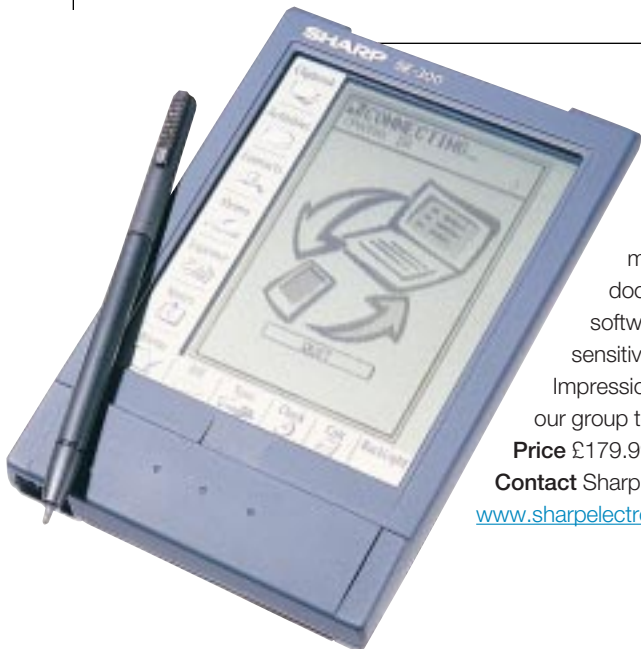
Facts at your fingertips

Here at PCW we're so organised you could bind us in leather and use us as a filofax. But those of you with less exotic tastes might well prefer to take a look at the new SE-300 from Sharp. It's a personal information manager (PIM), similar in size and shape to the PalmPilot. It comes with a docking cradle for connection to your PC and features the whole gamut of PIM software including contacts, reminders, a calendar and clock. The touch-sensitive screen uses a picture of a keyboard for entering information. See First Impressions [page 76] for a full review of the Sharp SE-300 and also take a look at our group test on page 192.

Price £179.99 (£153.19 ex VAT)

Contact Sharp 0800 262958

www.sharpelectronics.com



Of mice and men

Stop the presses! Hold the front page! It's a new mouse from Microsoft! Well, maybe it's not all that exciting but we all use them, so let's have a gander at this latest addition to the Microsoft litter. The Wheel Mouse (great name, guys) is a mouse with a wheel, just like the IntelliMouse but cheaper, smaller and not so shiny. Apparently, the wheel lets you zoom and scroll inside all Windows 95 applications and the two buttons enable you to click on things on the screen. What will they think of next!?

Price £19.99 (£17.02 ex VAT)

Contact Microsoft 0345 002000 www.microsoft.com



Chrome sweet chrome

"Oooh, shiny phone. Pretty." So mumbled our entranced editor when he first set eyes on this metallic beauty from Nokia. The 8810 weighs in at just 98g and measures 107 x 46 x 18mm, making it light and slim in the pocket. Not only does it look lovely, it has loads of features including profile settings and an alarm connected to the calendar for reminders and appointments. It also has three games, each of which can be played against another 8810 user via the infra-red port. The 8810 will be available in late August.

Price To be announced

Contact Nokia 0990 003110 www.nokia.com



All you need is glove

Gloves are great, aren't they? Put them on and they keep your little paws all warm in the cold winter wind. But not these gloves. These are for games, games and more games.

Designed for the Sony PlayStation, this single glove uses wrist-sensing technology so you can move game characters by simply bending your wrist. The fingers have multiple buttons which allow you to utilise different combinations, together with the regular action buttons placed directly under the fingers. The glove can be used as a standard digital controller or as an analogue device where, in a racing game for instance, the amount of wrist movement can determine how sharply the wheel is turned.

Price £49.99 (£42.55 ex VAT)

Contact Reality Quest 0990 998877 www.theglove.com



Look mum, no hands!

Who says you should have to use your hands to move a cursor around the screen? The clever people at Hunter Digital have rebelled against this blinkered restriction and come up with the NoHands Mouse, a revolutionary concept in cursor control. Instead of your hands, you use your feet on the two specially designed pedals. One is a 360-degree pressure-sensitive mechanism which lets you control the speed and direction of the cursor. The other is simply used as a clicking device. It could be the end of carpal tunnel syndrome as we know it. And best of all, it has "been specifically designed to stand up to your feet".

Price £150 (£127.66 ex VAT)

Contact Backshop
+31 102 480 216 (US)
www.hunterdigital.com



First Impressions

Sony goes mobile with the **VAIO PCG-737** (p86), while **Viglen** comes up with a cracker in the shape of the **Dossier M** (p79). There are new developments with **Delphi 4.0** (p97) and **JBuilder 2** (p98), and we call in the **Xpert** with **ATI's** new graphics card (p79).

■ Hardware

Evesham GameStation 2

Game on...With the arrival of Evesham's games-player, the desktop has something to rival Sony.

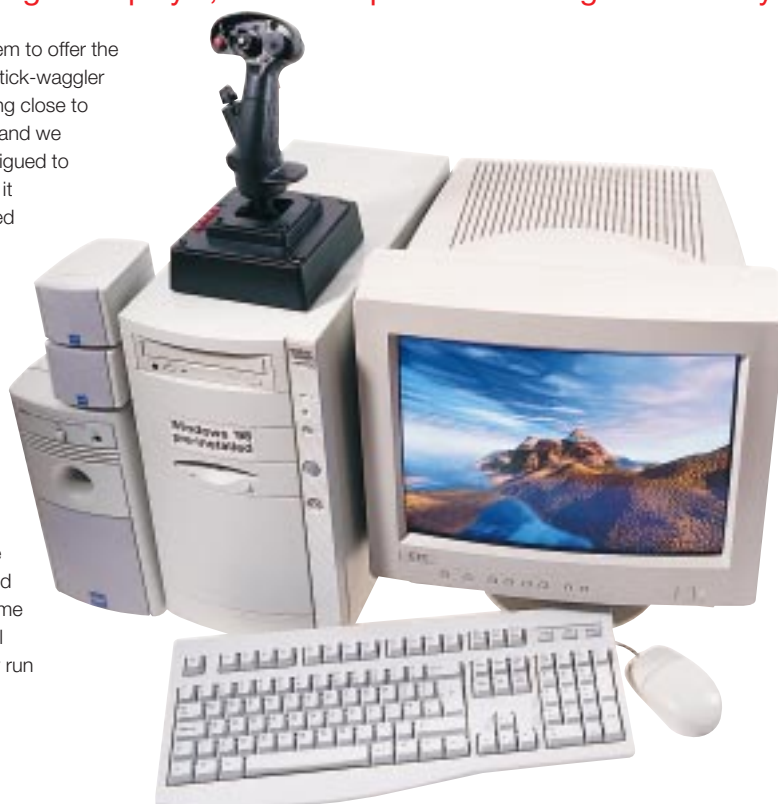
It might not be as cool as the Sony Playstation, but playing games on a PC has never been more popular. The advent of 3D and AGP has revolutionised gaming on the home computer, and while you can buy a PlayStation or N64 for a tenth of the price of a decent computer, a PC offers so much more variety in the type of games you can play.

In a bid to cater for the dedicated gamer Evesham is wheeling out the GameStation 2, a games-dedicated PC with two (count 'em) graphics cards, the AGP ATI Xpert@Work and the Voodoo2 3D Monster II from Diamond. This is combined with a 6Gb hard drive, and the seemingly now-standard 64Mb of SDRAM to ensure the machine's future-proofing.

Along with the graphics-card bonanza, there is also a PII 300MHz processor and the excellent SoundBlaster AWE-64 sound card from Creative Labs. This accompanies the YST-MS25 Yamaha speaker system with its sub-woofer, and the Suncom F15-E Raptor joystick for all you frustrated fliers.

Running an eye over the specifications, it

does seem to offer the avid joystick-waggler something close to heaven, and we were intrigued to see how it performed in tests. The BAPCo test was less relevant to this PC as it runs mainly 2D office apps, and while home users will probably run these at



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VNU European Labs



VNU Labs tests all kinds of hardware and software, from PCs to modems to databases. All our tests simulate real-world use and for the most part are based around industry-standard applications such as Word, Excel, PageMaker and Paradox. Our current PC tests for both Windows 95 and NT are the Sysmark tests from BAPCo. In all our performance graphs, larger bars mean better scores.

Ratings

★★★★★	Buy while stocks last
★★★★☆	Great buy
★★★☆☆	Good buy
★★☆☆☆	Shop around
★☆☆☆☆	Not recommended

some point in the PC's lifetime, it was, naturally, the 3D results we were interested in. The GameStation 2 flew through both sets of tests with flying pixellated colours, scoring very impressively when running the BAPCo test and running up one of the best sets of Final Reality test scores we have ever seen.

The GameStation arrived with the OEM version of Windows 98, which resulted in a conflict with the BAPCo Sysmark, so we had to run the test with Windows 95 installed as OS. Microsoft would possibly claim that if we had been able to run Sysmark on Windows 98 it would have scored even higher than the rating of 299 we got; but seeing as we couldn't get the new OS to work with the test, it's impossible to say either way.

The machine was well put together inside, and we were pleased to see all cables bunched together in plastic loops. A machine intended for gaming is probably going to be upgraded a fair bit, so there should be plenty of room for expansion. There was plenty of technical support offered by the excellent accompanying manual, and a full set of drivers for all hardware. The Chaintech motherboard was impressive in this respect, with two spare ISA slots and one taken up by the AWE-64 card, and three spare PCI slots with a fourth occupied by the 12Mb Diamond Monster II PCI card using the Voodoo2 chip from 3Dfx.

The Voodoo2 is the latest and greatest graphics chip in the fast-changing world of

graphics and is the successor to the original Voodoo generation of graphics cards. It works in tandem with an existing PCI or AGP card via an external pass-through cable, and vastly increases the performance of the PC when running 3D applications. A Voodoo2 card won't improve 2D graphics performance, but it will transform the way your PC renders 3D graphics, due to the on-board dedicated graphics processor which cranks up the frame rates and speeds up the transformations and effects, like fogging and tri-linear filtering. It also has dedicated EDO RAM running at 100MHz, as opposed to the RAM running at bus speed on the 2D/3D cards, either at the PCI bus speed of 33MHz or 66MHz for AGP. The card in the GameStation 2 has 12Mb of RAM, but if this is insufficient you can use SLI (Scanline Interleaving) where a second card of the same make can be daisy-chained and the image rendering shared between the two cards, allegedly doubling performance.

There are just a handful of companies so far which produce Voodoo2 cards, and it was Creative Labs which was first to market with its 3D Blaster Voodoo2. That said, it was incredibly difficult to get hold of them initially because ultimately, all the companies are reliant on the scale of 3Dfx's chip production. Creative shipped first but then effectively ran out of chips, while Diamond's 3D Monster II card was released later but with bigger stock. Evesham has had difficulty in getting shipments of the scarce Creative 3D Blaster, even though it's an advertised

component, and the PC we received featured the 12Mb Diamond card instead. Evesham assured us that, supply permitting, customers would be able to choose which of the two cards they want.

All in all, the GameStation 2 a well-assembled, well-produced package that is bound to appeal to those gamers who feel they are a little too mature to be seen with a Playstation.

Paul Trueman

PCW Details

Price £1,369 (£1,165.11 ex VAT)

Contact 0800 6345999 www.evesham.co.uk

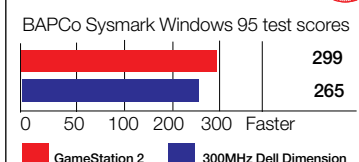
Good Points Great peripherals, great PC performance.

Bad Points If you play a lot of hefty games, you may find even 6Gb a little restrictive.

Conclusion Trigger-happy heaven.

★★★★★

Performance results



■ Hardware

Memax Exlen K6 300

This PC boasts a sound specification and impressive speed, but does it stand out from the crowd?

Memax has been turning out PCs since 1991 and, although it may be a small company, you'd expect its products to be pretty good, drawing as it does on seven years' experience. At least on paper, the Exlen looked to have a very fair spec albeit with some limitations, and we were prepared to be impressed. In fact, we were quite looking forward to seeing how its K6-300 chip, one of the first we've seen, held up under testing.

When it comes to setting up the PC, Memax takes the trouble to supply its own specially written manual, and though this only consists of half a dozen photocopied pages it is rare enough to see one. However, it gives no advice beyond plugging the cables into the appropriate sockets, and it obviously hasn't been customised to the system. Most importantly, there's no mention of the Diamond Monster 3D card. If you've ordered this, you probably know enough to delve into its box in search of a VGA pass-through cable, but this should be made clear.

The system unit itself is fairly anonymous: part of its curved front slides away to reveal the power button and external drive bays. Opinions varied on it, but at least it's not ugly enough to offend anyone. It is paired with a 17in MAG monitor, which offers a decent enough picture. On arrival this was very poorly set up, with some of the worst pincushioning we have ever seen. Fortunately, it's easy to adjust using the one-touch rotary control, though again, some don't like this. The point has to be made, though, that inexperienced users can worry unnecessarily when confronted with a strange-looking display, although it's easy to correct when you know how.

Inside the PC there's a fair set of components and the case is tidy enough, although we'd have liked more than one PCI and ISA slot free. You do have the usual two USB ports for external connections, but you'll have to install the USB patch to Windows 95 yourself. This may not be hard, but Memax should have done it for you, especially as its spec sheet claims Windows 95 is fully installed and configured.

The K6-300 processor, the fastest yet available, is twinned with 64Mb of SDRAM. That's no longer remarkable at this price level, but should certainly be more than adequate for most people's needs. It had better be, because in the machine we were sent, both DIMM sockets were populated. Although four SIMM sockets are still free, voltage and speed differences mean it can be inadvisable to mix and match the SD and EDO RAM; if you wanted to increase the memory, it would mean throwing one of the DIMMs away.



The CD-ROM drive is a 32-speed slot-loading model, and you get a V.90-compatible internal modem: the flash upgrade to the latest specification is supplied on disc. We were a little disappointed to see only a 4.5Gb hard disk on an otherwise extremely well-specified machine — it's strange to say that when we'd have been happy with 2Gb a year ago — as disk space is cheap and this will leave little margin for today's applications. At least it will be well able to cope with the bundled software. Pre-installed, you'll find the Microsoft Family pack which gives you copies of Works, Money and Encarta 98. Works is a cut-down office suite that should do everything most people need, although power users will probably want a full-blown office suite. Disks for Golf and 3D Movie Maker ensure that there's something for all the family to play with, in between doing the accounts.

As usual, we ran the BAPCo suite to measure overall system performance with business applications. Here, the Exlen's score of 290 was more than respectable. It beat both the 300MHz PII machines we tested in last month's group test. But given that you can buy PII-350 and 400s for much the same price, albeit with a lesser spec, we'd be wary of this machine if you're just after an out-and-out speedster. 3D graphics would have been a little disappointing if the 4Mb AGP Diamond Viper 3300 (using an nVidia chipset) had been the only graphics card. However, the Exlen is well set up for the latest games with an 8Mb Diamond Voodoo2

accelerator, one of the latest and greatest cards on the market. It's a pity Memax couldn't throw in a couple of 3D games which take advantage of the Voodoo2 acceleration; if you buy the system, you will have to splash out another forty quid for your first good games title.

Sound is well catered for by a SoundBlaster AWE-64 card complemented by a pair of fairly average speakers.

John Sabine

PCW Details

Price £1,269 (£1,080 ex VAT)

Contact Memax 01246 455277

www.memax.co.uk

Good Points Well specified and speedy for a 300.

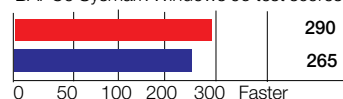
Bad Points Both memory slots filled. Hard drive could be bigger.

Conclusion It's certainly OK, but the Exlen is fundamentally just another average PC.

★★★★☆

Performance results

BAPCo Sysmark Windows 95 test scores



Legend: Memax Exlen K6 (Red bar), Dell Dimension 300MHz PII (Blue bar)

Hardware



Viglen Dossier M

There's no messing with this notebook. It is, quite literally, the fastest we've seen at this price.

This notebook is firmly aimed at the power-hungry executive. Featuring a 266MHz PII Intel Mobile processor, a 4Gb hard disk and a staggering 140Mb of RAM, this is one well-specified machine. The big 13.3in TFT LCD screen supports 1024 x 768 XGA resolution, zoomed video, and a crisp, vibrant display.

Build quality is one of the most important issues when buying a notebook PC. Even the most caring owner will throw it around from time to time or accidentally knock it against something. The Dossier M is solidly built with a case rugged enough to

survive the occasional rough treatment. We were also pleased with the build quality of the swappable 20-speed CD-ROM and floppy-disk drives, and the cable that allows you to connect the floppy drive to the parallel port and use both



drives at once. The Dossier M features the usual range of interfaces including docking station, USB and two PC Card slots. Viglen supplied a TDK 33.6Kbps faxmodem card with the system, along with a secondary battery (very handy) and a "deluxe" carrying case. Software includes Microsoft Works, Lotus Organizer 2 and a healthy selection of pre-installed notebook utilities.

The Dossier M uses a touchpad for controlling the mouse, which was fine, but we were especially thrilled with the keyboard which had exactly the right amount of resistance and bounce for our taste, though of course this is an area where individual preferences reign supreme.

As far as processing power and speed goes, you would expect a notebook as well specified as this one to burn some serious rubber on our business-software based BAPCo benchmark. The Dossier M did not disappoint: a score of 231

comfortably beats the winner of our 266 PII round-up [June 98], the Gateway Solo 9100.

Adam Evans

PCW Details

Price £2,466.33 (£2,099 ex VAT)

Contact Viglen 0181 758 7070 www.viglen.co.uk

Good Points Super-fast. Loads of features. Great build quality.

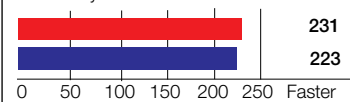
Bad Points You'll have to pay extra if you want full-blown office applications.

Conclusion The fastest notebook we've seen at a low price we can scarcely believe.

★★★★★

Performance results

BAPCo Sysmark Windows 95 test scores



0 50 100 150 200 250 Faster

■ Viglen Dossier M ■ Gateway Solo 9100



ATI Xpert@Work 98

The Xpert98 seems a good choice of budget card, but the Windows 98 drivers need attention.

The Xpert@Work98 is the latest in the Xpert family. It has been designed specifically for Windows 98 and, like the others, it's built around the Rage Pro chipset. There is no TV-out nor a socket for a RAM upgrade, but as the Xpert98 already has 8Mb on-board this isn't really a limitation. It is available as either an AGP or a PCI card.

However, read the small print carefully and you'll find that that 8Mb is actually SDRAM. This is much cheaper than the SGRAM found on most of ATI's other cards, but the company claims it is only five percent slower. In any case, it has certainly helped the company achieve an extremely aggressive price for the Xpert98.

Our performance tests were somewhat inconclusive on the issue. We tested the Xpert98 on a PII-333 running a beta copy of Windows 98, where its Final Reality score of 2.94 was well up with other Rage Pro cards. However, ATI's Windows 98 drivers were still in beta as we

tested, and we found a number of instabilities on our system. Accordingly, we had to run the card using the Rage Pro drivers from the Windows 98 CD-ROM: these are not optimised for the Xpert98 and you may well see greater speed when the final versions of the drivers appear at the end of June. This apart, the Xpert98

gave few problems. It offers hardware assistance to software DVD decoding although it doesn't include a fully-fledged MPEG-2 decoder, and there is a feature connector should you want to add ATI's TV tuner. OpenGL drivers are currently only available if you are using Windows NT.

For a budget card, the Xpert98 seems a good choice. But if your sights are set a little higher, it might be worth holding back until the launch of the Rage 128 chipset. Expected at the beginning of August, this will be a 128-bit graphics solution and should offer higher

performance than current cards, though details were sketchy as we went to press.

John Sabine

PCW Details

Price £69.33 (£59 ex VAT)

Contact ATI 01628 533115 www.atitech.com

Good Points 8Mb of RAM. 'good performance for very little money.

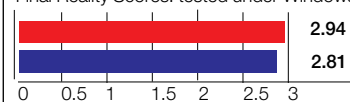
Bad Points Uses slower but cheaper SDRAM.

Conclusion A fair choice, as long as Windows 98 drivers are better than those we saw.

★★★★★

Performance results

Final Reality Scores: tested under Windows 98



0 0.5 1 1.5 2 2.5 3

■ Overall score ■ 3D score



Hardware

LG Electronics Phenom

Is this a PHENOMenon or will it make you WinCE? Will you be a black-and-white convert?

The Phenom is LG Electronics' first venture into the UK palmtop market. Its predecessor, which was available in the USA for several months, never made it across the pond. But LG has managed to launch the Phenom a mere three months after its stateside debut and we're glad to finally get our hands on it. (The reason for the delay is regionalisation, the process of customising the keyboard and some of the software components to British tastes.)

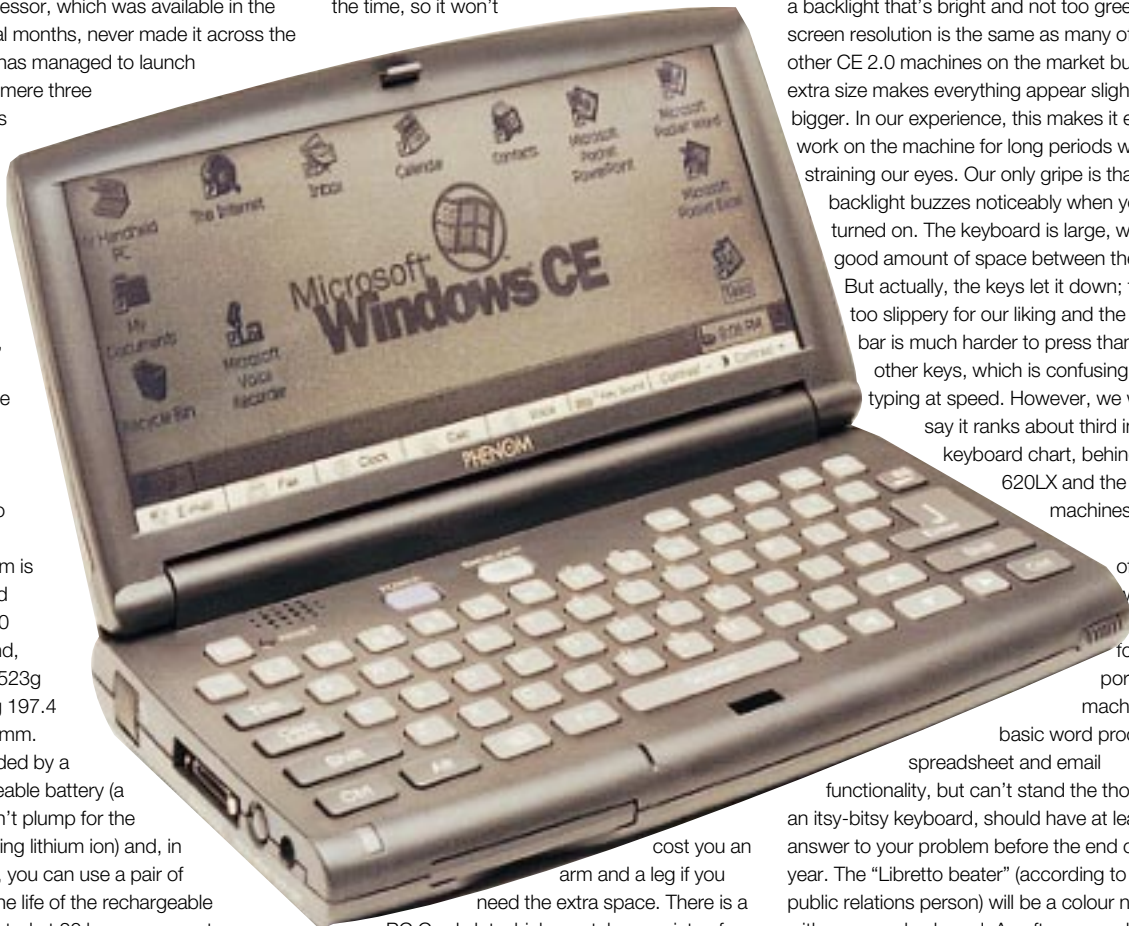
The Phenom is the biggest and heaviest CE 2.0 machine around, weighing in at 523g and measuring 197.4 x 109.2 x 29.5mm. Power is provided by a NiMH rechargeable battery (a shame LG didn't plump for the better-performing lithium ion) and, in an emergency, you can use a pair of normal AAs. The life of the rechargeable batteries is quoted at 20 hours usage at an average of a minute's solid typing every six minutes. The charger has an LED which changes colour when the palmtop is fully charged.

The 16Mb ROM holds the Microsoft CE 2.0 operating system, including Pocket versions of Word, Excel, PowerPoint and Outlook, and a selection of additional applications provided by LG. These include Pocket Finance and Pocket BizCalc, both aimed at business people with lots of figures to work out.

The LG user guide doesn't give you any instructions on how to use the extra applications, which is a shame, especially as some of them (notably Pocket BizCalc) look seriously complicated. The rest of the user manual is well laid-out and tells you what you need to know, but be warned: it's written in that curious translated English that can make you chuckle. It's a small point, but it always amazes us that these huge electronics companies can't afford to have a native English speaker proof-read the manual before it's printed.

There is 8Mb of user memory and a Compact

Flash slot for expanding this, as and when required (up to 32Mb). Prices are coming down all the time, so it won't



cost you an arm and a leg if you need the extra space. There is a PC Card slot which can take a variety of expansion options, the most obvious being a modem. LG's glossy magazine, Image, claims the Phenom has a supplied software modem, but the company's product manager confirmed this is not actually the case.

Some palmtops can use a PC Card to connect to a desktop monitor for showing PowerPoint presentations in 256 colours at 640 x 240. The Phenom actually has this capability built in, a bonus for salespeople when it comes to presentations. It's a pity that only PowerPoint presentations can be viewed in this way; someone, somewhere must be able to come up with a piece of software allowing you to do all your work on a proper monitor when available. And for good measure, they could throw in the ability to use an infra-red keyboard and mouse via the IrDA-compatible port on the Phenom, letting you use it like a normal PC, albeit a limited and underpowered one.

The Phenom's own monochrome LCD screen (16 grey levels) is the biggest we've seen on a palmtop, with a viewable diagonal of 7.1in

(though, strangely, LG claims 7.2in). The display operates at 640 x 240 resolution and is clear, with a backlight that's bright and not too green. The screen resolution is the same as many of the other CE 2.0 machines on the market but the extra size makes everything appear slightly bigger. In our experience, this makes it easier to work on the machine for long periods without straining our eyes. Our only gripe is that the backlight buzzes noticeably when you have it turned on. The keyboard is large, with a good amount of space between the keys. But actually, the keys let it down; they are too slippery for our liking and the space bar is much harder to press than the other keys, which is confusing when typing at speed. However, we would say it ranks about third in the CE keyboard chart, behind the HP 620LX and the Sharp machines.

Those of you who feel the need for a truly portable machine with basic word processing, spreadsheet and email functionality, but can't stand the thought of an itchy-bitsy keyboard, should have at least one answer to your problem before the end of the year. The "Libretto beater" (according to LG's public relations person) will be a colour notebook with a proper keyboard. A software modem will be built in, and the colour screen will have a viewable diagonal of over 8in.

Tremendously exciting stuff; but it won't be here until the tail end of the year. And bear in mind that colour screens use a lot more power, and the chances are that the battery life will be considerably shorter than the twenty hours quoted for the Phenom.

Adam Evans

PCW Details

Price £499 (£424.68 ex VAT)

Contact LG Electronics 01753 500470
www.lge.co.uk

Good Points Massive screen. Big keyboard. Good battery life.

Bad Points Slippery keys. Humming backlight.

Conclusion The best monochrome CE 2.0 machine around.

★★★★★

■ Hardware

Sony VAIO PCG-737

Sony's first foray into the European PC arena is conservatively-specified but really rather nice.

The chances are that you currently own, or have owned, some piece of Sony electronic equipment in your life. Some people are known to be so brand loyal they would not dream of buying anything else. However, up to now, Sony has never sold PCs in Europe. Monitors, digital cameras and speakers, yes; fully-fledged PCs, no.

Sony has had a PC and notebook range in the US for some time, but when these were first launched there were deep, dark rumblings about their quality. Sony, perhaps wisely, wanted to delay launch of this VAIO range of notebooks in Europe until everything was right, including all the service and support issues. You will get a one-year guarantee with the product and a further two years on registration.

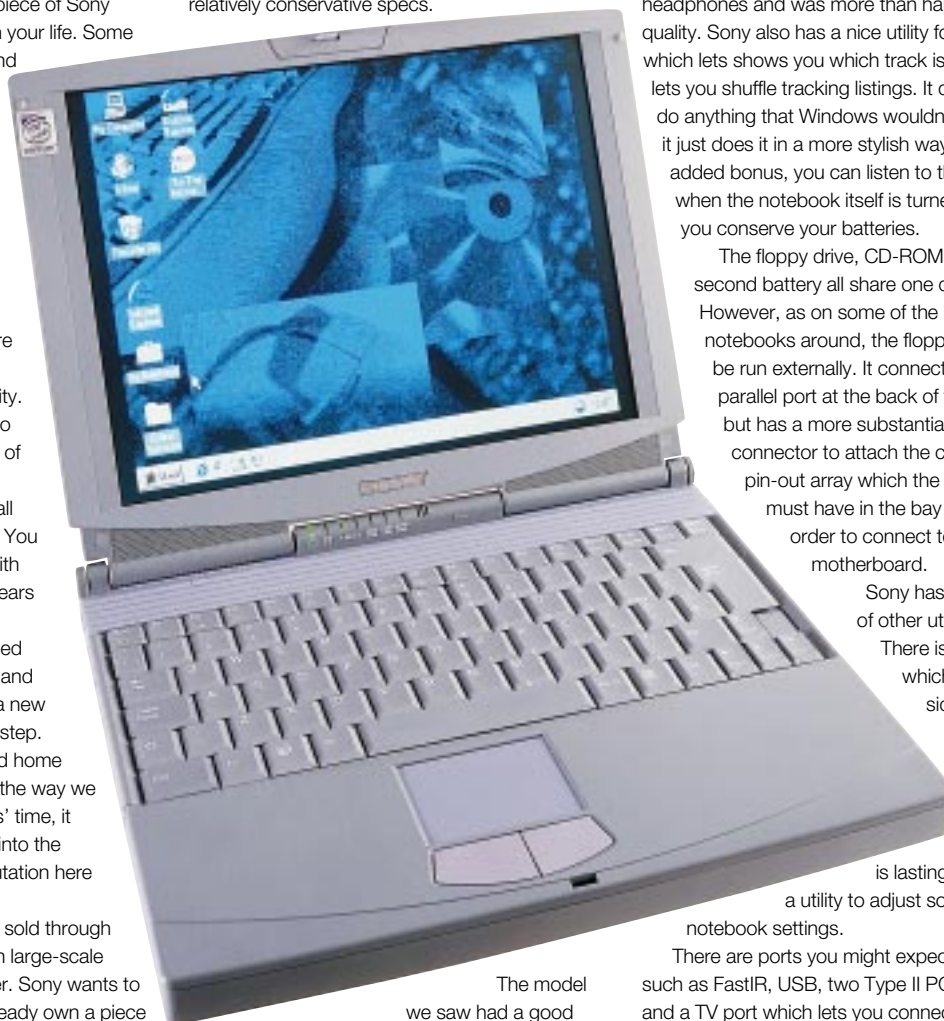
With so many well-established vendors in an already crowded and competitive market, launching a new range of notebooks is no small step. But if the conversion of PCs and home entertainment systems is really the way we will all be heading in a few years' time, it makes sense for Sony to jump into the PC market and establish a reputation here before it's too late.

The VAIO notebooks will be sold through PC World and John Lewis, both large-scale retailers selling to the home user. Sony wants to appeal to those people who already own a piece of Sony equipment, rather than the business market most notebook manufacturers are after. Sony is playing not only on its name, which, after all, is perhaps no more impressive than those of IBM and Toshiba, but is also depending on its reputation for fun products.

The knowledge base of these SoHo users is not expected to be high, but they will expect quality and they will also expect to get as much out of their purchase as possible. So, Sony will be launching a web site for VAIO users, aimed at increasing these people's enjoyment of the product. Whether there is a large enough market comprising these people remains to be seen; even more interesting will be whether people truly trust a consumer electronics firm to produce sound computing equipment.

The notebook itself is unremarkable in most technological respects. Sony has rejected the latest and greatest Mobile PII processors in favour of the slightly older P233MMX. It has just

32Mb of RAM and a 2.1Gb hard drive, again relatively conservative specs.



The model we saw had a good 12.1in TFT screen (the other model has an HPA screen), which is small compared to screens in some notebooks.

Instead, Sony has concentrated its efforts on developing some of the usability aspects of this machine. It is slim, at 38mm thick, but still has a CD-ROM drive in it and it is light — just 2.49kg, so it is easy to carry. It has great styling all round, and the keyboard is one of the easiest to use I have come across for a while.

The audio is one area where Sony has put in a lot of effort, and it shows. The quality of the sound is not wonderful when played through the speakers, which are attractively positioned at the bottom of the screen. Notebook speakers are never going to be able to compete with real standalone speakers, as the sound does not have enough room to reverberate in such a limited space. But the audio really comes into its own when you listen to the CD through the headphones which are included in the box. I sat

typing away with the sound blasting through the headphones and was more than happy with the quality. Sony also has a nice utility for the CD which lets you see which track is playing and lets you shuffle track listings. It doesn't really do anything that Windows wouldn't do for you; it just does it in a more stylish way. As an added bonus, you can listen to the CD even when the notebook itself is turned off, letting you conserve your batteries.

The floppy drive, CD-ROM drive and a second battery all share one drive bay. However, as on some of the better notebooks around, the floppy drive can be run externally. It connects to the parallel port at the back of the notebook, but has a more substantial and robust connector to attach the cord to the tiny pin-out array which the floppy drive must have in the bay to connect in order to connect to the motherboard.

Sony has added plenty of other utilities, too.

There is a battery bar which sits up one side of the screen, letting you see at a glance how your battery is lasting, and there's a utility to adjust some of the notebook settings.

There are ports you might expect to find, such as FastIR, USB, two Type II PC Card slots, and a TV port which lets you connect your digital video camera and play your presentations on a TV. The two docking stations have a vast array of ports, with the more advanced station supplying connectors for IEEE1394, SCSI and ethernet.

Adele Dyer

■ Full performance graphs for the Sony VAIO PCG-737 will appear in next month's ChipChat.

PCW Details

Price Around £2,000 (£1,702.13 ex VAT)

Contact Sony 0990 424424 www.sony-cp.com

System as reviewed P233MMX, 32Mb RAM, 2.1Gb HD, 12.1in TFT screen.

Good Points Well featured. Seems solidly built, with nice styling.

Bad Points No DVD support as yet. No larger screens available.

Conclusion A good buy.

★★★★★

■ Hardware

Fuji MX-700, FD-A1 FlashPath and NX-5D

Smile, please... A digital camera, a floppy disk that's well, a bit flash, and a photo printer.

The basic function of a digital camera is the same as any other camera: taking photographs. It doesn't hurt to have a cool-looking design though, and in this respect Fujifilm has come up with a corker: good looking, easy to use, and small enough to fit into the front pocket of a pair of jeans, although the door leading to the memory card came undone when we carried it like this. It weighs 245g (excluding the battery) and measures 80 x 101 x 33mm.

The lens has a massive effect on the quality of your photographs and we were pleased with the Fujinon supplied on the MX-700. There is no optical zoom (where the lens actually moves) but there is a 2X digital zoom. Pictures can be taken at two different resolutions (1280 x 1024 or 640 x 480) and three different JPEG compression levels. Put simply, the higher the resolution and the

films over the course of a few days and get them developed. How many good, usable photographs would you expect to get out of them? For many photographers, eleven is a good return on your money. The Fuji camera lets you be sure of your pictures by checking them on the colour screen. If you don't like one, delete it and start again.

One of the problems with the screens on digital cameras is the drain on the batteries. The MX-700 gets around this by having a separate viewfinder which you use as on a normal camera. It lets you take up to 250 shots on a single charge of the supplied lithium ion rechargeable batteries. However, if you want to use the macro or zoom modes, you have to use the two-inch colour LCD screen.

The camera is easy to use in automatic mode, but if you require more control over your pictures the manual mode will let you set all sorts of parameters from flash intensity to the white balance. If you want to look at your photos but don't have a PC handy, don't worry, you can connect it to a standard television set. A bit of tuning is all that is required. If you do have a PC, Adobe PhotoDeluxe 2.0 is supplied for your editing pleasure.

A serial cable is supplied for connecting to your PC, but this method can be a bit of a pain. Fuji has launched a new product to tackle this problem, however: FlashPath is a chameleon in the shape of a floppy disk. After installing a piece of simple software on your PC, just insert your FlashPath into the FlashPath, then stick the FlashPath in your floppy drive. Your computer will treat it just like any normal disk and you will be able to load your photographs with ease. You can even use your SmartMedia as a backup drive if you're desperate. The only drawback is the price: at £69.99 FlashPath is an expensive luxury, but well worth it if you've got money burning a hole in your pocket.

Having been impressed by the camera and the floppy disk adapter, the Fuji photo printer came as a bit of a disappointment. It uses special paper which already contains all the

colours needed; the printer simply exposes those required. It works out at about forty pence per sheet, which is not terrifically cheap. The maximum printable area is approximately 84mm

x 126mm, which doesn't allow for terrifically big prints, and the print resolution is 145dpi. But at this size, we were more than happy with the sharpness of the printed photographs (shot using the MX-700). We were a little disappointed with the colours, as some areas had a tendency towards a yellowish tinge.

As with the camera, the printer can be connected to a television set, so you don't even have to turn on your

PC to decide which photographs to print (the SmartMedia card slots in to the front of the printer).

Adam Evans



lower the compression (so it is less compressed), the better the resulting photograph. The trouble with using the best settings all the time is that they use up memory like there's no tomorrow.

Fuji digital cameras use SmartMedia to store the images; these are tiny, thin wafers around 3cm x 4cm which slide easily into a slot in the camera. They come in 2, 4 or 8Mb varieties and can be used, wiped and used again as often as you care. The 2Mb card which comes as standard with the camera can record only three "best-quality" images, so if you're thinking about buying the camera, budget-in another £59.99 (£51.06 ex VAT) for an 8Mb card. You can store eleven best-quality images on one of these, and although this figure jumps dramatically when you lower the quality, let's face it — we would all rather take the best pictures we can. But try thinking of this "problem" the other way around. Say you take two 36-exposure



PCW Details

Price Camera: £649.99 (£553.19 ex VAT), £699.99 (£595.74 ex VAT) with FlashPath

Contact Fujifilm 0171 586 5900
www.fujifilm.co.uk

Good Points Excellent-quality snaps. A host of manual controls. Fabulous battery life.

Bad Points Only comes with a 2Mb memory card. No optical zoom.

Conclusion A very desirable piece of equipment.

★★★★★

FlashPath

Price £69.99 (£59.57 ex VAT)

Good Points The easiest way to transfer data between SmartMedia and PC.

Bad Points A bit pricey.

Conclusion A great little gadget.

★★★★★

Photo Printer

Price £299.99 (£255.31 ex VAT)

Good Points Fast. Produces very sharp prints.

Bad Points Prints can be yellow. Limited size.

Conclusion We just can't see any overwhelming advantage over a photo-quality inkjet.

★★★★★

Hardware

Matrox Productiva G100

Solid 2D performance and an impressive software bundle distinguish this budget graphics card.

If you're looking for an affordable AGP graphics card with meaty 2D performance, 3D functionality and stacks of memory, this could be it. Priced at just £64 plus VAT, Matrox is pitching its latest offering at the business market. The Productiva G100 does deliver fast 2D performance, which will come in handy with applications like word processing, spreadsheets and email. But as you can see from the performance results, it actually runs our Sysmark test slightly slower than a 4Mb AGP Diamond Viper 330 in the same system. The Diamond card is more than £20 more expensive than the Productiva and features 4Mb less memory.

The Matrox card has an impressive software bundle including Micrografx Picture Publisher, Micrografx Simply 3D, Netscape Communicator 4.01, and Point Cast Business Network 2.

Alongside 8Mb of SDRAM, this 64-bit card boasts a 230MHz RAMDAC and 24-bit true

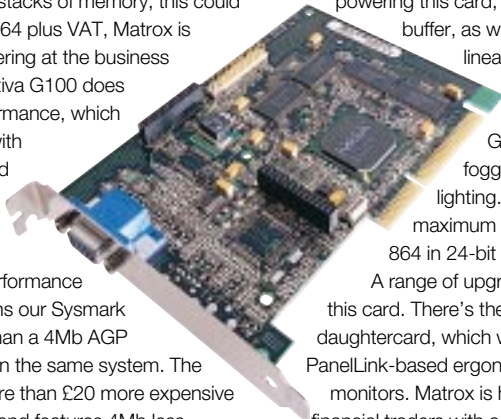
colour at resolutions up to 1600 x 1200.

The 3D engine, the graphics accelerator powering this card, features a 32-bit Z-buffer, as well as supporting bi-linear filtering, perspective-correct texture-mapping, Gouraud shading, vertex fogging and specular lighting. It will support a maximum 3D resolution of 1152 x 864 in 24-bit colour.

A range of upgrades are available for this card. There's the Matrox Flat Panel daughtercard, which will support the latest Panellink-based ergonomic flatpanel monitors. Matrox is hoping to appeal to financial traders with a driver which will let its AGP cards support dual or quad multi-displays with SmartGlass flatpanel displays from PixelVision. If dual displays aren't your thing, the daughterboard connector could be used to attach an MGA-TVO PC-TV encoder.

Upgrading is also possible through the new Rainbow Runner G-Series video editing card with

hardware-motion JPEG video capture, handy for holding live video conferences over the net, and a Matrox DVD Video daughtercard for hardware-accelerated MPEG-2 can be added.



PCW Details

Price £75.20 (£64 ex VAT)

Contact Matrox 01753 665500 www.matrox.com

Good Points Price. Good 2D performance, memory, and software bundle.

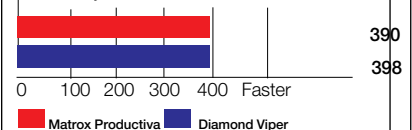
Bad Points None to worry about.

Conclusion A good budget graphics card for 2D applications.

★★★★★

Performance results

BAPCo Sysmark Windows 95 test scores



ViewSonic GA771

With a clean, crisp image, built-in speakers and a good price, this 17in monitor has a lot to offer.

The GA771 is ViewSonic's latest addition to its Graphic Series range of monitors, aimed at corporates, business and the more discerning home user. It is a 17in monitor with a 16in diagonal viewable area, and it differs slightly from the norm in that it comes with built-in speakers which look rather like industrial vents. We were not particularly impressed by the quality of the speakers, but there is always a trade-off between sound quality and saving space. The best separate speaker systems have subwoofers that you stick on the floor, out of harm's way, bringing the best out of the bass in the audio.



As far as day-to-day use goes, however, the speakers on this Viewsonic monitor will do an adequate if unspectacular job, depending on the importance you place on sound quality.

ViewSonic boasts that this monitor has the clarity and vivid colour normally associated with high-contrast CRTs and aperture-grille monitors.

The company makes this claim based on the use of its SuperClear screen technology, incorporating a combination of high-concentration phosphor filters and optimised glass to manipulate the colour spectrum of the electron beam fired from the rear of the CRT tube. This, according to ViewSonic, cleans up the light

frequency, giving a uniformly bright, high-contrast stream of colour. All well and good; but does it work?

We were impressed with the clarity of colour and detail produced by the GA771. Even at a resolution of 1024 x 768, which we ran at a refresh rate of 75Hz (the monitor is capable of 87Hz), images were easy on the eye and we were able to see clearly such small items as the individual keys on the My Computer icon.

Controls for the on-screen display are via four unobtrusive buttons at the bottom of the screen. An additional three buttons provide instant volume and mute control for the speakers.

Lynley Oram

PCW Details

Price £405.38 (£345 ex VAT)

Contact ViewSonic 0800 833648 www.viewsonic.com

Good Points Price. Good image, with crisp focus.

Bad Points Built-in speakers still no match for a decent pair of standalone speakers.

Conclusion Good to look at, at a price that's easy on the wallet.

★★★★★

Hardware

JVC GC-S1E Digital Camera

Picture this: the results from this digital camera are among the best the technology can provide.

Everybody seems to be jumping on the digital-camera bandwagon, and with this model from JVC, there is now even more choice. With 4Mb internal memory, and the option of adding flash cards to expand this, the default configuration lets you store between 30 fine and 100 economy-mode pictures. The 10X optical zoom far surpasses many of its contemporaries capable of only a small selection of preset magnifications. The lens rotates on an arc of 190°, allowing for picture-taking around corners or in awkward situations; but with no viewfinder to supplement the LCD, it's a battery drainer. Focusing is automatic: press half way on the shutter release and it does it for you. And to prevent you taking pictures you don't want, the mode selection dial is lockable. The software bundle includes Picture Navigator and MGI PhotoSuite SE. A self-timer function will give you fifteen seconds to set the shutter and dash into the picture, and the built-in flash has a



variable intensity that can be increased or decreased depending upon the lighting conditions. Although the automatic setting is suitable for most occasions, the manual option will allow users to select the white balance, exposure, shutter speed and numerous other settings to customise your results. Nine rather tasteless and disappointing graphical frames can be automatically appended to your photos before uploading to your PC, although quite why you would want any of them is another matter. JVC claims its F1.6 lens to be

the brightest in any digital camera on the market. Once you have taken your photos, they can be previewed on the built-in LCD in thumbnail or full-screen mode, downloaded onto your PC by serial cable or infra-red connection, played back on your television or recorded on video for posterity.

We had problems linking older PCs to the camera, but it was soon resolved when we switched to a machine with serial ports that recognised bi-directional data transfer.

Nik Rawlinson

PCW Details

Price £399.99 (£340.42 ex VAT)

Contact JVC 0181 208 7654 www.jvc.co.uk

Good Points Excellent picture quality. Great zoom.

Bad Points Uploading problems on old PCs.

Conclusion Some of the best pictures a digital camera is ever likely to provide.

★★★★★

HP Colorado 8Gb

Rock-solid backup from a brand name, but archiving is a chore and it likes to make itself heard.

For business, the answer to backup blues is a drive like the Colorado. Rather than constantly copying files to floppy, leave the Colorado switched on permanently and let the supplied software, a rebadged utility suite from Cheyenne, save up to 4Gb of your files automatically — 8Gb with compression. You can schedule full and incremental backups, where you save only those files that have changed since the last one. It's also possible to perform a full system backup together with boot floppies so you can recreate your entire system if disaster strikes. However, this won't be successful if you have an LS-120 drive, as the Colorado looks for its boot disks on the floppy controller rather than the IDE chain. Also, although you can use the Colorado for network backups, you can only



store the Registry of a local machine.

The Colorado's main disadvantages, though, are noise and speed. Switch it on, and it sounds like a small washing machine as it whirrs

though the tape. Large backups should be left for a time.

Hewlett-Packard claims data transfer at up to 50Mb/sec. When we backed up a P233MMX, we found this was no more than a peak rate, and the drive only achieved it for a few moments. 25Mb/sec is a realistic estimate for the parallel version we tested, but you should get higher speeds if you choose the internal EIDE model. Although some 40 minutes for a 1Gb backup seems interminable if you watch it happening, it is fine if you leave the software to run overnight. We were unimpressed

by the fact that it took some ten minutes to restore four Word files totalling less than 200Kb. Most of this time is down to tape's slow access time: it is a linear medium. If our files had been spread over the tape rather than clustered together, it would have taken even longer to find them. It's fine for backups, but don't try to use the Colorado for archiving files you may need again reasonably quickly.

John Sabine

PCW Details

Price £293.75 (external parallel port), £249.10 (internal EIDE), £39.95 (4/8Gb tape)

Contact Hewlett-Packard 0990 474747 www.hp.com

Good Points Uses industry-standard Travan tapes. Very well built.

Bad Points No quieter or faster than other tape drives, and it's not cheap.

Conclusion A fair choice for a rock-solid backup device from a brand name.

★★★★★

Hardware

Hitachi GF-1050

DVD we stand: easy-to-use and cheap storage from a medium that is the way forward.

It took nearly a decade to move CD from the ordinary pressed disc to the recordable version, and a couple more years to get onto rewritable CD. DVD, on the other hand, has jumped into its rewritable format virtually simultaneously with the launch of DVD-Video and DVD-ROM. Called DVD-RAM, this first rewritable system to use a DVD-type disc relies on phase-change technology to store 2.6Gb per side on an optical disc the same size as a CD. Hitachi has got out into the market first, with its GF-1050 drive which arrived hot off the production line early in May, a little later than originally planned.

The drive itself is a standard form-factor unit with a SCSI-2 interface; an ATAPI/IDE version will follow shortly. It can be mounted horizontally or vertically, although in the vertical fitting it only seems to want to work with DVD-RAM media. On installation the SCSI adapter card recognises the drive automatically, allowing it to immediately be used as a DVD/CD-ROM drive. In read mode, the drive behaves as a double-speed DVD-ROM drive, a rather unimpressive eight-speed CD-ROM (due mainly to the extra mass

of the read/write head), and DVD-RAM discs are read at single-speed DVD (1.38Mb/sec). You cannot, it should also be said at this point, write to CD-R or CD-R/W discs on this drive.

Hitting eject shows off the most unusual part of the drive — the disc tray that is designed to take ordinary CD/DVDs and DVD-RAM cartridges. The DVD-RAM disc is normally held in its own cartridge, looking like a cross between an MO (magneto-optical) and a large floppy disk. The cartridge slots into the open tray which also has indents for "bare" CDs and DVDs.

Before use, DVD-RAM discs are formatted using the UDF formatting software supplied with the drive. UDF gets over the drive-size limitations of FAT, and formats the disc in 2Kb blocks, making more efficient use of the space on the disc. Despite the disc size, the format process takes just a few seconds and then the disc is ready to write. For DVD-RAM applications Hitachi supplies WriteDVD! Windows 95 software

to handle the transfer of files on and off the discs. The software apes the action of Windows, with the physical drive appearing as two virtual drives on the desktop; one is a CD/DVD read-only drive, the other is the DVD-RAM writer. Apart from this slight oddity, the virtual-drive "writer" functions like any hard disk on the Windows Desktop. Files can be dragged and dropped, deleted, copied or renamed, all using

data rate is 1.4Mb/sec.

Where DVD-RAM has the upper hand, is in cost-effectiveness. Media costs £25 for 5.2Gb compared to £100 for a 2Gb Jazz2, and it is certainly cheaper per megabyte than the 650Mb CD-R/W at £20 or a 100Mb Zip at £10. The drives are not too expensive either; at £400 the GF-1050 competes very closely with Jazz2 and is considerably cheaper than MO. The Hitachi (and Toshiba and Panasonic DVD-RAM drives that are due soon) are first-generation DVD-RAM and carry with them a certain

amount of confusion about the compatibility that is inferred by adding "DVD" to their name. While the drives undoubtedly play all CD and DVD formats, the DVD-RAM discs it writes can only be read on DVD-RAM drives.

No DVD-ROM drives or DVD-Video players have been released that can read DVD-RAM discs, a situation that will not change for this generation of DVD-ROM drives and possibly not for the next generation either. It may be that we're well into 1999 before you can start using DVD-RAM as an interchange medium with DVD-ROM drive users.

At that time DVD-RAM itself will have gone through an upgrade to 4.7Gb per side, matching the storage capacity of DVD-ROM. And at that time there may be two other alternatives to further confuse the issue: DVD+RW and DVD-R/W. But the 2.6Gb-per-side DVD-RAM is here and working, and stands up well in its own right as a cost-effective removable-storage solution.

Tim Frost



A DVD-RAM drive is indicated as two separate drives, drives F and H

normal Windows operations.

The GF-1050 works well, but in a market crowded with a number of removable storage formats, what is special about DVD-RAM? First and foremost, the DVD-RAM drive should be looked on as a very cost-effective removable optical storage format that also reads DVD-ROMs, DVD-Videos and all varieties of CD. For anyone thinking of adding DVD-ROM or DVD-Video to their system, going the extra step to a rewritable DVD drive is a reasonable option. With double-sided discs storing 5.2Gb, in sheer capacity terms DVD-RAM has a clear advantage over Zip, Jazz2, MO and CD-RW. The obvious point is that DVD-RAM can be used as a serious hard-disk backup medium as well as a good removable store for large files and multimedia content. On the downside, while Jaz has hard-disk levels of access times and read speeds, DVD-RAM stays solidly in the realm of optical discs. The seek times are around 200ms and the

PCW Details

Price Around £465 (£399 ex VAT)

Contact Hitachi 01628 585000
www.hitachi-eu.com

System Requirements Windows 95

Good Points Easy-to-use and very cheap storage, with the bonus of reading DVD-ROM and DVD-Video discs.

Bad Points DVD-RAM discs will only work on DVD-RAM drives.

Conclusion DVD-RAM is a serious PC storage medium if super-fast access/transfer rates are not required.

★★★★★

Hardware

Creative Labs Webcam II

With the new Webcam, you can see your friends as you videocall with them over the internet.

In the film 2001: A Space Odyssey, videocalls are made to earth from the moon, with perfect picture quality and sound. While video technology may not yet be quite as impressive as Arthur C Clarke's vision, there is no doubt that video-conferencing has finally gone mainstream. Creative Labs' Webcam was reviewed in the February issue of *PCW* and was praised for its no-nonsense installation and ease of use. For those unfamiliar with the original, the appealing aspect of the Webcam when it was released was that there was no need for a PCI video card: it simply needed the installation of the software.

So what's this new product got to offer, coming out so soon afterwards? There are, in truth, not a lot of obvious differences between the two products, but the most immediately striking is the price. Whereas the Webcam cost £149 (inc



VAT), its successor, the Webcam II, is a snip at only £79. This massive drop in price is largely due to the change in lens technology: the Webcam II uses a plastic lens as opposed to the glass used in the original Webcam, although Creative Labs is keen to stress that the main reason it has switched over to plastic is because it brings improvements in picture quality. Another reason for the price drop is probably that there isn't as much bundled software with the Webcam II as with its predecessor. The multimedia email software Howdy! is missing, as is the web-page author, Hotmetal Lite. What you do get is the excellent Ulead MediaStudio 2.5 with the CreativeVideo WebPhone, and Ispy. There are definite improvements in picture quality with this new

Webcam — the picture is brighter and less grainy. The main improvement is in the quality of the motion capture: the maximum frame rate is now 30 frames a second rather than 15.

There are problems filming anything that moves quickly, so if you will be using the Webcam II to film fast-moving objects, you might want to look elsewhere. The more moving objects in the frame, the more frames that will be dropped. But if you fancy buying one for a network at home, or for friends with internet connections, there's fun to be had with this gadget.

Paul Trueman

PCW Details

Price £79 (£67.23 ex VAT)

Contact Creative Labs 01245 265265
www.creativelabs.com

Good Points Improved picture quality.

Bad Points Not as much bundled software as with its predecessor.

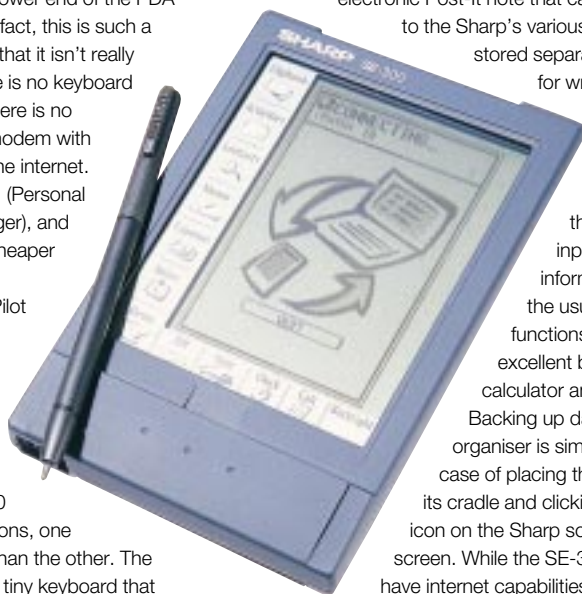
Conclusion Excellent. Affordable for the home.

★★★★★

Sharp SE-300

Look Sharp, it's a new PDA/PIM. If light on the pocket and the wallet, it could be a winner.

Sharp is positioning its new executive toy at the lower end of the PDA market. In fact, this is such a cut-down version that it isn't really a PDA at all. There is no keyboard to write on, and there is no TCP/IP stack or modem with which to access the internet. This is really a PIM (Personal Information Manager), and while it's slightly cheaper than 3com's all-conquering PalmPilot Professional, it doesn't have an equivalent to its rival's "graffiti" language, ideal for making quick notes. The SE-300 has two input options, one marginally better than the other. The first is the irritating tiny keyboard that appears on-screen, with its touch-sensitive keys only a few millimetres in width. The other option is the Notes application, where you can draw or



scribble whatever you like on the screen. Like an electronic Post-It note that can be attached to the Sharp's various applications or stored separately, it's great for writing quick reminders. There are six applications that allow the input of information, covering the usual PIM functions, along with an excellent backlight, calculator and clock. Backing up data from the organiser is simple enough: a case of placing the organiser in its cradle and clicking the Backup icon on the Sharp software on-screen. While the SE-300 does not have internet capabilities, email and text from the web can be downloaded from the PC and viewed offline on the organiser. At the time of writing, Sharp was still constructing the

software utilities web page that will enable users to download applications into the SE-300. However, if you really want to synchronise the SE-300 properly, you will need to have certain software installed on your machine. You need Outlook 97 for the email and Symantec's Act!3.0, or Lotus Organizer 97 GS for contact info. When we synchronised the SE-300 with a PC that had Organizer 97 GS, the contact details were all entered, apart from a slight problem with recognising lower-case characters.

Paul Trueman

PCW Details

Price RRP £179.99 (£153.18 ex VAT)

Contact Sharp 0800 262958
www.sharpelectronics.com

Good Points Synchronises well. Light.

Bad Points You need specific software to synchronise properly.

Conclusion If the price dropped, it would be a winner.

★★★★★

Software

Inprise Delphi 4.0

Now with a smarter interface and new components for builders of distributed applications.

This fourth version of Delphi has a smarter interface, language enhancements and new components for building distributed applications.

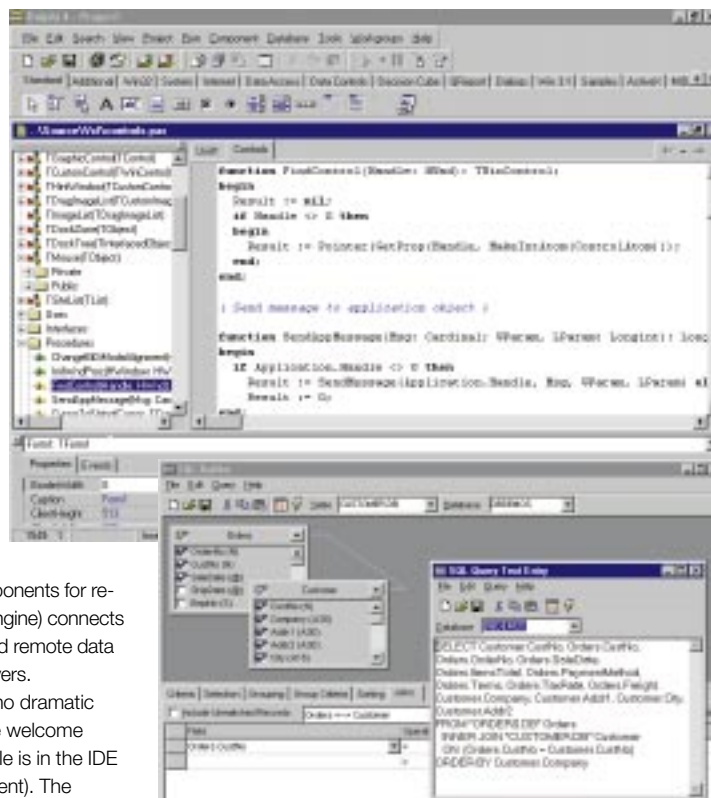
Delphi is a visual programming tool that offers rapid development with few compromises. Its language is Object Pascal and it supports all the key features of object-orientated programming. The compiler generates fast native code which matches C++ for performance. The VCL (Visual Component Library) lets you snap together applications using a form designer, and the component palette and makes it relatively easy to build custom components for re-use. The BDE (Borland Database Engine) connects to local dBase or Paradox tables and remote data through ODBC or its own native drivers.

The new version of Delphi has no dramatic innovations but does provide some welcome enhancements. The most noticeable is in the IDE (Integrated Development Environment). The code-editor windows can now be a container for other docked windows, including the project manager and object inspector.

There is also a new window, called the Module Explorer. This presents a tree view of all the types, classes, properties, methods and procedures in the current unit. It is synchronised with the code editor, so double-clicking a heading in the tree view moves the cursor to that point in the editor. Combined with a docked project manager, it should make navigating code easier. First impressions are that the Delphi 4.0 IDE remains well behind Microsoft's Visual Studio but the new features are taking it in the right direction.

Object Pascal has a few changes. It now supports method overloading so that a class can have several methods of the same name but be distinguished by the parameters they take. Functions and procedures can have default parameters. A handy new feature is dynamic arrays and its memory can be reallocated with `SetLength`, and there is a new 64-bit integer type. Another addition is the implements directive which allows you to delegate implementation of an interface to a property.

Delphi's component library has many new components and others have been enhanced. Docking support is now built into TWinControl so that all windowed controls can use it. TActionList is a non-visual control which lets you centralise the code that responds to actions like button



Left New dockable windows and module explorer give you more ways to navigate the code

Below, left The new SQL Builder lets you edit raw SQL or use graphical tools

Inprise also sells VisiBroker, a CORBA object broker. Inprise is emphasising CORBA above COM for distributed objects, but Delphi remains a Windows development tool and its COM support is more mature.

Does Delphi 4.0 hit the sweet spot? There is no doubt that the improvements are useful, but several things have changed since Delphi 1.0 stunned developers by combining Visual Basic's ease of use with the efficiency of C++. First, rivals have got better. VB now has a slicker interface and its own native code compiler, and Visual J++ 6 has many Delphi-like features. Second, the importance

of native code compilation has diminished due to the high performance of today's hardware. Third, Java has come along, leaving Object Pascal looking somewhat dated.

Borland/Inprise has driven Delphi up-market, with a focus on building distributed applications with COM or CORBA and SQL database servers. Here, it is encountering increased competition from Java and Visual Basic. The other problem with a high-end focus is that these features mean little to mainstream Delphi developers.

This is still the best product for traditional Windows development, but there's no doubt that its lead is diminishing.

Tim Anderson

PCW Details

Price Standard £99 (£84.26 ex VAT), Professional (new user) £527.58 (£449 ex VAT), Client/Server Suite (new user) £1,996.33 (£1,699 ex VAT). Upgrade prices to be announced.

Contact Inprise 0118 932 0022 www.inprise.com

Good Points New Windows components. Better support for distributed applications.

Bad Points IDE still needs work.

Conclusion Still the best all-round development tool for Windows.

★★★★☆

Software

Inprise JBuilder 2.0

Swinging widgets, CORBA integration and Beans Express are part of the new JBuilder.

Borland/Inprise was late to the Java tools party, releasing JBuilder 1.0 long after Visual Café was established as the leading visual Java development tool. The idea was to provide a Delphi-like environment but based on JavaBeans. The IDE (Integrated Development Environment) was better designed than the competition, but JBuilder 1.0 spoilt its chances by gaining a reputation for instability, especially on Windows 95. The other problem was performance.

JBuilder is mostly written in Java, even though it runs only on Windows. In version 2.0, performance has improved a little. As for stability, it's too early to be sure but it does seem better, although not everything worked as it should. For example, when designing a menu bar I found that the code did not update correctly when items were moved in the visual design view.

More seriously, I had trouble with one of JBuilder's best new features. You can switch between different versions of the JDK for testing, but to do this you first have to configure alternative JDK setups in a dialog. I could not get this to work from the IDE and resorted to editing JBUILDER.INI in Notepad.

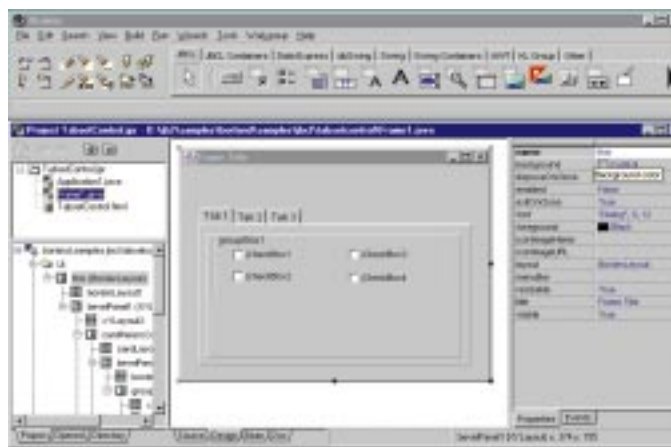
Hassles aside, JBuilder 2.0 is stuffed with good features. The environment is now hosted on JDK 1.1.6, including the new Swing widgets. You can take advantage of PLAF (pluggable look-and-feel), which means that by changing one line of code you can switch between a Windows, Motif or Metal appearance.

Metal is the Java default, but for some reason JBuilder defaults to Windows. The Swing components are installed on the JBuilder palette and their functionality is enhanced by the inclusion of a data-aware set, extended by Borland to have dataset and column properties.

The JBCL (JavaBean Component Library), Borland's own component library, also now inherits from JComponent, the base class for the Swing components, so Swing is deeply embedded into JBuilder. You do not have to use JBCL; there is an option to use only core JDK and Swing classes, to create lightweight applications that do not require JBCL support classes to be downloaded at runtime.

Beans Express is JBuilder's design tool for JavaBeans. For example, you can add and remove properties and designate which events to listen for, through simple dialogs. A new wizard, called Bean Insight, checks the validity of a new bean. There is also an Enterprise JavaBean wizard for creating non-visual Beans to run on a server.

JBuilder ahas great support for internationalisation. Java handles this through the ResourceBundle class, letting you load strings or



Left JBuilder 2.0 looks a lot like version 1, but now includes SWING components. Below, left Code Insight displays appropriate methods or parameters as you type



bridge is often not a satisfactory alternative. To overcome this, JBuilder comes with

DataGateway middleware, essentially a JDBC interface to the Borland Database Engine. Using DataGateway you can easily get at data in local formats like dBase, Paradox and Access, as well as popular servers such as Oracle, DB2 and SQL Server. Unfortunately, DataGateway only comes with the client-server edition of JBuilder.

JBuilder 2 is close to what the first version should have been. Although it lacks the true visual programming offered by IBM's VisualAge or ObjectShare's Parts for Java, it offers a highly

productive environment, particularly for developers familiar with Delphi. other resources from a resource bundle specific to a particular language. JBuilder has integrated this into the IDE. You can right-click any text property in the Inspector and choose Resource Bundle from a pop-up menu. There is also a Resource Wizard to help you determine which strings need to be in resource bundles.

For distributed applications JBuilder has support for both CORBA, particularly with the Inprise-owned VisiBroker object broker, and RMI (Remote Method Invocation), the native Java-to-Java standard. The CORBA tools are part of VisiBroker for Java, which ships with JBuilder client-server edition. JBuilder makes no effort to accommodate DCOM, Microsoft's standard for distributed applications.

JBuilder is a good tool for database work. On the client side, there is a rich array of data-aware interface components, along with other components that encapsulate data access. These include database, dataset, query and stored procedure components. Data access is via JDBC (Java Database Connectivity), the standard Java mechanism. The problem is that there are few drivers, and the JDBC-ODBC

productivity is still out on that.

All the essentials are here, provided you are not interested in ActiveX or COM. The remaining question is whether the twin bugbears of performance and reliability have been sufficiently conquered — and the jury is still out on that.

Tim Anderson

PCW Details

Price Upgrade prices: Standard £99 (£84.26 ex VAT), comes without database components. Professional £292.58 (£249.00 ex VAT), includes JDBC components. Client/Server £1291.32 (£1,099 ex VAT) with VisiBroker/CORBA and DataGateway.

Contact Inprise 0118 932 0022 www.inprise.com

Good Points Tidy IDE. Strong component set. Switchable JDK.

Bad Points Java-built IDE is slow, and some bugs remain.

Conclusion A strong Java tool and the natural choice for Delphi migrants.

★★★★★

Software

PrintMaster Platinum

Now it's easy for nearly everyone to create groovy graphics. Keep it simple or get sophisticated.

There are many people who have neither the inclination nor the need for semi-professional graphics packages, and software manufacturers have become more aware of their needs. Almost any software aimed at the relatively inexperienced user now comes dolled up with tutorials, wizards, on-line help and the like. This means you can be up and running on a complex piece of software in no time.

PrintMaster Platinum, from Mindscape, is no exception. Your starting point is The Hub, your desktop menu. From there you can choose one of three main options named With Help, Ready-Made and Brand New, which is fortunately quite a handy way of describing what they do. You can also access the Mindscape web site or browse through the art gallery. Also included in the package is a freebie from American Greetings, a CD with a special edition of CreaCard software for designing greetings cards.

With Help is the section that holds your hand: the multimedia wizard will see to it that you don't revert to playing solitaire due to frustration. Each step is easy to follow, with multiple-choice windows to click. Once you have the graphic or template of your choice, you can play around with it as you please.

Ready-Made allows you to choose whatever style or template you want from the gallery, and there are many from which to choose. There are project types such as newsletter or poster, and categories such as business or personal. You can also change the tone, style and media of whatever you are doing. This process ensures that you whittle down the possibilities to suit your requirements as quickly and painlessly as possible.

The third option on the Hub is Brand New. If you want to be more adventurous or simply cannot find a suitable template from which to work, this section will allow you to create whatever you want from scratch. Once you have chosen a basic template you can add graphics and photos, import text, and so on. This section is for the more advanced user yet it should not be beyond anyone's capabilities.

The range of graphics, photos and templates is impressive. Housed on five CDs (three art and two photographic) are 92,000 graphics, 20,000 photos and 4,000 professional templates. These can all be previewed without first having access



Above Welcome to the Hub

Right Choose which template you want from here



Left Come and boogie, you groovy hipster

Below Pull a face with Cartoon-o-Matic



to each CD. There are thumbnails (small pictures) of each one on the main installation CD. It is only when you double-click the graphic or photo that PrintMaster will ask you to put the relevant CD into the drive. That way, the image can be loaded in more detail.

There are plenty of other gizmos to be getting on with, too. Cartoon-o-Matic is one of those

gadgets that enables you to alter cartoon characters' facial features by using sliders. It is not the most advanced of its kind by any means, but it's fun.

The Photo-enhancer works on bitmap graphics such as TIFs and GIFs. The basic premise is that you can touch-up the photos as you please — removing the red-eye or erasing mad Auntie Ethel from the Christmas photos, say). It's nowhere

near as advanced as dedicated photo retouching software, but it offers most of the functionality a beginner will need and, more importantly, the whole thing costs only a fraction of the price of a semi-professional system.

For extra graphics and templates, look no further than the

Mindscape web site. As well as offering the usual on-line services like customer support, you can download new graphics and templates.

The manual is particularly well designed. In addition to the package's various parts, there are tutorials to help you out, ranging from newsletters to photo projects. With hints, tips and "bright ideas", it is easy to follow and relatively simple.

The packaging and language used suggests that PrintMaster Platinum is aimed at a young market. This is true to a certain extent, but don't let that put you off. There is plenty of choice, and the package strikes a good enough balance between simplicity and complexity to keep most people interested. Most of all, it is easy to use and well thought through.

Jim Haryott

PCW Details

Price £59.99 (£51.06 ex VAT)

Contact Mindscape 01444 246333
www.printmaster.com

System Requirements Windows 3.1/95

Good Points Comprehensive. Good fun. Easy to use.

Bad Points If you are looking for a professional graphics package, this is probably not for you.

Conclusion Impressive, easy to use and contains loads of photos, graphics and templates with which to play around.

★★★★★

■ Software

The Floyd Consultancy

Shop@ssistant

Beer to Brazil or lingerie to Lagos, here's a headache-free way to sell your products on the web.

Everyone is talking about e-commerce these days. An increasing number of firms are getting web-enabled with a view to opening up new markets. But using the internet to tell people about your products as opposed to actually selling those products are two entirely different things. The way to set yourself apart from the pack is to make your site interactive. More sales are likely to be made if potential customers can not only view your site but also buy your products there and then.

Shop@ssistant is an off-the-shelf product designed to make the prospect of generating automated, web-based sales easier for the beginner. It aims to minimise the headaches associated with the development of online interactive systems. All you need at the server end is the FormMail program, which is provided in the package. Thus, you are not constrained by your ISP's server platform.

The system essentially takes control of your web server, appropriating your index.html page and shunting it off into its own directory, replacing it with its own version of the file. The new index.html file includes code to check for browser versions, automatically turning off JavaScript for those clients that haven't yet upgraded. This is an important feature of the product, as there is nothing quite so annoying as logging on to a site, only to find that it isn't compatible.

Another useful side effect of this approach is that the product can be used to quickly update your existing first-generation web site. Static files providing little more than marketing material can be incorporated into your new, improved site, thereby cutting your time to market. If you're developing a web site from scratch, Shop@ssistant is completely independent of web design tools, meaning that it will work whether you're using, say, FrontPage or HoTMetaL.

Another useful feature is the optional links to the NetBanx online payment system. Floyd representatives say that companies worried about the complexities of secure servers do not need to concern themselves with it, because if they link their transactions to an online payment partner, they are effectively outsourcing the security of the product. Developers with no experience of e-commerce may have a slightly easier time adapting to this concept product than



Left Get a head on the web with the help of Shop@ssistant
Below, left Web surfers across the globe will be able to rent videos from your corner shop... but will you ever get them back?



those with a bit of background knowledge, because they will have no preconceived fears about what is secure and what is not.

Developers are given the opportunity to use other payment systems but Floyd is obviously friendly with NetBanx, because the product pushes the system heavily. If developers do not want to take the online payment route, though, they can offer the more conventional cheque/cash, call-back, cash on delivery or unsecure server options (although personally, I wouldn't be seen dead buying over the last). For those who want to get really sophisticated, it is possible to automatically calculate carriage charges based on product-dependent variables such as weight, volume and destination zone.

Because the product is aimed at the beginner, a welcome feature is the sample sites that come with the software. The "e-commerce in a box" idea is bound to make developers feel more at home. Furthermore, if you're running a bookshop, a bottled-beer shop, a lingerie outlet, a deli food emporium or a map shop, you'll feel right at home because these are the specific examples provided. Each of them is designed to highlight a particular variation in layout such as the listing of

same-price products in multiple variations, or the listing of multiple products on a single page, with the ability to purchase any or all items. As different types of business will

have different layout needs, this helps to make the product more developer-friendly.

On the whole, this product is encouraging for first-time e-commerce users, although there are some caveats. The version that we received could have used a step-by-step tutorial. It could have been a little more user-friendly in terms of online help, too, although the company's helpline was very attentive. But these are small points. On the whole, the software will go a considerable way towards bringing the hazy world of e-commerce into focus for smaller companies. Even larger firms like Vision Express are using it, which is surely a good sign.

One final piece of advice. If you're going to install any sort of e-commerce product, make sure that you have the back-end logistics in place to deal with web-based orders. When you set out your stall on the internet, anyone can walk in, so you must make sure you'll be able to cope if you receive sales enquiries from web-surfers in Brazil, say. And don't forget to keep your site up to date.

Susan Pederson

PCW Details

Price £233.83 (£199 ex VAT) single site licence
Contact The Floyd Consultancy 01256 880 770
www.floyd.co.uk

System Requirements For development: Windows 95 or higher, web browser. For hosting: access to one of the supported scripts that convert form submissions into email.

Good Points Off-the-shelf solution that is cheaper than using a professional developer.

Bad Points Might take the beginner a while to get the hang of it.

Conclusion Worth a careful look if you want to set up shop online.

★★★★★

■ Software

Paint Shop Pro 5

This bargain graphics program just keeps improving and now it has gone for the layered look.

Paint Shop Pro started life many years ago as a shareware file conversion utility. It has remained very capable at translating files between proprietary bitmap formats as well as from vector to bitmap. That aside, the regular addition of new features has changed it almost beyond recognition.

Version 5 adds a raft of new features that will be greatly welcomed by users of version 4.12, including image layers, multiple undo with history, CMYK separations, picture tube brushes, Bézier curves and support for Photoshop plug-ins.

Despite the fact that it now has a feature set that puts it in the reckoning with far more expensive packages, Paint Shop Pro remains shareware. You can download a 30-day trial version from www.jasc.com, and paying a £69.95 registration fee for a permanent licence gets you a printed manual and CD with image files and a tutorial. The 6.7Mb zipped file takes around 45 minutes to download on a 28.8K modem or 15 minutes on a single-channel ISDN line.

Probably the most welcome new feature is the introduction of layers. These allow you to carry out non-destructive image editing, which is to say you can put text or other images on top of the background layer without obliterating what's underneath. Paint Shop Pro's layer palette allows



Left Retouching brushes allow you to apply effects selectively, particularly when used with a selection mask

Below Animation Shop lets you create and view animated gifs and there's a wizard to help you along the way

a revamp. You can now save selections to alpha channels, which means you can use them again and again without having to reselect. Alpha channels can be modified using filters or the image-editing tools to create sophisticated selection masks, through which retouching effects can be applied.

The retouching brushes have been expanded and there's now a worthwhile selection of effects that you can paint onto layers. A dual-function tabbed control palette lets you first select from over 12 modes including the unpleasant-sounding "hue up", sharpen, emboss, dodge, burn and smudge. You can also modify these effects by selecting varying paper styles. Then, using the brush tip panel, you can set the size and shape of your brush as well as opacity, density, hardness and step. Applying "filter effects" in this way may take a little longer, but you have far more control than with the more usual overall method.

Another plus is the new Explorer-style browser which shows thumbnail previews of your images, and lets you drag-and-drop to create new files and new layers within existing images. You can copy layers between different images using drag-and-drop, too.

If you've used Painter 5 or Corel Photopaint 7 you'll be familiar with the concept of Picture Tube brushes which allow you to paint using an image as a brush. Picture tube brushes take the idea of a stencil, or potato stamp as a starting point, but offer greater flexibility. As you paint, the selected image is stamped onto the page. You can have up to 12 different images in a tube and a different one is printed each time, depending on user-selectable parameters such as brush angle, speed, or if you're using a tablet, pressure. For example, you could quickly create an entire forest, using a

picture tube, with a selection of trees of different sizes and varieties. Trees are not on offer but you do get coins, letter blocks and pointing hands. You can design your

own picture tube brushes and there are others which you can download from the jasc web site.

If you fancy yourself as a web animator, you need look no further for animation tools. Animation Shop provides an excellent environment for the creation of animated gifs. A wizard takes you through the process. Having first created the individual frames in Paint Shop Pro you can order them, select a frame rate to determine the speed and set it to loop or stop at the end. You can then play it to check whether it's what you expected before making any necessary modifications.

You can optimise your animation for the web using the optimisation wizard. This reduces the file size by compression and by reducing the number of colours in the palette without too much of a compromise on quality. You can compare the file size pre and post optimisation, and the wizard also provides information on download times using modems of various speeds. This is first-rate stuff.

Ken McMahon



You can quickly create composite images using the layer palettes, opacity sliders and blend control pull-down menus

you to rearrange the order of layers as well as providing control over layer opacity and blending. Lock buttons allow you to guard against making changes to a layer accidentally, and toggle switches let you turn layers off to remove unwanted clutter while you work on a detail. These kinds of features make creation of composite images and photomontages a breeze.

Creating such images requires precise control over image selections and these have undergone

PCW Details

Price Shareware. Full working version on 30-day trial. Registration £69.95

Contact Digital Workshop 01295 258335
www.jasc.com

System Requirements Windows 95 or NT4.

Good Points Now with layers, alpha channels and lots of other new features, plus an excellent gif animator.

Bad Points No filters of its own.

Conclusion An absolute bargain. If you don't believe it, try before you buy.

★★★★★

Software

Thomson Business Search

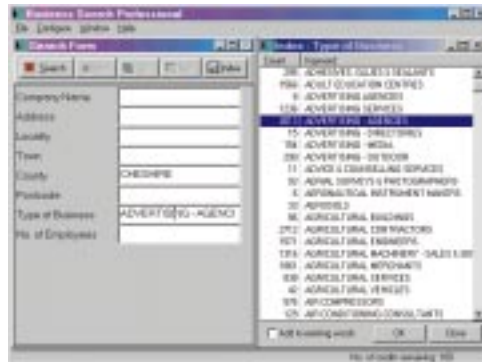
Will this directory succeed where other CD versions have failed? PCW flicks through the pages.

The advantages of having a business directory on CD are self-explanatory. It is faster to search, and you can cram more information into a smaller space. Unlike internet-based directories, you do not require a net connection.

Business Search Professional can be installed as a standalone product or as a network-based resource. Once loaded, the CD is simple to use. The left-hand side of the interface consists of a row of boxes to fill in the search criteria. These are pre-defined as Company, Address, Locality, Town, County, Postcode, Type of Business and Number of Employees.

On the right is an index of the available options for each criteria. As you fill in your chosen box, the search engine double-guesses what you are looking for and finds it in the index, saving time and making sure you have the right keyword to further your search.

You only have to fill in one or two criteria to find what you are looking for, depending on how wide or how narrow you want your search to be. So, if you are looking for a builder in Central



London, you can either choose London or make your search more specific by searching just a couple of postcode areas. You can search for more than one keyword at once, so, for instance, you could search for builders in EC2 and EC4 simultaneously. This function does not always work as well as it might, but it does help to narrow down the possibilities.

The amount of data itself is very good, as one might expect from Thomson, and it is updated with new editions every six months. All the details you need are there, including address, telephone

Comprehensive indexes speed up searches

number, type of business and number of employees. You can export a certain number of records to an external database, although each time you do this you are charged between two and five credits. The CD comes with 500 credits, and once you have used these up you can buy another 500 for £39.95 (ex VAT).

You can print records as labels and print the search result lists, although again you are charged one credit for each sheet you print.

Adele Dyer

PCW Details

Price £93.94 (£79.95 ex VAT) inc. 500 credits.

Contact Thomson Directories 0645 636261
www.thomson-directories.co.uk

System Requirements Win3.1, Win95 or NT.

Good Points Easy to search. Packed with data.

Bad Points Some search functions are ill-refined.

Conclusion An excellent directory.

★★★★★

PC Audio Guide

This guide to Windows 95 will explain the quirks of this Gates phenomenon. Just in time for 98!

PC Audio Guides covers all manner of things PC. This particular one is for that ever-so-quirky OS you've probably all heard of, namely Windows 95.

A quick glance at the CD cover tells you that, as far as learning about Windows 95 is concerned, "a simpler method does not exist". And it's not wrong, for PC Audio Guides are just that; accompanying audio guides for your PC. There is no software at all on the CD, and all you really need is a PC that runs Windows 95 and has a CD-ROM drive. But you don't really even need one of those if you have a CD player on your stereo close at hand.

There are 95 tracks covering most facets of Windows 95 and there is certainly more than enough to be getting on with for your average beginner, at whom this package is obviously aimed. The CD sleeve has all the tracks on it, plus an alphabetical index of each application or task to make it easier to locate. It will tell you how to cut and paste, minimise screens, add printers,



and many other tasks, too. Be warned that anything more complicated than that is not on this CD, so if you want to connect your PC to a server or add a new graphics card to your PC, the stalwart medium of books would have to suffice on that count.

As for the integrity of the content itself, the first thing to note is that the actors' voices are clear, concise and British. In the background is a mélange of relaxing guitar music, the ilk of which

Windows 95 may look complicated but PC Audio Guide can help you master the basics

you might encounter in a supermarket. This guide is easy to use and runs you through the important Windows 95 capabilities. It even explains how to activate disk defragmentation and scandisk options to prevent disasters.

Jim Haryott

PCW Details

Price £9.99

Contact Zain Media UK 0171 363 6133
www.zainmedia.com

System Requirements Windows 95.

Good Points Cheap. Easy to follow. It is ideal for a real beginner to Windows 95.

Bad Points It does not cover some of the more complicated aspects of the operating system.

Conclusion A great way to get a foothold on the cliff-face that is Windows 95. You will soon want to move on, though.

★★★★★

Software

Serif MailPlus 1.0

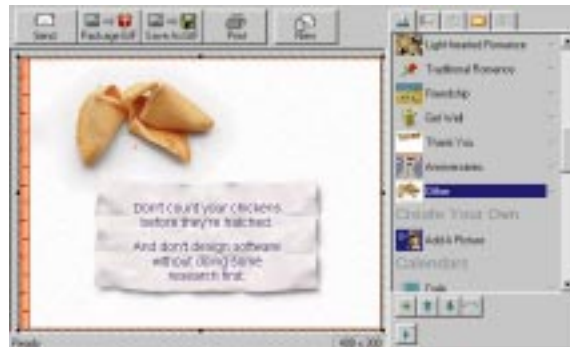
This product is intended to put a sparkle into your emails, but all that glitters may not be gold.

Ever wished you could add some class to your email? Back in Victorian times people would write two or three letters a day in perfect, flowing handwriting. These days, people dash off emails that are little more than the electronic equivalent of a scrawled note on the back of an envelope.

Serif wants to change all that with its MailPlus product. It is an email composer that lets you add graphics to your messages.

Designed to work with all popular email clients including AOL, Eudora, Outlook and Netscape Navigator, it provides thousands of different predefined message combinations. Users can choose from birthday or anniversary greetings, for example, along with electronic party invitations or holiday greeting cards.

Once you've selected your scheme, you can customise it to suit your own needs. As it is digital-camera ready, you can send embedded pictures of your cat across the Atlantic.



One of the more tasteful emails available with Serif MailPlus

Even though the program seems to offer everything, there are drawbacks. The set of predefined message types is very US-centric. Send your granny in Luton a Fourth of July or Labour Day card and she'd be a bit confused.

The picture capability is really the only other notable product feature, and this also presents problems, as a picture takes up an awful lot of bandwidth. So, you'd better be sure that the recipient has a reasonably fast ISP connection, or choose graphics files that are not too complex.

One good thing about MailPlus is that its built-in intelligence works for you, handling the spacing, formatting and colour balancing each time you create a message. The designs aren't breathtaking and, for the price, I would have liked to have seen some more stock photos, cheesy though they are. The product also falls into the trap of assuming that all men love fishing and cars, while all women adore animals and flowers.

It would be OK as a shareware product, but I'd rather make a £30 long-distance call than send someone a Serif MailPlus-enhanced email.

Susan Pederson

PCW Details

Price £29.95 (£25.49 ex VAT)

Contact Serif 0800 3767070 www.serif.com

System Requirements Windows 95, email client.

Good Points So simple, it's a no-brainer.

Bad Points You're never going to be accused of being the next Andy Warhol.

Conclusion Only worth it if you plan to send hundreds of emails.

★★★★☆

i-CD

Telephone directory information on a cheap CD — but reverse searches could be abused.

In most countries, addresses and phone numbers are regarded as public information, freely available. All-US directory CDs have for years been on sale for a few dollars. Similarly, printed directories and 192 (then DIR) calls were free in pre-privatised Britain. But BT claimed ownership of phone numbers and soon imposed high charges for directory information.

This monopoly might have been excusable if it had been used well; but it was not. As an alternative to costly 192 calls, BT introduced a rudimentary online service which was barely promoted and used an interface apparently designed in 1863 (even today, BT offers no web-based enquiry service).

If you wanted better, you had to fork out the best part of £2,000 for a 192 CD, plus hundreds of pounds a year for updates. Prices have fallen since, but BT nevertheless deserved to get shafted over the matter. Yet it was with mixed feelings that PCW's Newsprint reported in 1996 that a German company was offering a pirate 192 CD for just £20. BT had at least tried to protect privacy, whereas the pirate CD allowed you to carry out reverse searches by putting a name and address to a phone number. The CD was also



flaky and inaccurate, having been based on machine-interpreted scans of printed directories. It was withdrawn after court action from BT.

The i-CD is faster, with a far better interface, and is said to be based on commercial data sets, including electoral rolls. Even people without phones are listed, which broadens its use into some questionable areas (the vendors point out that the information has always been available, at a price).

We looked at the basic version which allows only simple searches. The Pro version offers reverse searches. Some listed numbers are out of date, though it is hard to say whether the

We've intentionally left the details out of this screenshot, but for the most part it's easy to track down the numbers you want

proportion is higher than with a normal phone directory. And the indexing is eccentric: the data covers all of Britain, yet some counties aren't listed by name.

At the price, you can hardly go wrong. But beware: if you are caught abusing the information on the CD, you could be liable to prosecution.

Clive Akass

PCW Details

Price £20, or £169 (ex VAT) for the Pro version.

Contact i-CD 01703 450450

System Requirements Windows 95 or NT.

Good Points Easy to use. Comprehensive.

Bad Points Intrusive. Some inaccuracies.

Conclusion Cheap at the price.

★★★★☆

■ Software

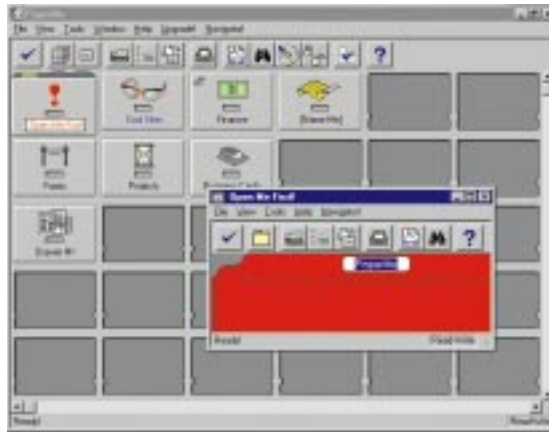
Esselte Paperlite Live

Can't even get close to achieving a paperless office? OK. So if you've got it, file it on your PC.

Hardly a month passes without the release of the latest product to usher-in the "paperless office". With Xerox's recent figures showing that offices' demand for paper is growing, not diminishing, this PC industry cliché seems as far away as ever from becoming reality. The paper-free advantages offered by the net have been countered by the amount of paper used in printing-off articles.

Paperlite Live, a new "filing cabinet" for your PC, angles itself as the complete solution to these problems. You can scan paper documents into its in-tray, grab pages from the web (complete with hotspots) or print directly to the in-tray from Microsoft Word and Excel.

The files are kept as images on your hard disk, along with a text version made by analysing the image. This text version is used for searching cabinets for certain words, making retrieving documents easier than rummaging through that five-foot high pile of paper on your desk. The retention of the original scanned images makes a



dependent on your hard-disk capacity, but it's infinitely preferable to be able to refer to a document as it originally looked.

The software is easily installed, as are the macros for printing from Word and Excel. It resembles a 2D filing cabinet with many drawers and folders. Sadly, folder level is as far down as it goes, which means you can only have a three-level structure; a hindrance, but it depends on how you like to organise your information.

It's possible to import files from Windows, too

One of the common complaints with virtual "filing cabinet" software is that the effort required to connect applications and scanned documents to the filing system discourages the users from bothering. Here it works well, especially with scanned documents and web pages. Printing documents (singly) to the cabinet from Word and Excel is easy, but it's a shame there is no batch conversion utility so that you can transfer a number of old documents simultaneously.

Paul Trueman

PCW Details

Price £104.58 (£89 ex VAT)

Contact Esselte 01954 786205

www.esselte.com

System Requirements Windows 95, scanner.

Good Points Very easy to use.

Bad Points Needs lots of storage space.

Conclusion A useful utility for people buried under mounds of paper.

★★★★★

Which? Software TaxCalc 98

If the thought of tax taxes your brain, this helpful package may be the answer to your prayers.

Tax: we all hate it and we all have to pay it. To add insult to injury, it's so complicated that anyone doing anything out of the ordinary, like driving a company car or being self-employed, needs a PhD in jargonese just to be able to read the tax forms, let alone fill them in.

If you want to be able to work out your tax, especially if you are among the nine million people who now have to fill in self-assessment forms, but don't want to shell out for an accountant, TaxCalc 98 could be your saviour.

The fundamental concept behind TaxCalc 98 is simple: you enter every single bit of information about your tax-related activities and the software will produce an Inland Revenue-acceptable report which you simply have to check, sign and date (for self-assessment). Additionally, even if you are employed by a company, you can work out the tax you *ought* to be paying for comparison with what you *are* paying. After all, nobody, not even the Inland Revenue, is infallible.



It takes into account tax incurred by company cars, mobile phones, capital gains, share dividends and so on. There is superb context-sensitive help whereby you right-click on a confusing box and it gives you a simple, plain-English explanation of what you need to enter. However, the Interview, the section where you enter all the information about yourself, is unnecessarily complex. Instead of having a simple wizard to guide you through the process,

TaxCalc 98 can help you make sure you're not paying over the odds

you have to navigate the different sections yourself. It doesn't take a tremendously long time to get to grips with the system, but it's a shame that it's not easier.

Using TaxCalc 98 might not be the last word in entertaining pastimes, but compared with paper forms and reams of meaningless Inland Revenue documents, it's a lot more fun.

Adam Evans

PCW Details

Price £29.99 (£25.52 ex VAT)

Contact Which? Software 0990 084201

www.taxcalc.com

System Requirements Windows 3.11, 95 or NT.

Good Points Does what it says on the box.

Bad Points Takes a while to get the hang of the interface.

Conclusion If you need to work out tax, buy TaxCalc 98 now.

★★★★★

■ Hardware

Kodak DC 210 & Sony Mavica MVC-FD5

Digi-pix for either the budding Vermeer or the happy snapper.

If I had no need of instant electronic images, I would not think of buying a digital camera until their prices drop. Conventional models are far better value. But I do need digital pictures and I have made extensive use of the Sony Mavica MVC-FD5 for some six months, and of the Kodak DC210 for about three.

The 210 is the latest of Kodak's DC series and is heavier than a conventional family snapper. There are two LCD screens: a 1.8in preview at the back, and a smaller, status screen on top. You can use the rear LCD to frame your shot, but to save batteries (two AAs) you should favour the conventional eyepiece. A bundled 4Mb flash card stores up to 60 images. The CCD sensor offers resolutions up to a genuine (as opposed to software-generated) 1,152 x 864. You can download the pictures to a PC via a bundled cable or infra-red, and there is a TV output.

Digital cameras are more tolerant than film and almost any graphics package will allow you to correct poor exposures. It is a mistake to think that digital images are poor cousins of film. On occasions, the DC 210 proved remarkably sensitive. I took one casual indoor shot: with yellow light filtering through a window, the scene looked like an old Dutch painting: the digital sensor brilliantly captured the light and subtle variations in the wall colours. You *might* have done better with film, but not without much careful setting-up.

Digital cameras are something of a poisoned chalice for Kodak, which faces long-term decimation of its money-spinning film business. It is trying to compensate by encouraging users to send files in for colour printing, just as they do with film. So, bundled

with the camera along with software like Adobe Photodeluxe, is a photo-management module designed for novices and including a facility for uploading files to a Kodak bureau.

The 210 comes with a 2X zoom, equivalent to a 29-59mm lens. This range is too small for my liking, and models with larger zooms are available for less than the 210's price tag. These include the FD7, big brother to the other digicam I have been using, the Sony Mavica MVC-FD5.

At first sight the FD5 is less desirable than the Kodak, with a CCD boasting only 380K pixels, a fixed-focus 47mm-equivalent lens and a maximum 640 x 480 resolution. You frame your shot through a 2.5in LCD screen on the rear panel, but it is difficult to tell if your subject is in focus. This is no problem in good light with a large depth of field, but it makes indoor photography something of a hit or miss affair (although there is a macro facility for close-ups).

There are many tasks which require no more than a snapshot and the Mavica has one useful feature offered by no other digital camera: it stores photos on floppy disk.

You may not think this is a big deal. If so, you probably do little travelling and have never tried to download pictures via a slow serial cable. The Mavica can pack up to 40 pictures, of good enough quality for web sites, onto a single floppy disk costing a few pence and available everywhere.

You can transfer pictures in seconds to any PC. No special software to load, no messing with cables. I simply selected up to 15 pictures on the disk and dragged them *en masse* to

PaintShop Pro for sorting and editing.

The rechargeable battery lasts for days of heavy use as the disk drive only draws power during accesses. All of which means you can take as many pictures as you want and can afford to be hit or miss about your shots.



The FD-5 is good for happy snappers who are not too concerned with image quality. I would personally go for the FD-7 which offers the same features plus an auto/manual focus and a 10:1 optical zoom, equivalent to 40-400mm.

Both the Kodak and the Mavica proved robust, withstanding sustained periods of vigorous handling without a single hiccup.

Clive Akass



PCW Details

Kodak DC 210

Price £599 (£510 ex VAT)

Contact Kodak 0800 281487 www.kodak.com

Good Points Easy to use. Good results.

Bad Points Limited zoom.

Conclusion Good buy if high resolution is a priority.

★★★★★

Sony Mavica

Price FD-5 £450 (£383 ex VAT); FD-7 £600 (£511 ex VAT)

Contact Sony 0990 424424 www.sony.com

Good Points Simple. Robust. Floppy drive more useful than it sounds.

Bad Points Capricious focusing (FD-5 only).

Conclusion Excellent visual notebook; not good for high-class photos.

★★★★★

We welcome readers' contributions to our Long Term Tests section and pay for those we publish. If you've used a piece of hardware or software for some time, write 300-words for hardware or 650 words for software (plus GIF-format screenshot for the latter) and send it on disk in MS Word or ASCII format, to Paul Trueman at the usual PCW address, marking your envelope "Long Term Test". Or email it to paul_trueman@vnu.co.uk.

ZipFolders & Partition-It

This portable's previously obese hard disk was turned lean and hungry with these two utilities.

My portable computer folds up small and packs useful computing power but its 540Mb hard disk rapidly fills up.

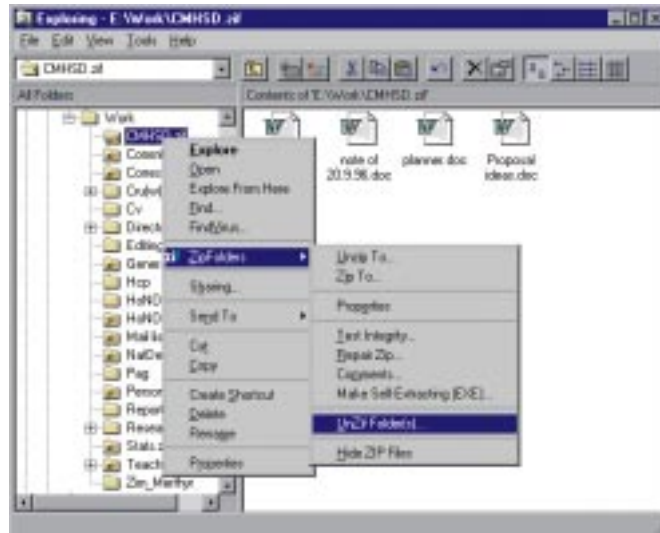
Plugging in another disk was just not an option. I considered compressing my disk with DriveSpace, but the thought of committing all my files and data to a single compacted file did not appeal; I feared that corruption of one document might cause the loss of the whole drive. Then I came across ZipFolders. Since having downloaded and installed it, I have not looked back.

ZipFolders (now incorporated into ZipMagic) is a low-level utility which loads at startup and opens ZIP files as folders (with a .zif extension). These are then seamlessly incorporated into the file system of Windows 95. Explorer opens them just like any other folder but displays them with a .zif extension. The ZIP files are still there; the ZIF folders are an illusion.

Alternatively, ordinary folders can be zipped and files and applications within them used as usual, which can be very useful. For instance, I have a number of PowerPoint presentations on my machine. If they contain graphics, these can take up several megabytes and cannot easily be backed up nor transferred via a floppy disc. In compressed form they may only take up a few hundred kilobytes. This saves disk space and allows them to be archived on floppies.

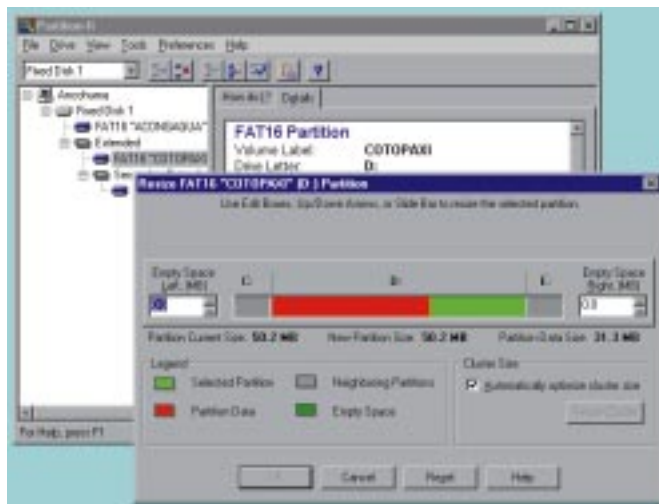
ZipFolders provides the best of both worlds: files can easily be accessed while taking up little space. Compressed downloads can be accessed and read as soon as they are downloaded, without the hassle of extraction. ZipFolders can also translate a raft of archive formats to ZIP format and can be extensively customised. ZIP files can be shown or hidden, as preferred.

There is one problem, though. There is an occasional speed penalty, and with large files (and a 75MHz Pentium) extraction can be excruciatingly slow; my machine has occasionally hung. I now mainly use ZipFolders to allow me to keep large documents on disk that I would otherwise have to archive elsewhere. If I want to use them, I tend to move or copy them to an



Left ZipFolders enables you to compress space, gobbling up files into a fraction of their former selves

Below Windows 3.1 and Windows 95 see partitions as completely separate drives, allowing you to manage your data more easily



uncompressed directory. The alternative, of course, is to simply uncompress the ZipFolder to an "ordinary" one and access files as normal. Running simple programs or opening Word documents has never been a problem.

My bulging hard disk made me aware of another problem — large cluster sizes. With a single partition on a 540Mb disk, these are frustratingly large. A disk usage utility indicated that 20 percent of my disk was wasted, so I invested in Partition-It. This is similar to Partition Magic, but cheaper. It is a Windows 3.1/95 utility which repartitions discs on-the-fly but does not provide boot managers etc. This was quite sufficient for my needs so, after having backed up important work, I loaded and ran it.

It worked like a dream. The interface is clear and simple. I was able to convert one large partition into three: the original to keep Windows 95 and installed applications, D for internet

applications and downloads, and E for work. This process regained 25Mb of disk space without hitch or murmur, and was as simple as moving a slider with the mouse and clicking OK. Partition-It allows you to set partitions as primary if you wish, as well as to choose FAT type and cluster size. It can move applications between partitions, but it seemed a little more risky to meddle with the depths of the registry and I have not attempted this in earnest.

These two utilities have worked superbly and without hitch. Partition-It has allowed me to re-organise my hard disk and recover useful space, ZipFolders has worked quietly in the background of the file system without a murmur and without corrupting or conflicting with anything. ■

PCW Details

ZipFolders (now ZipMagic)

Price £29.95 (registration)

Contact Astrossoft 0149 453 3393

Good Points Easy to install and arrange.

Bad Points Nothing obvious. Occasional problems with large files.

Conclusion A brilliant concept. Superb implementation.

★★★★★

Partition-It

Price £39.99 (£34.03 ex VAT)

Contact Quarterdeck 0645 123521

Good Points Simple. Effective. Safe as far as tested.

Bad Points No boot manager. Limitations with non-Windows operating systems.

Conclusion A sound buy.

★★★★★

■ Software

1 YEAR
TEST

Visio 4

Companies wanting to produce their own schematic drawings will be in business with Visio 4.

When businesses need to produce basic schematic drawings, they have several options. One is to use the basic drawing tools offered as part of a package like Microsoft Word. Another is to go for a full-blown CAD application (and associated hardware costs). Yet another, and often most suitable option, is to employ a package like Visio 4 which provides an effective low-cost solution to producing schematic diagrams, organograms, office layouts and other documents that may be required by many small to medium-sized firms.

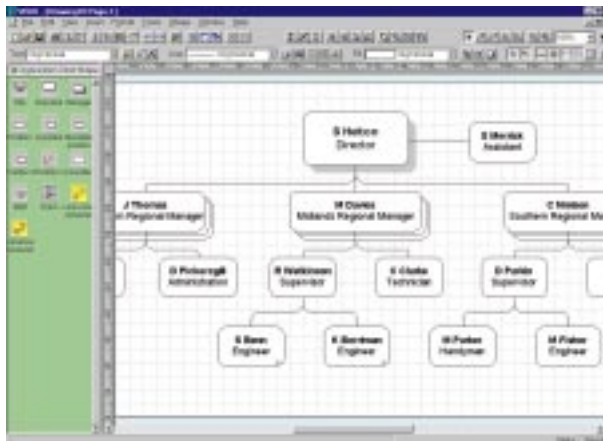
Installation was a painless affair, with both 16- and 32-bit versions supplied. Once running, Visio allows the toolbars to be altered to resemble any of the three main office suites (Office, SmartSuite and Perfect Office), a nice touch that builds user confidence through familiarity.

When starting a new drawing you have the option of opening a stencil alongside the main drawing area. These stencils are Visio's secret weapon and contain "smart shapes", resizable drag-and-drop shapes that enable drawings to be quickly compiled.

Various stencils are provided which give the user access to smart shapes for organograms, office layouts, networks and even maps of the world. Multiple stencils can be open, and can be docked to the left or right of the main drawing area, or left floating.

Once the required smart shape has been selected, it is dragged and dropped onto the drawing proper, where it can be rotated, flipped, filled, shaded or, if you can't be bothered, just left as it is. Shapes can also be joined with a sticky connector that continues to link the shapes even when moved. Callouts can be used to add descriptions or information to the shape. Standard drawing tools are well catered for, allowing non-standard shapes to be drawn, manipulated and grouped for easy copy-and-paste actions. Control over the drawing components can be made to fractions of a millimetre if necessary.

Extensive use of the right mouse button is made within the program, giving context-sensitive menus for the selected item. Shape help is also available for every shape in the stencils, giving information on usage and placement.



The toolbar can be made to resemble your favourite office suite (left), while the stencils and smart shapes allow you to build up a seemingly complex schematic with ease (below)

where they were renamed. Connection points were added to allow easy linking and the stencil was then saved in the standard Visio

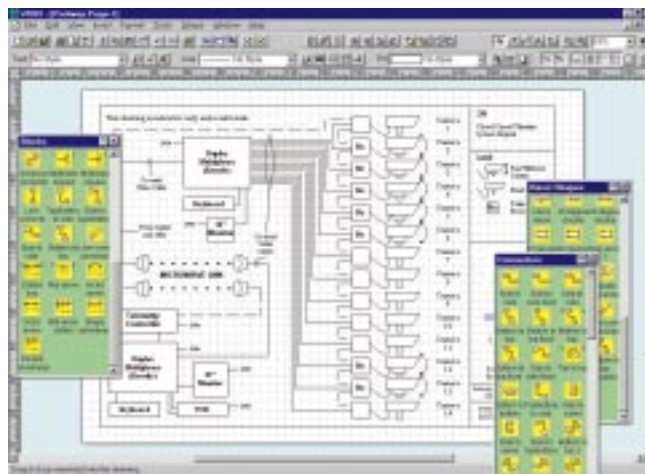
stencil folder, making it available among the list presented by Visio.

The template of the blank schematic drawing was created next, complete with title bar and company logo, the latter in the form of a bitmap. This template, together with the newly created stencil, was saved as a workspace, ensuring that when the template was opened, so would the stencil. And that was basically it. An hour of work has allowed me to create diagrams using standard symbols time and time again.

As with all graphics-intensive programs, running Visio will be aided by a reasonably fast processor, a good graphics card and plenty of RAM. The latter was proven by my upgrade from 32 to 64Mb, a move that showed a marked improvement in redraw speed. Screen real estate can also be an issue, particularly with multiple stencils open, and 1024 x 768 resolution should be considered a bare minimum if you are to use Visio for any length of time.

For all its user-friendliness, Visio can be dauntingly complex if you look too deep. But for the majority of users, myself included, it will produce excellent results with the minimum of fuss and effort.

Stacey Helton



Visio helpfully includes wizards to produce basic drawings on your behalf, including project timelines, organisation charts and graphs. While the result of the wizards' work can appear sparse, they are a good basis from which your document can evolve. It is even possible to create Visio's version of the hyperlink, where right-clicking on a link-enabled shape will produce an option to go to another page in the document, or another document entirely. Also included is an excellent file conversion utility to allow files from competitive applications to be incorporated in your Visio document.

While Visio has been extensively used by my employers to produce company organograms, my main use for the program has been for schematic diagrams that did not warrant the use of an expensive CAD application. I decided to create my own templates and stencils specific to my business.

My first task was to create my own stencil that would hold my smart shapes. A blank stencil was opened, my smart shapes were created on a blank drawing and then dragged into the stencil

PCW Details

Price Visio 5 Standard £116.33 (£99 ex VAT)

Contact Visio 01372 847800 www.visio.com

Good Points Ease of use. Reasonably priced. 16-bit users still catered for.

Bad Points More complex options can be confusing. Smaller screen resolutions can appear cramped.

Conclusion The answer to most small to medium-sized companies' prayers when it comes to producing business graphics.

★★★★☆



Room to move

Huge file sizes crippling your hard disk? A removable storage device is the answer. Roger Gann reviews the options and tests the available products.

Until comparatively recently, the range of removable drives available on dealers' shelves was comparatively narrow. Over the past couple of years though, the number of removable disk drives on the market has mushroomed to the point where we are now spoiled for choice, both in terms of capacity and the technology used.

So why has removable storage become so important recently? Simple. Data and program files have ballooned in size due to the impact of factors such as Windows, the internet and multimedia. Once upon a time, a 1.44Mb floppy could comfortably

accommodate your data files — but no longer. Another factor in the growth of removable storage has been the growing disparity between the capacity of the typical hard disk and the standard removable drive fitted to all PCs — the humble floppy disk. Previously you could have expected to back up your hard disk on less than 20 floppies — a not unreasonable number.

Times have changed, and we no longer have 10Mb hard disks, yet the floppy's capacity remains stuck firmly at its 1983 level of 1.44Mb. A modern hard disk would require four or five thousand floppies to back it up.

ILLUSTRATION BY Paul Shorrock

Uses of a removable drive

There has always been a market for removable disk drives. They offer many advantages over conventional, fixed drives. One obvious use is that they enable you to easily exchange files which are too big to fit on floppies.

They're ideal for archiving data, for near-line storage (data you access by quickly swapping disks), for backup (with media costs that challenge tape's, per megabyte) and as relief for overburdened hard disks. Indeed, it is possible to treat larger removable drives as primary storage from which you can boot. Removable drives enable you to secure sensitive data by locking it in a safe. And with a removable drive, a group of users can share a PC, with all users retaining control of their desktop data.

Removable drives let you access different applications and different operating systems by changing disks. They also offer unlimited storage, in that you can always insert a new disk when one fills up.

Choosing a removable drive

- Decide the minimum capacity per disk or cartridge you will require, but do not ignore higher-capacity drives that are still within your budget.
- Pay attention to the cost of media (printers and consumables); the true cost of a removable drive has to include the cost of all the cartridges you're likely to buy.
- Durability is something else to consider if you want to archive data. Magneto-optical technology claims to have the longest shelf life — about 30 years — and is immune to most threats that render normal magnetic media useless. All this assumes, of course, that our "antique" technology will still be around in years to come!

Choosing an interface

The choice of interface is an important consideration when selecting the right sort of removable drive for your PC. As with conventional hard disks, the two most common interface types for removable disk drives are IDE (also called EIDE or ATA) and SCSI. Both come in several versions, with the latest doubling the peak data transfer rate of its predecessor: in the case of SCSI, this is Ultra 2 SCSI, and in the case of IDE, it's DMA/33 or Ultra ATA.

You will not actually need the throughput offered by these high-performance interfaces for your removable drives, for the simple reason that they are all too slow to take advantage of the performance gains these interfaces offer.

While all PCs ship with a pair of IDE channels as standard, making it cheap 'n' easy to add another IDE device, SCSI interfaces are rarely supplied as standard. Buying a decent SCSI host adapter can cost £150 (more than the cost of most removable drives) so the SCSI option, though technically attractive, is only economically viable if you've got such a card already installed.

Most drives are available in both internal and external versions. Although there are three interface options (IDE, SCSI and Parallel), parallel drives are always external and IDE drives are always internal. Only SCSI is available in both versions. ➤



Alternative removable storage technologies

In this review, we've concentrated on drives based on some form of magnetic technology, either Winchester or magneto-optical (MO). But the market includes a number of alternative removable storage technologies.

- First and foremost is CD-ROM. A CD-ROM has a capacity of 650Mb and you can now pick up CD-R writers for less than £200, with blanks costing about £1 each if bought in quantity. The resulting CD-ROM discs are thus cheap to burn and are a good medium for distribution — after all, who doesn't have a CD-ROM drive these days?

However, the writing process is painfully slow compared to say Winchester technology, taking at least 20 minutes to fill a 650Mb disc. The rewritable CD-R/W technology is more flexible, allowing data to be selectively erased but the resulting discs are only readable on MultiRead CD-ROM drives, which hugely restricts their application. They're also very dear at about £15 a pop. Overall, CD-ROM offers a mixture of advantages and disadvantages.

- One oddball removable technology is PD/phase change, originally developed by Panasonic. This is essentially a variant of MO,

which uses a laser to change the structure of the recording layer from crystalline to non-crystalline. The Panasonic PD drive acts as an ordinary 8X CD-ROM drive. However, it can also take a £20 650Mb MO cartridge to which it can read and write. However, Panasonic ploughs a lonely furrow with this technology and there are superior alternatives available.

- Sadly, the promise of DVD-RAM remains just that. At the beginning of last year, with DVD-ROM drives about to ship, the promised DVD-RAM standard not only looked to be a sure winner but seemed likely to be the future for optical storage in general.

Today, though, DVD-RAM has become just one of four variations on 120mm rewritable optical discs, all ready to re-run the BetaMax vs VHS battle to be the successor to the 650Mb CD-ROM format. The first-generation DVD-RAM standard will offer 2.6Gb per side so expect to see single (and double-sided discs). Today, £350 will buy you a Hitachi GF1050 DVD-RAM drive. Second-generation DVD-RAM drives with 4.7Gb per side are slated for 1999.

With hard disk technology improving and getting cheaper, it might make more sense to

buy a DVD-ROM drive plus a removable drive than to buy a writable DVD unit. Although cartridges for removable hard drives will probably cost more per Gb than discs for optical drives, none of the optical read-write contenders will offer anything like Winchester-class performance.

- Another alternative is tape. Tape drives are the traditional backup medium and the cost per megabyte can be very low. Tape drives are cheap, too. An 8Gb Travan 4I drive costs less than £250. But tape is a serial medium and so using tape as a random access device requires a high degree of patience.

There are some software packages that allow you to treat tape drives as virtual disk drives but these are dependent on hard disk-based caching. The new Iomega Ditto MAX Pro drives have a 125Mb "Flash file" section at the start of their cartridges, which can be treated as a virtual disk drive, with a claimed five-second access time.

- Finally, do not forget that if all you need is extra storage capacity, adding a second hard disk is relatively easy and very affordable. For instance, a four gigabyte drive can cost you as little as £115.



3

If you have a notebook, your options are restricted. You can hang a parallel port drive off a notebook, or plug in a SCSI PC card plus external SCSI drive. Or you can plug in something like the Avatar Shark 250.

Performance criteria



4

While no removable disk can quite match the performance of a top-notch fixed hard disk, some come relatively close. Overall though, their performance varies considerably, from those with hard-disk-like throughputs to others

barely faster than floppies. However, higher capacity generally goes hand in hand with better performance, and some technologies perform better than others.

- At any given capacity, those drives using Winchester hard-drive technology, like Avatar Peripherals' Shark 250 (5), Iomega Jaz, Nomai 750.c and SyQuest's EZFlyer 230, SyJet and SparQ tend to be the best performers. Next in line are those with MO or phase-change optical technology. Bringing up the rear are those that use floppy technology or variations thereof, such as the Zip and LS-120 drives.

- Pay attention to the performance spec. Ignore the average seek time, which tells you only how fast the drive head can get to the correct track on the disk. A more meaningful gauge of performance is the average access time, which equals seek time plus latency — the time it takes to rotate the disk to the right place on the track. Average access time tells you how fast the head can reach the data it's seeking.

- Another important measure is a drive's sustained throughput, and tells you more than the rather academic maximum burst rate. A fast average access time does the most good when the drive is reading lots of small chunks of data spread over a disk. A high sustained throughput will be important when loading, say, a single large data file like a scanned photo or a movie clip. While Ultra DMA has a burst data transfer rate of 33Mbps, for example, the sustained rate is less than half this.

- While the parallel port won't act as a bottleneck on slow devices such as a Zip drive, it will if you plug in a high throughput device like a hard disk. So if you want capacity and performance, you should avoid parallel port versions at all costs.

- CPU utilisation is important, too. This is normally expressed as a percentage, so for example, a 100 percent CPU utilisation score would mean that the CPU is fully occupied with transferring data and has no capacity to do anything else.



7

everything and other factors are important, too.

With the spooling software running, the Nexus and Imation LS-120 drives were the fastest of their type that we tested. But the LS-120s enjoy backward compatibility with standard 3.5-in floppy disks, which makes them attractive as a straight replacement for the floppy disk drive.

The Nexus is an internal drive that plugs into a standard IDE interface. It can be used as a boot device, like a normal floppy, but this depends on whether your PCs BIOS permits it. The external Imation version plugs into the parallel port, which makes installation easy, and it comes with spooling software that uses the hard disk to accelerate the drive's performance.

The Iomega Zip is the most popular removable storage device. It's incompatible with any other removable media but its ubiquity makes it a good choice as a medium of exchange. The new Zip Plus (4) claims to be substantially faster than its predecessor but this is confined to accelerating the initial disk access.

The internal IDE version is bootable but needs BIOS support for this feature. The external Zip Plus now has a single, dual-purpose, SCSI/parallel interface which it auto-detects.

The EZFlyer (2) may look a bit like the external Zip drive but it has more than twice the capacity. Depending on what version you buy, it can be cheaper, too. However, it tends to



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This is an extreme example, but some drives absorb so much CPU power that they can slow the operation of a PC, which is no good if you're playing back, say, a large MPEG clip. This is because the CPU has to supervise the transfer of each bit of data from the drive, across the system bus, into memory. Old-style PIO Mode 4 hard disk drives (and CD-ROM drives) were notorious for this, but modern drives can use Direct Memory Access (DMA) to manage data transfers at modest CPU utilisation hits. The lowest CPU utilisation scores are normally achieved by SCSI devices, as the SCSI host adapter takes total care of the data transfer chores. Parallel port devices require a high degree of CPU attention, too.

Using the three size categories listed above, the drives we've tested can be grouped.

Drives on test

1. Drives up to 250Mb

Three wildly different technologies are employed in this category, from a development of the old "floptical" disk in the case of the LS-120, the old Bernoulli disk in the case of the Zip, and the Winchester hard disk in the case of the EZFlyer.

Not surprisingly, this determined the performance scores of these devices and the Zip drive (4) was the slowest, with the EZFlyers delivering sub-hard disk results.

Using the three size categories listed above, the drives we've tested can be grouped.

fall between two stools, the hard disk and the super-floppy camps; not big enough for a hard disk and too good for the floppy replacement market. The EZFlyer was late in coming to market and it looks like it may have missed the boat.

2. Drives from 250Mb to 1Gb

Three more removable drives offering three different solutions. The **Shark 250** is the only device in our review to cater specifically

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for the notebook user.

In a stylish case, the **Shark 250** uses a proprietary Winchester-based cartridge and is small, light, and easy to use. It comes in two versions, parallel or a PC Card. Both draw power from the notebook, either via the PC Card or from the mouse port. The

Shark is about average in performance terms and its capacity is rather on the low side, but it's nevertheless a good choice for the mobile user.

Next in line is the 640Mb **Fujitsu DynaMO** (6). This is a SCSI device only and is reasonably easy to install, although the DIP switches are a little confusing. The disks are compact, roughly the size of two stacked 3.5in floppies.

Media costs are low too, at about 2.2p per megabyte, although the drive itself is a little pricey.

Bringing up the rear is the **Nomai 750.c** (7). This uses Winchester-

based MCD cartridge technology. It's another well-built SCSI-only design that offers good performance, but you'd expect that from a hard disk. Its price is now low enough to compete with other removable hard disks, but good though it is, it stands no chance against the **SparQ** (8).



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3. Drives of 1Gb and above

As we move to the largest-capacity segment, only one choice remains. All these drives use conventional Winchester-based hard disk technology, just like the fixed disk in your PC. **Iomega** reinvented the removable hard disk with the ground-breaking **1Gb Jaz** (3), which offered both speed and capacity.

There is now a **2Gb version** (9) of the original 1Gb Jaz. Both are SCSI-only (though a parallel port adapter is available) and both are available in internal and external versions. Despite using Winchester technology and a SCSI interface, both drives, while delivering good performance, aren't quite as nimble as the **SparQ**. Nevertheless, at 2Gb the **Jaz** offers the greatest capacity available. At about 3p per megabyte, the 2Gb cartridge is relatively dear compared to **SyQuest**.

SyQuest's initial response to the **Jaz** was the **SyJet**, a 1.5Gb rival that closely resembled it (10). This is available in both internal and external versions and in all three flavours of interface. It offers enough capacity and speed to serve as your primary storage, and with each cartridge costing about £50, at about 3p per megabyte storage costs are low. The **SyJet** offers good value with top performance.

The **SparQ** drive is cosmetically similar to the **SyJet** and although offering just 1Gb of storage, its performance is on a par with that of the **SyJet**. The **SparQ** is available in internal IDE and external parallel port versions (no SCSI). What sets it apart is its remarkably low price. Not only is the drive cheap, but the cartridges are low-priced (about £28), delivering storage at about 2.8p per megabyte.



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Editor's Choice

With such a range of capacities, interfaces and technologies, there can be no one removable disk drive that will satisfy all your needs.

If you're looking for a replacement for the ubiquitous 1.44Mb floppy disk drive, the choice is a little tricky. The **Nexus LS-120** internal drive isn't bad and can read and write to old 1.44Mb disks. The **Zip** remains a good compromise between performance and price, and its popularity means it doesn't suffer as a medium of exchange. The external **Zip Plus**, though relatively pricey, offers a good combination of ease of use and portability. If you're looking for a portable removable drive, this is the one to go for.

If you're simply looking for an overflow for your existing hard disk then the IDE **SyQuest SparQ** is the clear winner. Not only does it offer excellent performance, but its low price (around £135 on the street) coupled with low media costs make it the most affordable removable hard disk on the market. Another saving accrues from its IDE interface as there's no need to invest in a SCSI host adapter.

The **SyQuest SparQ** easily wins our award of **Editor's Choice**. The **SyQuest SyJet** and the **Iomega Jaz 2Gb** are **Highly Commended** and could function as your primary storage without breaking a sweat.

Notebook users don't have a great deal

of choice

when it comes to removable storage, but the **Avatar Shark 250** is a good choice. Some notebook manufacturers, such as **Fujitsu**, are offering it as a built-in option. It's not cheap, but it acquits itself on the performance front, and it's well designed and easy to use.



Table of Features						
	Avatar Peripherals	Fujitsu	lomega	lomega	lomega	Imation
	Shark 250	DynaMo 640	Zip	Jaz 1Gb	Jaz 2Gb	SuperDisk 120
Price ex VAT	£149.95	£399	£143.83	£228.94	£339.58	£90
Price inc VAT	£176.19	£468.83	£169	£269	£399	£105.75
Unformatted media size	250Mb	640Mb	100Mb	1Gb	2Gb	120Mb internal
EIDE						
Supplier	Nexus Peripherals	Fujitsu	lomega	lomega	lomega	Imation
Tel no	01491 413663	0181 606 4415	0800 973194	0800 973194	0800 973194	01344 402200
Web URL	www.nexusp.com	www.fujitsu.com	www.iomega.com	www.iomega.com	www.iomega.com	www.imation.com

Table of Features						
	Nexus	Nomai	SyQuest	SyQuest	SyQuest	SyQuest
	Superdisk LS120	750.c	EZFlyer external	SparQ internal	SparQ external	SyJet
Price ex VAT	£69	£164 (£139 internal)	£110.63	£144.67	£144.67	212.76
Price inc VAT	£81.08	£192.70 (£163.33 internal)	£129.99	£169.99	£169.99	249.99
Unformatted media size	120Mb	750Mb	230Mb	1Gb	1Gb	1.5Gb
Media price ex VAT	£9	£35	£18.71	£29.78	£29.78	55.31
Cost per Mb	8p	4.6p	8p	3p	3p	4p
Interface	EIDE	SCSI external	Parallel	EIDE	Parallel	SCSI
Other interfaces available	N/A	Parallel, internal SCSI	SCSI	N/A	N/A	Parallel
Supplier	Nexus Peripherals	Nomai	SyQuest	SyQuest	SyQuest	SyQuest
Tel No	01491 413663	01383 741147	01189 880207	01189 880207	01189 880207	01189 880207
Web URL	www.nexusp.com	www.nomai.com	www.syquest.com	www.syquest.com	www.syquest.com	www.syquest.com

How we did the tests

We used ThreadMark, developed by Adaptec, to test nine of our 13 removable storage devices. It is a multithreaded benchmark that measures I/O performance under Windows 95 and NT. VNU European Labs' strategy of emulating the "Real World" is carried out in ThreadMark, as the benchmark implements reads and writes through the use of common Windows APIs.

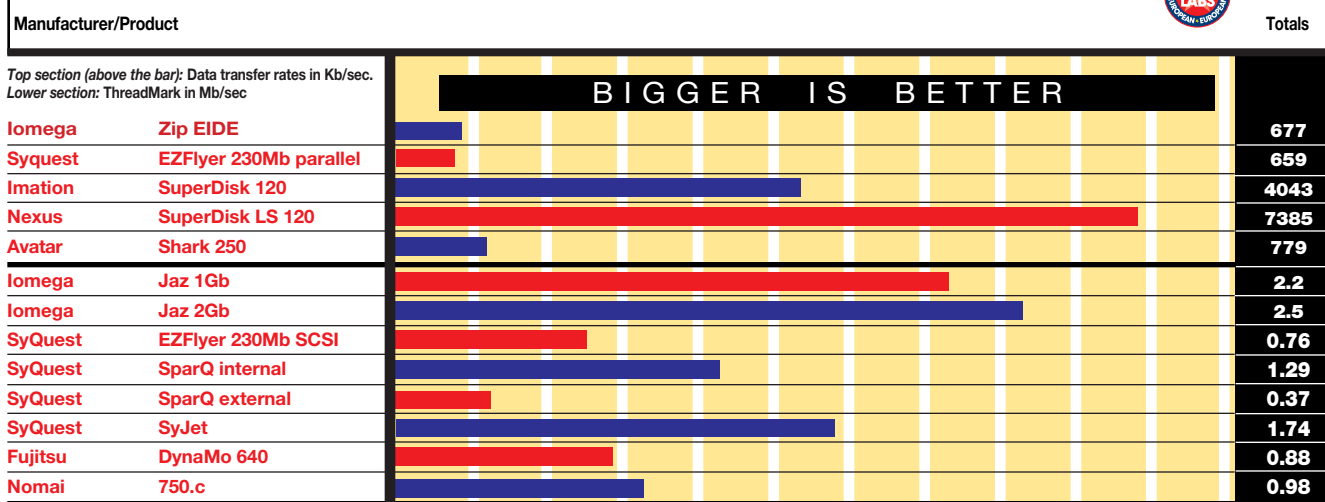
Examining the way the OS reads and writes files allows a clear picture to build up of how the subsystem handles different periods of activities such as high I/O. Multi-threading allows reads and writes to occur simultaneously across a range of block sizes in 512/1K/2/4/8/16/32/ and 64K of the test file across 1, 2, 3 and 4 threads.

Each test file is twice the size of the system RAM to minimise the effects of caching. We were able to isolate the individual performance of the tested devices by keeping the Adaptec AHA-2920 PCI SCSI adapter and 32Mb Pentium 166MHz MMX PC constant. This way, there is an indication of the capable throughput of each of the devices in a typical environment. The results are expressed in terms of average data transfer rates.

Due to our 32Mb of system RAM, ThreadMark created test files too large to run on our smallest-capacity drives, so we ran separate tests for the 100Mb Zip, parallel 230Mb EZFlyer, the two SuperDisks and the Avatar Shark. The test timed how long it takes to copy a 50Mb file from the PC's hard drive to the removable drive. The results are in Kb/sec.



Storage speed test results





Windows 98: an air of refinement

Will Microsoft's new OS be excitingly different or are we just being offered cleaner Windows? PCW provides a bird's eye view of Windows 98, release candidate 2.

When Microsoft launched Windows 95, it was the biggest product launch ever, with a Rolling Stones soundtrack, "Start Me Up", for which Bill Gates shelled out millions of pounds. But to be fair, Windows 95 did provide the user with a huge change from Windows 3.1.

The launch of Windows 98 might be no less garish or understated (after all, the theme tune this time around is David Bowie's "Heroes") but the product itself is less of a massive overhaul and more a refinement of a few niggles in Windows 95.

The interface

Windows 98 lets you view your desktop as a web page, which means (theoretically) that you can have on your desktop anything you would normally see on a web page. The Channels Bar (see "Internet Components", p123) is a good example of this. It is a free-floating graphical bar which updates automatically when there is new content available on selected internet sites. The only trouble with the whole thing is that it slows up my Pentium 133-based machine so much that I can't bear to leave it switched on.

You can now customise your desktop and folders to your liking. You only have to click once to launch My

Applications and a browser-like window lets you go up a level, or back, when looking at folders. So, no more messy multiple windows cluttering up your desktop.

So, if you are a contented Windows 95 user, should you shell out for Windows 98? Does it offer enough to warrant the £130 price tag for the full product, or even £68 for the upgrade? Should your business go for a quick upgrade now or wait for NT5, which is promised soon?

The PCW team looked at the most important aspects of the new operating system, which at the time of writing was still in "release candidate 2" form, to assess whether we would opt for an upgrade or save our hard-earned cash for other things.

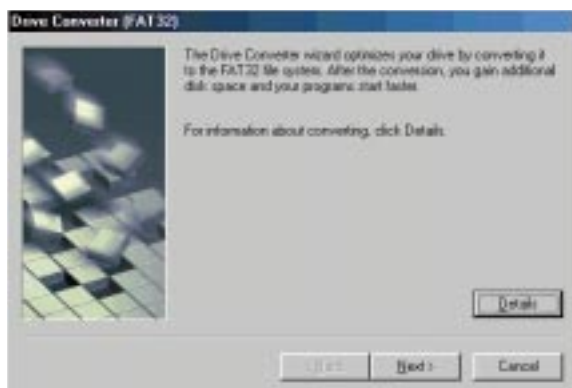
You can also put things into the Start bar like application shortcuts and an internet address bar. It's all wonderful stuff but... you can get it completely free just by upgrading to Internet Explorer 4.

Hardware support — FAT 32

At the start of the decade, 40Mb was considered a decent hard disk. Today, that figure could be multiplied by a hundred. This brings problems for the File Allocation Table (FAT), the way DOS and Windows-based machines allocate physical disk space to files. Due to the FAT's limited size it can only "see" partitions of less than 2Gb, and it allocates disk "clusters" in a wasteful way (a file of a few bytes may take up 32Kb of disk). FAT32 does away with these problems by providing more room for the allocation table. It's not a newcomer, having been available as part of Windows 95 OSR2, but you would have had to have bought a new PC or hard disk to get it.

Windows 98 brings FAT32 as an upgrade option for the first time, with a Wizard to convert existing FAT16 partitions to FAT32. It's not quite roses all the way, though. You can't convert a drive that has been compressed with DriveSpace, nor can you use DriveSpace on a FAT32 drive. You cannot convert a drive or partition less than 512Mb, and once converted there's

Automatic FAT32 conversion gives you more disk space but it has its drawbacks



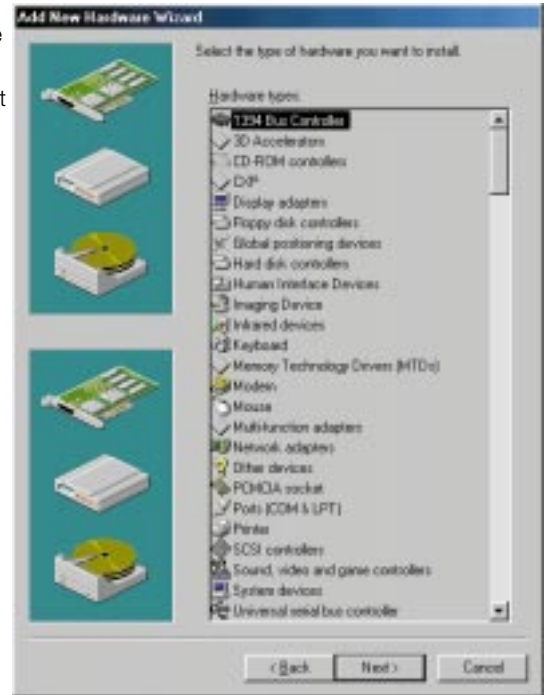
no going back, at least not without third-party software. Finally, although FAT32 is claimed to speed up Windows, it is slower than FAT16 when running in MS-DOS mode.

Windows 98 device support

One of the most important tasks for an updated operating system is support for the latest hardware. The computer industry continues to speed ahead and there have been plenty of new devices introduced since Windows 95. Interestingly, some have been waiting a while for OS support, while others are new technologies which 98's support could drive forward into the mainstream.

Certainly the most obvious place to start looking for new device support is in the Add New Hardware Wizard. Newcomers on the device list include 3D accelerators (separate from boring old display adapters), 1394 (FireWire) bus controllers, Universal Serial Bus controllers (complete with its new icon), global positioning devices, imaging devices (scanners and cameras, at last) and the intriguingly named "human interface devices" (mice and keyboards to you and I).

In addition to these new listed items, Windows 98 is the first version to natively support the Accelerated Graphics Port (AGP), Intel's MMX processors and the Advanced Configuration and Power Interface (ACPI). These terms are disappointingly familiar. Indeed, most if not all have been standard fittings on PCs for the best part of a year, just waiting for Microsoft to come along and support them properly.



Above The list of new supported hardware is impressive

Internet components

Windows 98 has been so long in coming that we were all expecting some major improvements, refinements and (above all) differences from Windows 95. And to be sure, on the surface it is very different indeed. The Active Desktop and browser windows for looking at the contents of your disks are certainly innovative. The trouble is, they've been done before — Internet Explorer 4, to be exact. The updated browser and internet applications have all been running happily on my PC for the past six months.

The primary application is, of course, the browser itself. It's a huge improvement over version 3 which was bundled with Windows 95. It is much easier to use, faster, and has better Java support. Perhaps the most innovative new feature is the Channels. You can "subscribe" to an internet page and set the PC to automatically check for (and download) new material at particular times.

The Connection Wizard is a clear, simple guide to the process of connecting to the internet for the first time. RealPlayer is essential for playing all those Real Audio files you find on the internet. Microsoft NetMeeting, as its name suggests, lets you have a "meeting" over the internet with other like-minded people. It's only really useful in a corporate environment where everything is organised well in advance and everyone knows what's going on.

Outlook Express, a well-designed email and news reader, is quick to load and easy to customise. You can create folders for storing messages and the Inbox Assistant can file messages automatically depending on the author, subject or content. If you're being pestered by unwanted mail, you can even set it to delete mail off the server without downloading it. The only real drawbacks are that it can't access cc:Mail or Lotus Notes email systems and you can't choose to leave copies of emails on your Internet Service Provider's server for security. The Address Book, for storing the email addresses, is pretty basic but it does the job of organising home, work and personal details into a manageable form.

You can use FrontPage Express to design simple web pages and use Personal Web Server to host them on your PC, or to preview them before loading them on to your ISP's server.

On the internet side alone, Windows 98 offers very little over a Windows 95 and Internet Explorer 4 combination. So get yourself a gratis copy of Internet Explorer 4 and save the cash.

Windows Update

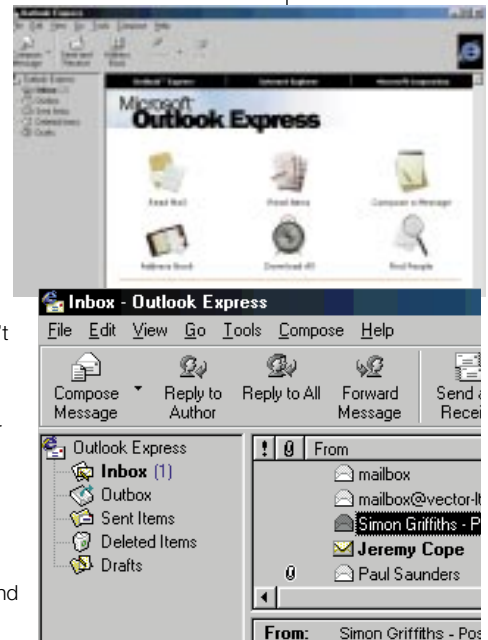
The Windows Update is one of the more controversial concepts behind Windows 98, with everyone originally convinced that it meant Microsoft keeping an online presence on your PC and updating the software when it saw fit.



The reality is somewhat less Orwellian.

The "one-stop" upgrade concept should please any Windows user who has had to trawl the labyrinthine Microsoft web site for patches and drivers. All the new Windows software updates like fixes, drivers and revisions will be kept on a single web site, and can be linked to with a single click on the "Windows Update" title kept on the Start menu. You must register online with Microsoft first, but you can give as much or as little information as you like.

It is also up to you whether or not you want to submit the system inventory run by the online software to Microsoft High Command, but you may find that this is the best way to get results. There is no automatic updating to fear, though (unless that is what you want) and you can always undo any upgrades made to your system's original configuration.



Above Outlook Express is part of IE4 but is fully integrated into Windows 98

Networking and comms

Whether businesses again decide to upgrade all their clients to Windows 98, or wait for NT5, remains to be seen. For all those who do, there are not too many surprises when it comes to integrating Windows 98 into your network.

Microsoft's Zero Admin for Windows hasn't yet reared its ugly head. Early reports of the beta software suggested that it was more hassle than it was worth to install and set up. We'll have to wait for Windows NT5, though, to see how true this all is.

Windows 98 offers better integration with Novell NetWare servers by way of the new Microsoft Service for NDS (Novell Directory Services). Integration with NDS provides a more seamless network, with better management of clients and resources.

In a step towards more efficient backup of networked computers, Windows 98 comes with two new agents for Computer Associates' ARCserve and Seagate's Backup Exec. The network administrator controls when the workstations are backed up to the server, but the user retains control of just what does get backed up. Data is then backed up to tape as part of the server's standard backup cycle.

Along with a fairly comprehensive list of supported Ethernet and Token Ring NIC drivers, Windows 98 features better ATM support. There is now a whole raft of device drivers for ATM adaptors as well as LANE services and other ATM functionality. A number of ATM APIs have been added to Winsock II, further enhancing OS support for ATM.

Windows 98 provides support for Microsoft's DCOM (Distributed Common Object Model). This makes it easier to implement distributed applications through your network of Windows 98 clients and will also be supported by Windows NT5.

Modem and comms support

For many people who want a faster dial-up connection (either for themselves or for a small business) and the bandwidth of a leased line without the cost, multiple modem support (also known as multilink) may be the answer.

Like multiple monitor support, this feature should theoretically be quite easy to implement. You will need to have all your modems attached to one PC, with a phone line for each of them and an ISP that supports multilink. The technology is designed to run with ISDN modems but can work with analogue modems of the same or different speeds. Microsoft warns however that using analogue modems may lead to serial overrun errors.

ISDN support is now built into Windows 98, just as it is starting to look like yesterday's technology. More welcome is the support for PC Card modems which should now, theoretically, be Plug and Play.

Earth-shattering stuff? Hardly. Multilink may be useful with ADSL just around the corner, but whether this will be a hit remains to be seen.

Universal Serial Bus

The eternal wait for 98 has almost seen the death of USB, which looked like a great idea when launched two years ago but now seems dated. With the equally flexible yet more powerful 1394 bus perhaps ready to make a takeover bid, USB could fail before it has left the starting gate.

However, USB is still much cheaper to implement than 1394, both on PCs and the devices themselves, and Microsoft has additional plans for the bus. With PC processors sufficiently powerful to emulate hardware through software alone, the question of physical connectivity remains. You may be able to do without a sound card, but where do you plug in your speakers?

Microsoft is encouraging the use of USB or 1394 as the means of connection for digital audio devices. Philips already offers USB speakers with built-in digital-to-analogue converters.

Incidentally, the media-streaming architecture for high-quality digital video and audio playback has been renamed from ActiveMovie to DirectShow.

ACPI lets you power-down your monitor and hard disk, but it is not compatible with all hardware

When you consider that we currently have a different connector and hardware interrupts for the keyboard, PS2 and the parallel and serial ports, we at PCW cannot wait to see USB, with its single interrupt and plug shape, finally take off.

DVD

It is currently too early to tell whether DVD will take off in the UK as a domestic movie machine. It will however be a big hit on the PC as the natural successor to CD-ROM. DVD-ROM has a capacity of between seven and 24 times that of a CD, and the drives can also read CD-ROM titles. The standards for DVD recorders are still changing too rapidly to instill buying confidence but the format as a whole is here to stay, so 98's support is crucial.

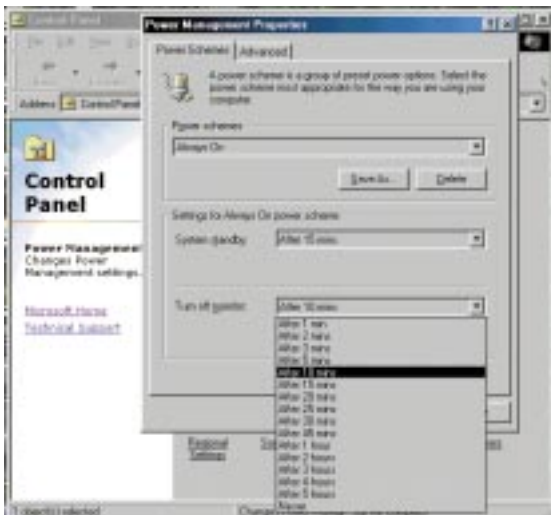
Win32 Driver Model

Despite supplying a variety of patches allowing Windows 95 to support new devices, Windows 98 employs a new technique which clearly indicates Microsoft's future OS intentions. The Win32 Driver Model, WDM, is based on code currently used by Windows NT but designed both for Windows 98 and future versions of NT. The idea is that new devices need only be supplied with one driver, compatible with both operating systems. Windows 98 employs selected NT Kernel services to support future WDM drivers while maintaining compatibility with existing device drivers. The global migration to NT5 on future desktop systems is already being implemented.

Power consumption

Advanced Configuration and Power Interface (ACPI) is a means of preventing peripherals and components from consuming too much power. In other words, if they are not being used they can effectively be switched off. In practice, the user does not have as much control over the power consumed as you might imagine. You can however opt to switch off your monitor and your hard disk when they have been idle for a specified period. Your PC will then put itself into sleep mode and will have to be nudged back into full operation.

ACPI heralds the age of so-called OnNow PCs. OnNow describes a PC which appears to be off but is actually active and ready to respond immediately to user



requests, such as a fax coming in or a signal from a keyboard or digital camera.

Be warned, however, that your hardware might not support this feature and instead of switching down it will simply hang and have to be re-booted. If this happens it will probably sulk, run ScanDisk and, at worst, might lose a few system files. It happened to this reviewer, although to its credit Windows 98 did recognise that something untoward had happened and restored itself to its original state.

Multiple monitor support

Windows 98 will let you run up to nine screens from one PC. This is useful if you want to have more than one large Window open at a time, such as big spreadsheets.

In theory, installing each of these monitors under Windows 98 should be a piece of cake. Each monitor will need a separate graphics card to power the monitor, but any mix of AGP and PCI graphics card should work. You can designate one card as your primary card, which will display the startup information when you boot and shut down your machine. The secondary cards can be arranged in a variety of patterns of your choosing, depending on how you want to position them on the desk. All the screens will show parts of the same background, while the mouse will run over each of them. Applications can be opened on specific screens.

This might prove useful for some people, but who can honestly say they have room for more than one CRT on their desk? Until flatpanels become the prevalent technology, this is something of an odd utility to have.

WinTV

The WinTV module in Windows 98 is Microsoft's attempt to get a corner on PC/TV convergence. UK consumers will not be able to use it for some months.

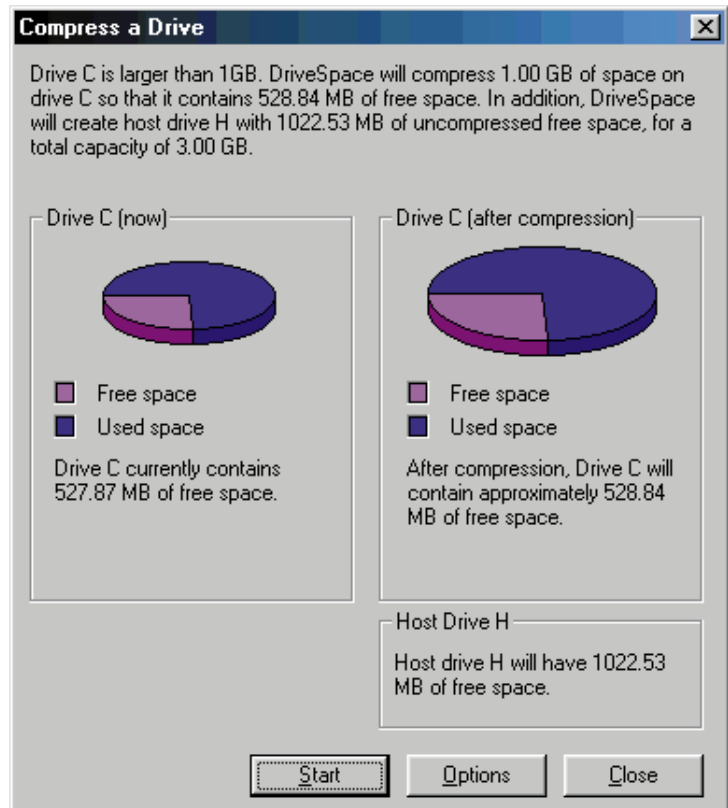
Its simplest function is to provide a graphical user interface for a TV add-on card, allowing you to pick a programme from a net-updated listing. It is also used in set-top boxes.

WebTV allows for interactivity to be incorporated into TV programmes so that you can click an icon on a TV picture to get more information. Conversely, you can view TV on a web page. This mix of web and TV is eventually likely to supersede the relatively static web of today, but Microsoft is by no means the only contender and faces much opposition from media and entertainment moguls.

Microsoft is doing WebTV pilots with BT and holding talks with possible UK content providers, but so far it has given no firm date for UK implementation.

Windows Tune-Up Wizard

Most of the Windows Tune-Up Wizard isn't new but it has been far more attractively packaged, offering one-stop access to immediate or scheduled disk scanning and defragmentation. Both ScanDisk and Defrag are established Windows tools. The former checks the disk for errors such as "lost clusters", the latter re-arranges the way data is stored on a disk.



There's also access to the Compression Agent for optimising settings if you are using DriveSpace, and the wizard offers you the option of removing items from the Start-Up folder but not various other locations from which Windows runs programs automatically.

Finally, there's Disk Cleanup. This, like the other utilities, is also available as a standalone and is both new and rather good. Once again it can be scheduled from anything between daily and monthly intervals and there's a checklist of things that will be weeded. The list in itself is a revelation as to the rich variety of expendable files that may be on your PC. Apart from the obvious, such as the contents of the Recycle Bin and the Temp folder, there are the cached internet files, ActiveX and Java applets that have been automatically downloaded from web pages, files created by ScanDisk, temporary setup files, and more. Although it's nothing a knowledgeable user couldn't do before, it's a great time saver.

Testing the Wizard in the beta revealed a few problems. I was unable to get a scheduled ScanDisk to work on multiple partitions, and the clean-up still left files in my Temp folder that were not created in the current session. Let's hope this will be sorted in the final product.

Backup

The backup utility that shipped with Windows 95 had its origins in the utility bundled with Colorado (later HP) tape streamers. It embraced the new Windows 95 environment with features like drag-and-drop, and it had reasonable if somewhat narrow hardware support, too. You could backup to hard disks, network drives, floppy disks; QIC 40, 80, 3010 and 3020 tape drives connected to the

(continued on page 128 >)

Without DriveSpace, the Compression Agent will not make a great deal of difference

Faster opening of applications

As swiftly as the faster, more powerful processors make their appearance and memory prices fall, so applications bloat and swell, taking up all the room and power your PC can offer. Microsoft is perhaps among the worst exponent of bloatware, but it has offered help in its operating system to make applications open faster. That, at least, is the theory.

To do this, the operating system goes through three basic steps. It looks at what is being opened and how often it is opened, so working out what are your most frequently used applications. It creates a log of where these applications are stored on the hard disk, what other files are needed and where they reside. Finally, it will work out what needs to go where, and when you defragment your hard disk, the disk

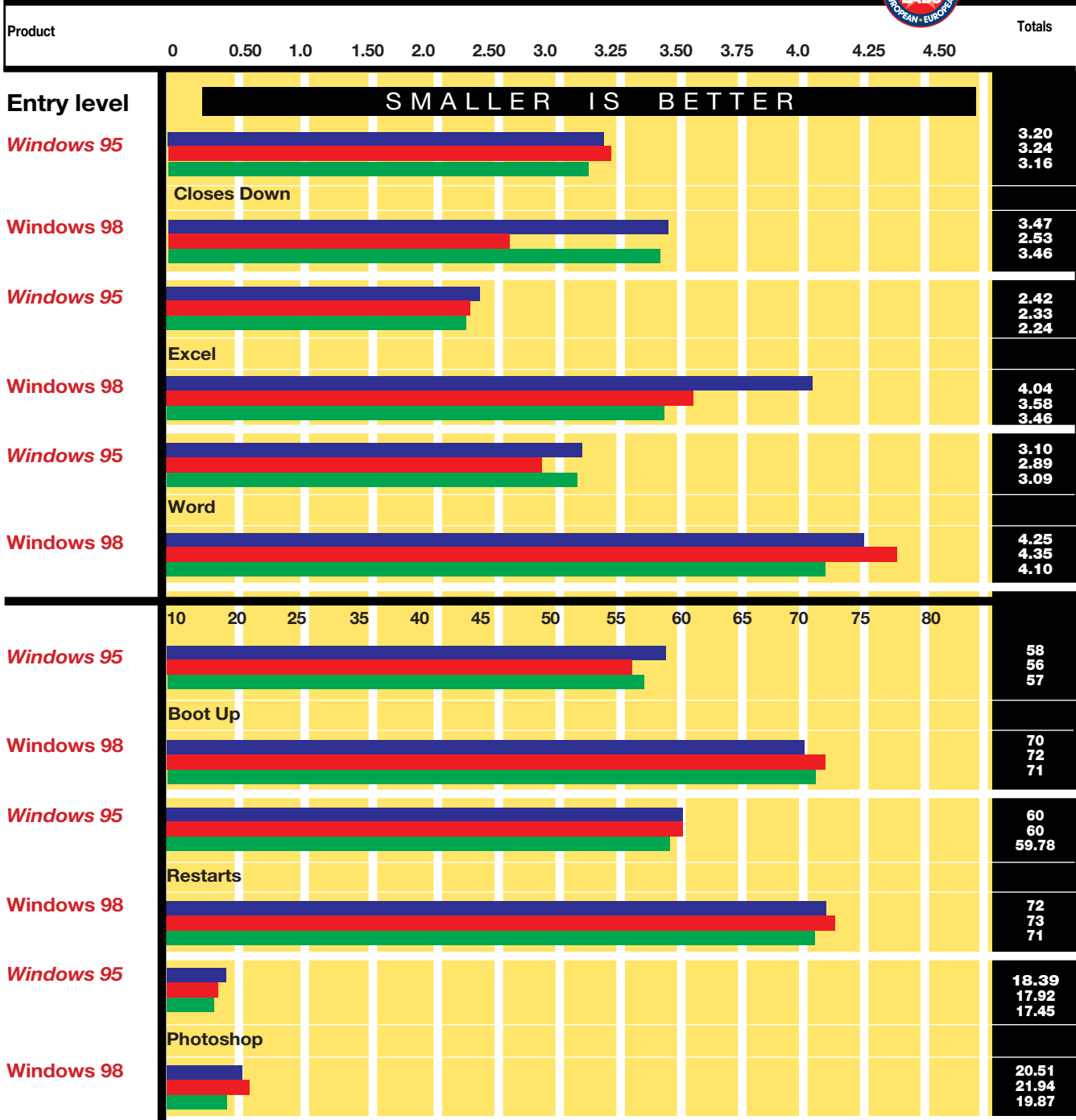
optimisation wizard will look at the log to decide what are your most important applications and will put them on the fastest part of your hard disk.

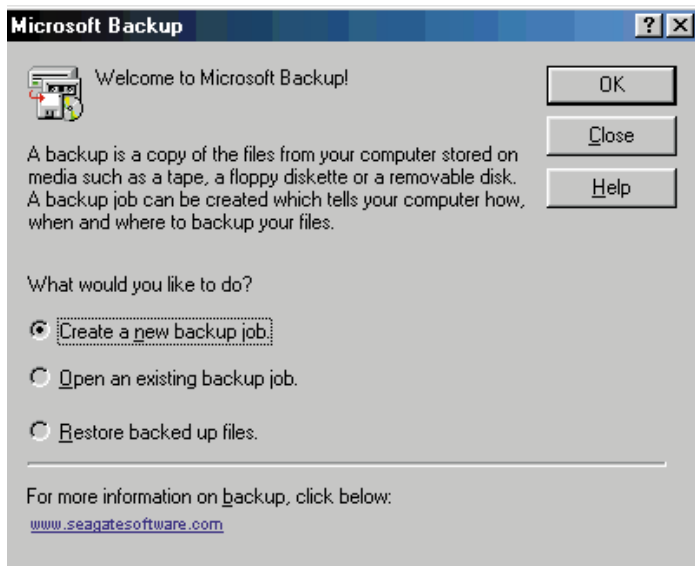
In practice, we found Windows 98 slower than Windows 95 in opening three typical applications. While these tests are by no means conclusive, and even though we were testing a beta, we were disappointed that this did not work better.

Even booting up and shutting down was slower under Windows 98. Nevertheless, you can now opt to put your PC into a low power mode using ACPI, rather than shutting down completely. In other words, if your PC only has to wake up rather than boot up, you will be able to get working faster.



Windows 95 vs Windows 98





The backup utility is a "lite" version of Backup Exec 2.0

primary floppy disk controller; and QIC 40, 80 and 3010 tape drives (manufactured by Colorado Memory Systems) which connect to the parallel port.

The backup utility that ships with Windows 98, although visually similar, is in fact a "lite" version of Seagate's Backup Exec 2.0 — a reasonable backup program. The new applet extends hardware support to other parallel port tape drives, IDE/ATAPI drives, SCSI tape drives, and removable drives like Zip or SparQ. As well as the old tape formats, QIC-3010 Wide, QIC-3020, QIC-3020 Wide, Travan TR1, TR2, TR3, TR4, DAT (DDS1, 2, & 3), DC 6000, 8mm and DLT are all supported.

The new backup has a variety of new features and improvements over its predecessor. Perhaps the most important is the Emergency Recovery option which creates a set of special boot disks. These allow you to automatically rebuild Windows 98 and restore the latest full backup directly from their tape device in the event of a crash. Previously you had to manually reinstall the operating system before the backup software could function and enable users to restore data, a time-consuming and tedious process.

Help

The help available has been massively updated and now incorporates large help files on the web. Navigating the files is far easier now that they are all presented in HTML, whether within the OS or on the internet.

The approach is three-pronged: there is the help offered within Windows 98, the help resources on the web, and the option to



Help is now in HTML

"Contact a support engineer".

The user chooses how they want to go about finding the answer to the problem. Accessing the internet help is done with a click on the Web Help option, from where users can either contact Microsoft engineers on the phone, or go to the web help files which are much more thorough than those offered by the installed help files.

Plus Pack

The Plus Pack will be released at the same time as the OS. As in Windows 95, the focus is on the more sensible utilities and includes the McAfee ViruScan software, integrated with the Windows 98 Maintenance Wizard.

CyberMedia's FileCleaner is included in the pack and suggests files to be deleted. It accompanies the Start Menu Cleaner which cleans up the Start menu by removing dead links and abandoned folders. A compression utility has been added which works with drag-and-drop, and offers up to 90 percent compression while allowing folders to act as normal.

The CD Player facility has been linked to the internet, fetching information from registered sites about the record you play. There is also a cut-down version of PictureIt!, Microsoft's basic image-editing software. ■

Windows 98: was it a winner with *Personal Computer World*?

Most of us had a pain-free installation process which took less than an hour to complete. However, once we were in, few of us found anything much that had changed.

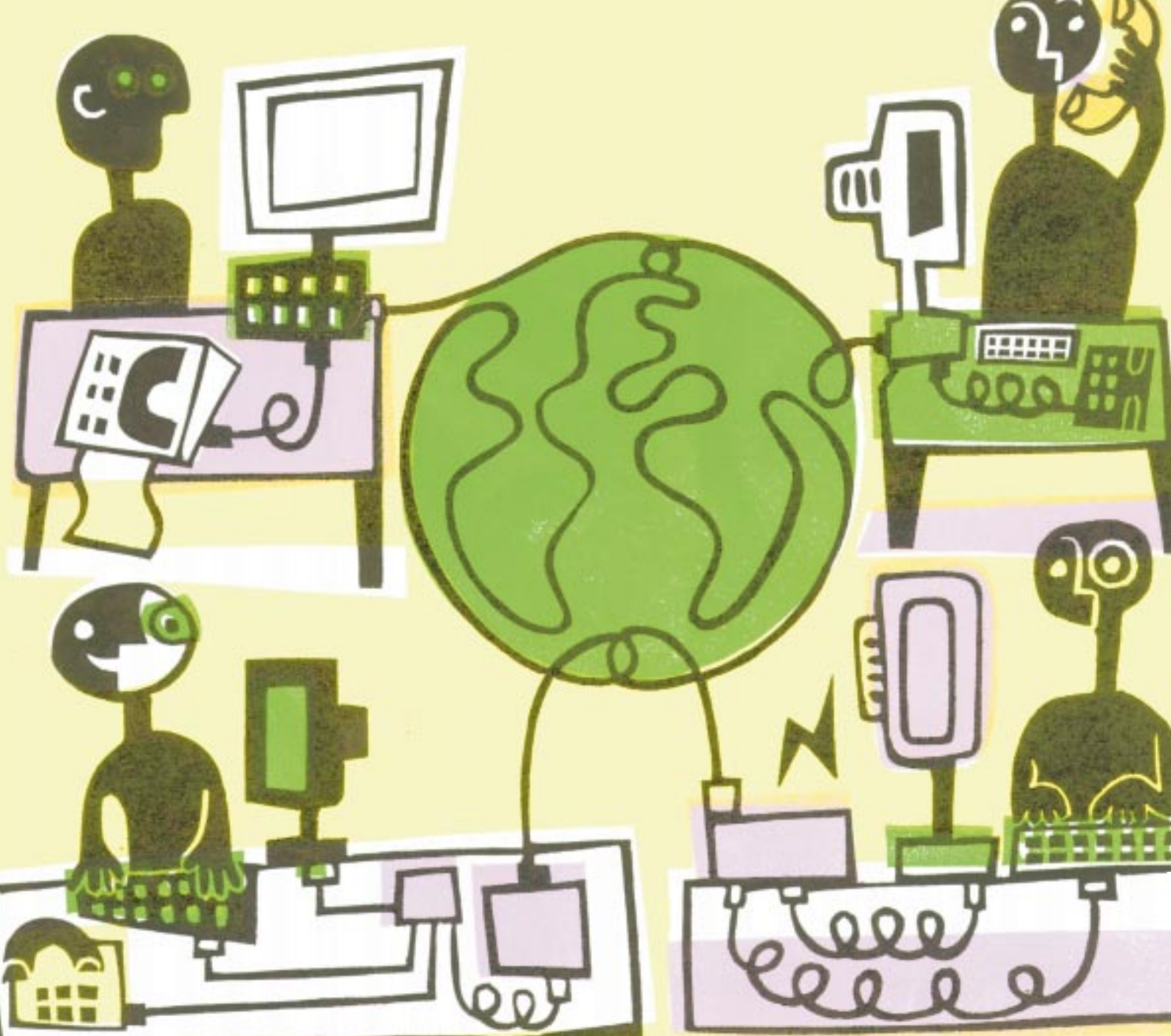
Some were pleased with the improvements made to the interface. Associate editor Clive Akass was charmed by the new file navigation system: "Under 95 I tended to use Explorer to navigate files, but the new browser-like My Computer system is a joy. I happen to think Microsoft has a point in stating that the browser should be part of the operating system — although there remain issues about the limits of market power." But *PCW* columnist Tim Nott took a rather more dim view: "Call me a reactionary, but I prefer to use my web browser for web browsing. The sheer weight of folder, desktop and view options has become hideously complicated: I'd much rather see the numerous interface enhancements moved into the mainstream product than be part of this ephemeral entity known as the Active Desktop."

For others it was the hardware support which most impressed. Gordon Laing, managing editor, was delighted when ACPI compliance let him put his PC to sleep rather than having to re-boot, and was relieved to find Windows 98 recognised his DVD drive. However, he

points out that little of this is worth paying for: "If you're currently using Windows 95 OSR2, you'll already have Fat32 and USB support, while the addition of IE4 will give you Active Desktop. Unfortunately, you can only get OSR2 if you buy a new PC, leaving earlier users of Windows 95 with little choice but to buy Windows 98 if they want support for all that sexy new hardware — sneaky, Microsoft. I do have to say, though, that support for MMX and my AGP graphics card did seem to speed my system slightly, and that's ignoring the fact that the installer mysteriously set my clock 20 minutes into the future."

On the plus side, WDM might prove to be Windows 98's saving grace. As Clive Akass said: "With NT and 98 heading for a common driver set, you may find the upgrade will save you problems in the long term."

Adam Evans, reviews editor, summed up most people's reaction when he commented: "Windows 98 is certainly worth having, but is it worth paying for? The best bits, the internet and interface updates, are all available free with Internet Explorer 4. You'll get it automatically with a new PC, but £85 is much more than I'm prepared to pay for a minor upgrade to my current system."



Message parlour

Many small businesses want to communicate through email and the internet, but don't know where to begin. Terence Green discusses the options open to everyone from graphic designers to accountants, including ISDN advice.

Whether you're running a one-person business from home or a small office with a PC network, you'll want to use the internet and email for contact with the outside world. But what communication hardware should you use? The choice of single or multiple telephone lines, modems, ISDN, leased lines, plus a wide variety of routers can seem bewildering when all you want to do is send a few messages. Over the following pages we'll discuss the pros and cons of each technology, compare prices and features and recommend the best solution for your business.

Email can be used not just for quick memos, but also for attaching and sending any types of files. Accountants send copies of accounts to their customers, graphic designers transmit work to the printers and photographers send images to clients, to name just a few examples. A small business could also use the web to research the market, keep an eye on competitors and access support for its computer systems.

For the single-user business, all these aims can be accommodated with one standard telephone line, an inexpensive dial-up account with an ISP and the software

ILLUSTRATION by Melvyn Evans

included with most operating systems. You can stay updated with free Netscape Communicator and Microsoft Internet Explorer from *PCW*'s cover CDs.

Bear in mind that the latest versions of web browsers can be quite demanding. If you don't have a fast Pentium with 16Mb RAM or better, you may prefer to stay with the version 3.0 browsers. They lack the frills of the later versions but still offer email, news and web browsing.

The cost of this without call charges will be between £200 and £250 a year — about £150 for ISP access and £100 for a decent latest-specification modem or £50 for a cheap internal modem.

Choosing an ISP

You will need an ISP dial-up account for which the standard charge is between £10 and £15 a month. There are hundreds of ISPs from which to choose. Some, such as AOL, offer unique content, while others only provide internet access services. When it comes to choosing an ISP, it's best to seek out magazine recommendations and ask friends and colleagues for their views. You'll want to make sure there's a local number to call to keep costs down, and it can be helpful to ask other users whether they have had difficulties getting through at certain times of the day.

A good idea is to make a shortlist of ISPs, try their telephone support lines and select the one which comes across as the most helpful. Generally, when you sign up with an ISP it will supply a browser and a setup program that helps you through the process of entering your personal details. Normally it's a straightforward business, but if there's a glitch you'll want to call on support.

Many newcomers to the internet make use of free trial offers from the major services. This is not a bad idea, but remember that your email address is generally tied to the ISP so don't have your business cards printed until you're sure you're going to stay at that address.

Another point is that no ISP has yet delivered the level of reliability that we expect from the telephone service. Internet email is a useful service but you should never place absolute faith in it. Even BT has managed to cut its users off from email for hours at a time, and in the US, AOL has had a couple of day-long outages. Some ISPs are beginning to offer service-level guarantees but you should expect to pay extra for these.

Access success

Assuming you already have a telephone line, you'll need a modem to connect to an ISP. If you're not keen on opening your computer and installing an internal modem, then go for an external model which will also have front panel lights that allow you to monitor the line status. Most of us forget at some stage or another to disconnect from an ISP after an internet browsing session and sometimes Windows gets confused too, so a visible "online" indicator is helpful.

Modem speeds are currently in transition to yet another standard. The top speed at the moment (rounded to the nearest thousand) is 56,000 bits per

second, usually written as 56Kbps. Modems capable of 56Kbps include those marked X2 (sometimes confusingly called 56K), K56 and V.90. The next highest speed is V.34 (or 33.6Kbps).

All ISPs support V.34 and either X2 or K56. Some ISPs support both X2 and K56 but only a few ISPs support V.90, so you need to check that your chosen ISP supports your modem. When it comes to speed, V.34 is fine for email and for most web browsing. If, however, you expect to download large files regularly, then the extra speed of X2, K56 or V.90 is desirable.

Unfortunately, 56Kbps modems operate at their maximum speed only for downloads. When sending files they'll only upload at 33.6Kbps. If you're going to send or upload plenty of large files you'll be better off with ISDN, which runs at 64Kbps both ways.

Another good reason to consider ISDN is that you get two lines. If you run a home office you will probably need at least one extra telephone line so you can have internet access and still have a line free for incoming calls. You might also want to keep a private line free and have a dedicated business line, in which case you might need a third line for internet access. You might even want a fax line too. Taking on ISDN in addition to your existing residential line will give you two extra lines which can handle digital ISDN calls along with analogue calls from faxes, modems and telephones.

Small-scale connectivity

If you have a small number of computers networked together, say between five and ten, you can provide individual email addresses for each, using a modem in one of the computers, a single ISP dial-up account and some additional software. But don't even think of offering web access too unless you're prepared to take turns using the modem.

There are dozens of ways to set up both email and web access for a networked group, with costs ranging from almost free, with the assistance of an old 486 PC running Linux, to very expensive (£1,000 setup, £6,000 per annum rental) for a leased line. You're likely to be running a peer network where one of the computers acts as a gateway to the internet, but it's worth considering a proper dedicated network server even for a small network of between five and ten people. You'll pay more but you'll also gain reliability, security and performance.

Whether you opt for a peer network or a server-based network there's really only one choice for cost-effective performance and convenience, and that is the new breed of ISDN routers which can be used with a dial-up ISP account. To understand why an ISDN router is such a good solution we need to review the options for email, and for web access.



The joys of ISDN

ISDN2 supplies two 64Kbps ISDN channels over standard telephone lines. A third 16Kbps channel (D-channel) is used for signalling and call setup but is not yet available for data transmission in the UK. ISDN2 is known as Basic Rate ISDN to distinguish it from Primary Rate ISDN, which supplies up to 30 channels.

Basic Rate ISDN2 is installed only by BT in the UK but you can sign on with an alternative carrier for service. There are a few locations which ISDN2 cannot reach, either because they are too far from the exchange or because of technical limitations in the exchange. Some cable operators offer ISDN2.

The ISDN equivalent of a modem is a Terminal Adaptor (TA). TAs can be found for as little as £100 in the advertisement pages of *PCW*. They come in internal or external versions, like ordinary modems. ISDN Routers are network interfaces and cost more. An internal router can be used as an alternative to a TA in a single-computer system. Some ISDN equipment, particularly TAs, include one or more analogue ports for devices such as a phone, fax or modem, from which you can call other analogue devices.

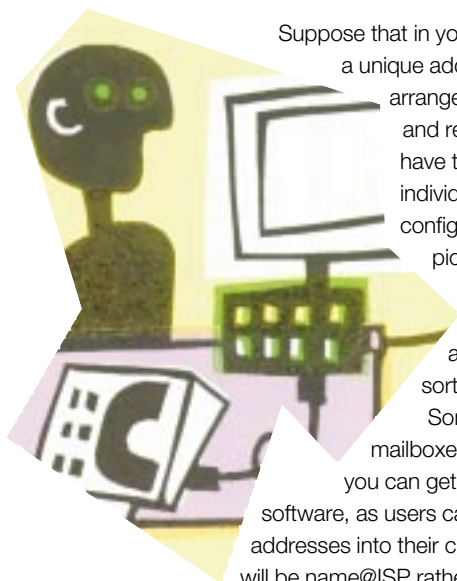
ISDN is digital from end to end so there are no line-quality problems or that 20 to 30-second negotiation phase that modems go through before they decide on which protocol to use. So ISDN calls take a few seconds to set up as opposed to half a minute for modems. The ISDN advantage is fast call setup, 64Kbps bandwidth, and the ability to attach multiple ISDN and analogue devices.

With the exception of international data calls, which are expensive, BT calls are charged at the same rate as analogue lines. ISDN is normally installed as a business line entitling you to discounts for high call volumes under the Key plans, but you can ask for residential service to make use of Friends and Family discount plans.

BT offers three regular cost plans for ISDN, and discount schemes for long-term commitment and high-volume usage. Low Start has a one-off connection fee of £400, quarterly rental of £88, and calls charged quarterly in arrears. The other two schemes have a higher quarterly line rental (£133.75) that includes annual call allowances. In effect you pay in advance for calls.

Plan one, Start-up, costs £199 for connection and £133.75 per quarter with an annual call allowance of £105 for the first two years and £230 thereafter. Plan two, Fast Start, has a connection fee of £500, a call allowance of £335 for the first year and £230 per year thereafter. The standard rate is £133.75 per quarter with an annual £230 call allowance.

Startup gives you the cheapest initial entry point and spreads the entry cost over two years. Low Start costs much less quarterly and you pay as you go for charges. Fast Start is designed for high usage. After three years Fast Start and Startup cost the same, but Low Start costs about 14 percent more per year because you pay £352 annual rental with no call allowance versus £535 per year with a £230 call allowance.



Suppose that in your office you need to organise a unique address for each recipient and arrange for each to be able to send and receive mail individually. You have two choices. You could use individual email mailboxes and configure each user's email client to pick up email independently, or you could opt for a single POP3 mailbox for all mail and use mail server software to sort mail locally.

Some ISPs offer "five free mailboxes" and if this is all you need you can get by without mail server software, as users can configure their own email addresses into their client software. The addresses will be name@ISP rather than name@yourchoice,

though. If you want name@yourchoice or more than five email addresses and you don't want the complication of using mail server software locally, you will have to fork out extra for mailboxes. You may be able to find an all-in package: Global Internet has a £885 offer called iLink Delta which includes your own domain name, five mailboxes, a router configured for you and free web space. A 13-mailbox option is also available.

If you opt for an ISP offering "unlimited email addresses" it means that all mail will be delivered to one mailbox, and you will have to use mail server software on

your network to download and sort mail for the right recipients. You also need to configure each email client so that the sender is correctly identified in outgoing mail.

The basic unlimited address option has addresses such as name1@yourchoice.ispname.co.uk. For an extra payment of around £100 and a small annual fee (the sum varies according to the ISP) you can have your own domain name so that your email addresses could become name1@yourchoice.co.uk.

Now you have to run mail server software on one of your networked computers. Whenever that computer is connected to the internet, the mail server software collects mail from your mailbox on the ISP's server and sends outbound email to the ISP's server for onward transmission. When you're not connected to the internet and someone wants to send email, it goes to the mail server and is stored there until the next time you connect to the internet.

"The only feasible way to provide shared access for web browsing without shelling out for a leased line is through ISDN"

Each user on the network needs to run the TCP/IP protocol and use any email client which supports POP3 (Post Office Protocol v.3) mail; virtually all email clients support POP3. Set up the email clients to use the software mail server as their mail server, and *voilà!* The mail server also supports internal email on the network. Some mail servers have a scheduler which will do automated dialling for you; others need extra software.

Weaving your web

So you've sorted email. What about web access? Assuming you have two or more users who need to

How to speed up access

- **Modem aggregation**

Take two 56K modems and aggregate (join) their bandwidth to achieve 112Kbps. Well, yes. Each modem has all the limitations of an individual 56K modem and you need two phone lines and two ISP accounts. What a good idea. Not.

- **Leased line**

The standard for large companies, but it is expensive and not really necessary for web browsing and email unless you also wish to run your own web site.

- **ADSL**

Asymmetric digital subscriber line will run over existing lines and be some orders of magnitude faster than ISDN. Until recently, ADSL was best known for the bitter disagreement that raged among its proponents, but Compaq, Intel and Microsoft recently initiated a move

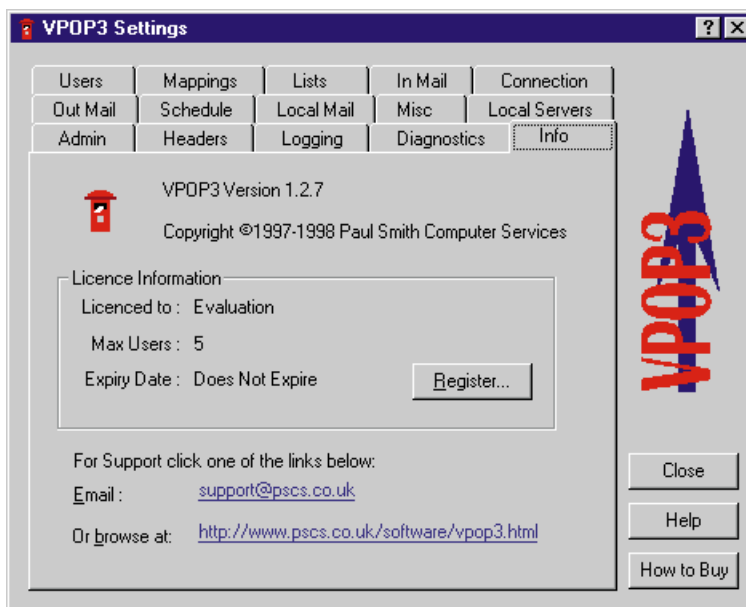
towards a standard, Universal ADSL, in the USA and have now been joined by BT and a host of international telecoms providers. It is possible that ADSL may appear by the end of 1998, but...

- **Cable modem**

The great white hope when ADSL looked remote. It will be a while before it hits the UK, and you will only be able to choose an ISP from those connected to your cable network.

- **BT Home Highway**

Expected this September, Home Highway is a DIY ISDN installation for home users. You plug a little box into your BT telephone socket and, hey presto! two ISDN channels with an analogue port for your telephone. Later there'll be a version with two analogue ports. For the single-user home office this is the best prospect yet, but let's wait and see whether BT cocks up the pricing.



browse the web, forget about a modem unless you are prepared to take turns or stick to text-mode browsers which don't do graphics, Java and all that multimedia stuff. The only feasible way to provide shared access for web browsing without shelling out for a leased line is through ISDN. You have two choices.

Either buy a router or a piece of software variously called a gateway or a proxy. Gateway software works with ISDN but will work with modems (and LAN connections and leased lines) so you can try sharing web access with a modem for laughs. The gateway software installs on the computer with the connection to the internet and has to be configured to use the dial-up account. All clients need to run the TCP/IP network protocol, and their browsers have to be configured to use the gateway software when they want to browse the web.

Now each time someone wants to access the internet they fire up their browser, it hails the gateway, and the gateway fires up the internet connection. If someone else wants to browse the web, the gateway is already connected and that person shares the connection with the first user. You can use the gateway software in conjunction with the mail server software already mentioned so that mail flows when the gateway makes a connection. But there are some problems. Setting up the mail server and gateway software is reasonably user-friendly but it really calls for someone prepared to get to grips with TCP/IP.

The following selection of mail server and gateway software for Windows 95 and Windows NT can be downloaded and evaluated before purchase. Similar software for other platforms can be found on the internet.

- **Mail server** SLMail from Seattle Mail costs about £150 from www.cloud-nine.co.uk. VPOP3 from www.psecs.co.uk costs £30 for a five-user version, £60 for ten users.

- **Gateways** WinGate from Deerfield at www.wingate.net costs approximately £75 for five concurrent users for the Lite version and £175 for the Pro version. The Pro version simplifies TCP/IP configuration for the clients and allows internet access by users to be controlled. MidPoint



Top VPOP3, an inexpensive mail server developed in the UK

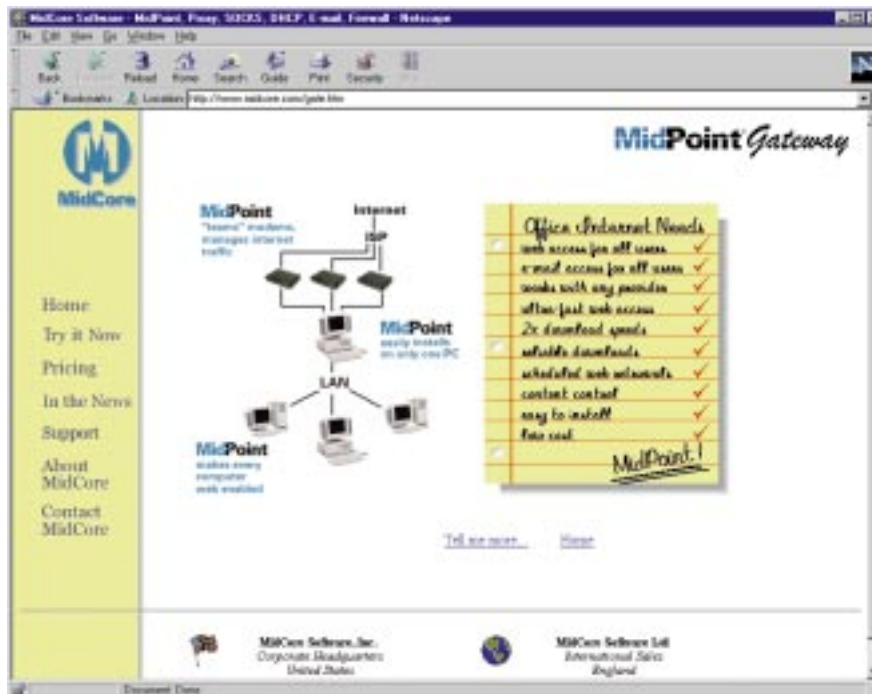
Above ISDN information and online ordering from BT ISDN pages on the web site

Companion from www.midpoint.com starts at \$119 and can share multiple modem connections. Trumpet FireSock from www.trumpet.com costs \$60 for five users, \$100 for ten.

ISDN routers

So much for the software approach. Now, here's the easy way to do email and web for a small business. Buy an ISDN router which supports network address translation (NAT). This uses a single external IP address so you can use it with a dial-up ISP account, and it hides your private network from the internet which offers security against intruders. The router has an ethernet port which connects to your network.

Connect the router to your ISDN line and the network. Run the configuration software on one of the client computers. Clients run TCP/IP and the router sets their IP addresses. Set the router address as the proxy address in the web browser configuration on the clients. Your clients are now ready to browse the net. Email requires a little more work as you will probably need a local mail server such as SLMail or VPOP3 to handle mail collection, transmission and distribution.



probably be charged extra for the wider bandwidth, along with your two sets of call charges. Sophisticated routers can add bandwidth on demand, only bringing in the second channel when a threshold is exceeded.

If you're starting from scratch without any network hardware, consider a combined router and ethernet hub which does away with the need to have a separate hub for the network.

Some of these may include dial-in ports, enabling remote workers to access your network.

A few ISDN routers support either modem or ISDN connections which allows you to start with a modem and move up to ISDN. Models with analogue ports into which you can plug a fax, modem or telephone are also available. Intel's recently released

InBusiness Internet Station, which costs about £250 and is very easy to

set up, is a good example of a modern router. Compaq's Microcom 808 for £400 includes a hub and two analogue ports.

An ISDN router may seem like an expensive option compared to mail server/gateway software and a modem, but ask yourself whether you are in business to play with TCP/IP software setups or to save time and make money. Get a router.

Above MidPoint software shares modems and connects networks to the internet

Left Intel's InBusiness Internet Station is a recent example of an ISDN router



Until not so long ago routers were expensive and hellish to configure, but that's changed and there's a whole new generation of user-friendly routers out there. Everyone seems to do one, including 3Com, Zyxel, Bay, Compaq and Intel.

You can find new ISDN routers with loads of extra options if you are prepared to pay for them. If you have heavy browsing requirements or lots of large file transfers, look for MPP (Multilink PPP Protocol) support which aggregates both channels of ISDN2 to give 128Kbps bandwidth. Only a few UK ISPs actually offer MPP for ISDN — Enterprise and Global, for example — and you'll

PCW Details

ISDN information and online ordering from the BT ISDN pages on the web at www.isdn.bt.com

VPOP3 Supplied by PSCS www.pscs.co.uk

SLMail Supplied by Cloud Nine Communications 01256 811955 www.cloud-nine.co.uk

WinGate Supplied by Deerfield www.wingate.net

MidPoint Companion Supplied by MidCore

Software 01932 589831 www.midcore.com

Trumpet FireSock Supplied by Trumpet www.trumpet.com

Small office ISDN routers

3Com 0800 225 252 www.3com.com

Zyxel Cambridge-ISDN 01223 495928 www.cambridge-isdn.com

Compaq 0845 2704222 www.compaq.com

Intel 01793 403000 www.intel.com

Techie detectives

Computers have long been criticised as being an aid to the fraudsters, but now they are on the right side of the law. George Cole investigates a new breed of IT-literate crimebusters and the weapons they have at their disposal.

Although Sherlock Holmes needed nothing more than his keen nose and a magnifying glass to solve a crime, modern law enforcement agencies are increasingly having to rely on information technology.

It is not so long ago that a major crime database consisted of hundreds of meticulously indexed cards. But last April saw the launch of PITO (the Police Information Technology Organisation), a public body aiming to develop the use of IT in Britain's police forces.

In 1967, the Police National Computer (PNC) project was launched, with the aim of computerising police records. The PNC, situated in Hendon, north London, was launched in 1974. It consisted of two

the PNC's hardware is being beefed up. By the end of the year, the organisation will have a Siemens CMOS/.390 processor which will double its processing power to 320 MIPs.

The PNC uses relational databases for criminal analysis. A system called comparative case analysis, for example, is used in serious cases such as murder, rape and robbery, comparing the methods used in various crimes to see whether there is link between them.

A system called VODS (Vehicle Online Descriptive Search) makes it possible to identify vehicles when the registration number is not known. By entering data such as the car's make, colour and number of doors, and a postcode of the area where the crime was committed, it is often possible to produce a list of suspect vehicles and their registration numbers. Another system called Quest works on roughly the same principle to identify possible suspects from a partial description.

In 1997 the PNC handled about 60 million transactions and processed 269 million screen images. During the busiest times of the week, the PNC delivers about 10,000 screens of information to police forces around the country every five minutes.

The beat goes on

In the past, police officers have had to radio back to their station control room and make a request for a PNC check. The control room sends the request on to the PNC, receives the information and transmits it back to the officer. Now nine forces, including Sussex, Derbyshire and Lincolnshire, are testing a mobile data system which gives the officer on the beat direct access to the PNC. Fifty mobile data terminals are being tested, including handheld PDAs, notebook PCs and in-car terminals with touch-screen systems.

The Yorkshire Ripper investigation, during which valuable information was missed through lack of communication between various forces, led to the establishment of Holmes (Home Office Large Major Enquiry System). The database is used to cross-reference evidence collected by different police forces. Originally a mainframe system with dumb



**It's elementary,
my dear
Watson... The
HOLMES
mainframe is due
to go live this
winter**

Burroughs/Unisys B6700 mainframes which filled an entire room, and the central file system had a data storage capacity of around 5Gb. It seems primitive by today's standards, but the PNC transformed operations, providing police officers on the beat with information in seconds rather than days.

The criminal tendency

The PNC initially held a database of stolen vehicles, but has grown to include criminal records, criminal intelligence, DNA data, firearms records and bail conditions amounting to a total of around five million names and 111 million records. To match this growth,

terminals, Holmes 1 is now a client/server system using Windows software.

The updated Holmes 2 is being tested by West Midlands, Northumbria and South Yorkshire forces. Supplied by Unysis, it will include an integrated analysis package, advanced free text retrieval and automated indexing. It is due to go live nationally this winter.

City of London police have set up an automatic number plate recognition system (ANPR) in an effort to prevent terrorist attacks. All roads into the City are covered by a network of surveillance cameras which photograph the licence plates of all incoming vehicles. The images are digitised and fed to the PNC for checking against lists of stolen or suspicious vehicles.

Scene of the crime

One of the most ambitious police IT projects in the UK is NAFIS (the National Automated Fingerprint ID System). Due to be launched in England and Wales in around 2001, it uses hardware from Sun and Hewlett-Packard, and software that includes a database from Informix.

NAFIS can process about one million fingerprints a second. The latest version has been developed by US IT company TRW and is being piloted by nine UK police forces. The aim is to develop a database containing six million sets of prints and more than two million scenes-of-crime clues. When a fingerprint or other mark is found at the scene of a crime, it will be digitised and fed into NAFIS. Smart algorithms will be used to analyse these images and compare them with those stored on the database. There are also plans to link NAFIS with fingerprint systems used by the FBI and police forces in other European countries.

Hard disks with criminal records

Computers are increasingly coming under investigation in a host of crimes ranging from computer fraud to blackmail. "Computers often hold information that is extremely helpful to the investigator, such as banking transactions, contacts, names and addresses," says Andrew Durant, senior manager of the fraud services unit of accountancy firm Arthur Andersen.

The burgeoning science of forensic computing recovers and analyses computer data which could form part of a criminal investigation. Many of the tools used by forensic computing investigators are designed for notebook PCs.

"When people use computers for committing fraud, they leave a lot of trails," notes Tim Allen, director of Computer Forensic Investigations, a company which specialises in investigating computer fraud. Anyone who has ever used a program like Norton Utilities knows it is possible to retrieve deleted computer data. Howard Schmidt, Microsoft's director of information security, notes: "A lot

of people believe that when they press the delete button on their PC or reformat the disk, they are destroying all the data. Not so."

There are a number of programs to help the investigator recover deleted data, including files which have not been saved on the PC. "One fraudster created a set of false invoices on a PC and printed them without



The ANPR (Automatic Number Plate Recognition system) enables bobbies on the beat to instantly check a car's details

saving the files. But what he didn't realise was that the computer had created a temporary file which we were able to recover," says Peter Verreck, director of Computer Forensics, which develops forensic computing technologies.

Computer fraud is able to flourish because in many companies, senior management lack IT skills and have few control systems in place. One of the best known scams is the "salami slice", which involves skimming a small amount of money (say, a few pennies or cents) from each customer account and diverting it to another account. When thousands of customers are involved, this can add up to a tidy sum. Another favourite is to create bogus employees or suppliers and direct money into their equally fictitious accounts.

Mark Morris, senior manager of Computer Forensic Investigations, says only about ten to 15 percent of computer fraud is committed by someone dialling into a company network from outside. "Most fraudsters rely on knowledge of human behaviour rather than technology," he adds.

Examples include the "dumpster diver" who rifles through wastepaper baskets for pieces of paper with

"Computer fraud is able to flourish because in many companies, senior management lack IT skills and have few control systems in place"

passwords scribbled on them, and "shoulder surfers" who look over the shoulder of someone entering a password. Temporary workers have been known to ring up the accounts department claiming a computer crash has deleted password files, and asking for passwords so that employees can gain access to their PCs.

"There are warning signs that employers should look out for, such as the worker who often stays late or who doesn't like other people taking over his tasks while he's away on holiday," says Morris.

Courting disaster

If a company like Computer Forensic Investigations is called in by suspicious employers, its team usually makes a visit outside working hours to check out the suspect's computer. The first step is to copy the data from the suspect's PC on to another computer to be analysed. The difficulty is in doing this in such a way that the data is admissible as evidence in a court of law. "You mustn't alter the original hard-disk contents in any way, but by simply copying the data it is possible to write new files to the hard disk," explains Verreck.

Computer Forensics has developed a disk image system called Dibs which creates a perfect copy without affecting the original data. Dibs uses a phase change technology to copy the data onto an optical cartridge. The Dibs software can find data that has been hidden, deleted, password-protected or encrypted.

The volume of data to be analysed can be vast. For example, if all the information on a relatively modest 500Mb hard disk was printed out, the 200 reams of paper would fill a small room from floor to ceiling.

But a new technology called visual intelligence analysis has transformed IT fraud investigations. "The traditional way of analysing data was to use a working chart, but sometimes this could be over 20 feet long," says Mike Hunter, managing director of software company i2. It has developed the Analyst's Notebook, a highly sophisticated database which is used not only by all the UK's

police forces, but by many agencies worldwide including Interpol, Europol, the FBI and the US Drugs Enforcement Agency.

The Analyst's Notebook breaks down complex information by creating links and producing graphical displays. Connections can be made between spreadsheets, photographs and documents. A feature called Link

Analysis can trace connections between people, organisations and the flow of money. Network Analysis can display transactions, account transfers and internet traffic, and a sequence of events can appear in the form of diagrams.

Other technologies that could ease the task of the IT fraud investigator are looming on the horizon. Arthur Andersen's Durant is enthusiastic about imaging. "When optical character recognition software improves, we'll be

"The warning signs are the worker who often stays late or doesn't like other people taking over his tasks while he's on holiday"



Example of a mobile data terminal giving members of the constabulary direct access to the Police National Computer

able to scan documents directly into a PC rather than entering them manually," he says.

Neural computing is useful for analysing patterns of behaviour, says Peter Baxendale, commercial director of Neural Technologies. The company is working on a long-term project with a merchant bank to produce an anti-fraud computer system that would monitor employees' normal patterns of behaviour, such as the files they access or the destinations PC data is sent to. If the employee's behaviour deviates from the norm, the system would put out an alert.

Baxendale says the system has great potential to reduce computer fraud, but adds a warning. "Technology doesn't replace your existing security systems, it complements them," he says. "Technology will never solve all your problems."

PCW Contacts

Computer Forensics/Computer
Forensic Investigations www.computer-forensics.com
i2 www.i2.co.uk
Neural Technologies neuralt.com
PITO www.pito.org.uk



URL be sorry

Keith Teare, the founder of the Cyberia chain of internet cafés, has flown the UK coop and taken his talents to Palo Alto. Michael Hewitt caught up with him to talk about his latest scheme for transforming the web with Real Names.

This was supposed to be a double act: the Keith Teare and Jean-Marie Hulot interview. But on the day, Jean-Marie decided to take a back seat, so you'll just have to imagine him nodding in agreement after Keith's each and every utterance, like a toy dog in a car's back window.

He must have had the occasional loquacious moment, because in February 1997 he was invited as guest speaker to the Bangkok Internet Conference. What he said, though (lots of complimentary things about Microsoft) didn't go down too well with the audience. Nor did Keith's speech, for that matter. He appeared next on the podium and also came not to bury Microsoft but to praise it. "Our views were not at all popular," said Teare. "In fact, no-one would speak to us, so Jean-Marie and I had no choice but to speak to each other."

So they talked. Jean-Marie (who, according to Keith, "is a very famous guy — much more so than me") talked about his time at NeXT, where he'd been chief technology officer for ten years, responsible for the human interface creation software.

California dreaming

Keith had an impressive track record, too. He'd helped found the Cyberia range of internet cafés, and then Easynet. Now, both men were kicking their heels, looking for a new project. After some discussion, they hit on the idea of creating a much more simple navigation system for the internet, to replace lengthy and cumbersome URLs. They decided to form a company, eventually called Centraal, to develop and market it.

Well, it was a bit more complicated than that, of course, but you get the idea. Anyhow, in April last year, Keith moved to Palo Alto in California to get the ball rolling.

Why, I interrupted at this point, does everyone and his uncle move to Palo Alto these days if they're trying to flog something hi-tech? Is it simply tradition: the technological equivalent of doctors congregating in Harley Street, tailors in Savile Row and drug dealers in Electric Avenue?

"No, it's more the fact that the UK is a total washout as regards efficient financing of technology projects," replied Keith. "I had the experience in Britain of launching a company, Cyberia, that's a very well-known brand

name throughout the world. And yet it has never been able to get properly funded and grow into a large-scale franchise cybercafé operation, as I'm sure would have happened had I founded it in the US.

"For instance, look at a US company called Starbucks Coffee. It has a similar business model to Cyberia but now has hundreds of outlets throughout America, funded by venture capital. No financial institution is particularly keen on taking risks, of course, but at least in the US they're willing to give it a go. In the UK, forget it. As far as our banks are concerned, risk is a four-letter word."

Choppy Channel crossing

Keith blames the accountant-led balance sheet mentality in the UK for the less than spectacular success of another of his ventures, Channel Cyberia. This was a web-based service that delivered a rolling schedule of information and entertainment, including news bulletins from ITN, sports updates from the Press Association, book reviews and an interactive soap. It was all financed by in-site banner advertising.

Back in 1996, when it first went live, Keith had predicted that it would become as big as AOL and CompuServe. Those sorts of proprietary online services, he said, would be unlikely to retain their user base and would have to migrate to an open environment — the web. Channel Cyberia was this open environment, but with a television-like interface to make navigation and selection of material that much easier.

"The collapse of CompuServe, and the transformation of AOL and Microsoft Network into what are basically internet providers, has proved us right. At the time, Channel Cyberia was showing the way things should be done. In fact, Microsoft actually went on and adopted our 'channels' concept. But Channel Cyberia only ever made around £30,000 of banner ad revenue, because the market just wasn't there. Companies were just not willing to take the risk and invest money in advertising with us."

And if we in the UK don't soon pull our collective fingers out, warns Keith, we'll get left behind. "Here, the internet is still desperately in need of large corporations to take it seriously. If that doesn't happen soon, the cultural environment created by the early adopters will



fade through lack of enthusiasm. In particular, there needs to be investment in greater bandwidth and infrastructure.

"But will that happen? If I'm realistic and ask myself whether the organisations that are large enough to make that investment — in particular, BT and the cable companies — will actually do so, I'd have to say no. There's no historical record of them digging deep into their pockets. Not unless they see a proven business model. But as the internet is virgin territory, there is no business model."

Hence his move to America, where people are willing to take the risks. "After Channel Cyberia, I was

determined never to try to launch another big idea, here in the UK. I was absolutely certain that I would do it in America. Within 15 minutes of Palo Alto, I can meet the CEOs of all the world's leading hi-tech companies. I can also meet the venture capitalists with the largest percentage of the world's available venture capital finance. And I can meet investment banks that take companies public without even thinking about it. So the resources that you can bring together in that part of the world are really unmatched anywhere else, which means that if you fail in the US, it's largely your own fault. You can't blame anyone else."

Which, in a roundabout way, takes us to Centraal.

Keith Teare, dismayed by the lack of investment offered by UK companies, determined to make Real Names a success in the US

p142 >

Keith Teare's latest big idea, and Centraal's *raison d'être*, is something called Real Names. It came about because traditional internet URLs are not particularly memorable.

For example, if you want to find out about the Sony Handycam, even if you know its URL's exact location, you have to type a whole line of gibberish to get to its home page. Why can't you just type "Sony Handycam"? Well, thanks to Real Names, you now can. Try it. Put down PCW for a moment, log on, go into AltaVista and type away into the "Address" window at the top of the screen. Behold, after a few moments' churning, up it comes. It's totally transparent to the user. Now, isn't that a lot easier than having to type `http://www.sel.sony.com/SEL/consumer/ss5/camcorder/handycamrtmcamcorders/index.html?`

Actually, this is just a very simple example. The system is more flexible than that. It has to be. Suppose you want to go to the Mustang homepage with a view to acquiring a new, Ford-flavoured set of wheels. But suppose, too, that you're a resident of Mongolia. Obviously, a dealership based in London or New York isn't much use to you. However, Real Names has the intelligence to allow you to type "Ford Mustang Ulan Batur". This will bring up your local car showroom. Or at least, it will when Real Names is up and running on a few more desktops.

Spot the difference: URL or Real Name?

How does the search engine tell the difference between a URL and a Real Name? Simple. It automatically assumes that anything that doesn't have `www` at the beginning, or that isn't liberally sprinkled with full stops and forward slashes, is a Real Name. And if you type in a search term that doesn't correspond to a registered Real Name, the system (within reason) will give you a best guess and present a list of sites that it thinks are the sort you're looking for.

At the time of writing, the only search engine that's Real Name-enabled is AltaVista, although that should soon change. But if you feel sufficiently moved, you can go to the Real Names web site at <http://realnames.com> (or better still, just type "Real Names" into AltaVista) and download a plug-in that will make Windows 95 Real Names-enabled. Then, any software that's running while you're online will do the job.

Currently, although there are about half a million Real Names addresses, most of them set up by Centraal to kickstart the service, only a few hundred companies are actually registered with Real Names. But if the idea takes off — and it's such an improvement on the existing navigation system that I'd be surprised if doesn't — then all products and company information will be as easily accessible as described above.

So, I asked, how does it all work? "Once you've

created your web page, you go to our subscription services web site and register its Real Name. Ideally, the Real Name should be product-specific: 'Amazon Bookshop' or 'Ford Cosworth', say. We won't allow generic names such as 'book' or 'car'. When you've

registered your Real Name, we email you an XML file to put into your web server. This is basically a form with blank fields that you have to fill in. Those fields contain information on the product, your company's location, the site's language, and so forth, to permit searches to be made: 'Ford Cosworth Manchester', for instance.

"Finally, you save the XML file. This is stored in three separate but synchronised locations: on your own web site, on our centralised site and on one of ten separate servers, or 'resolvers' distributed around the US. Each of these is capable of handling 100 million Real Name queries per day."

Companies pay \$40 per Real Name, per year. In practice, each product and company will have several Real Names to reflect the fact that, for example, different URLs are going to be in different languages, and that people may refer differently to the name of any product. Microsoft's internet browser might variously be called "Internet Explorer", "Microsoft Browser", or "That Piece Of Dreck That Keeps Falling Over Every 30 Seconds". Whatever, once each is registered and the \$40 coughed up, you can forget all that http nonsense.

"The nice thing from the user's point of view is that we've adopted a business model where the data is free. They can deliver data to their customers without ever having to pay us a penny, even though we're doing all the work to gather that data together. We've done that to ensure that the Real Names system grows quickly and becomes universally known. There are currently 2.5 million URLs. We reckon that the market for Real Names is about 100 times that. Of course, not all URLs will adopt Real Names, but those that do will adopt several. So the potential market is very big indeed."

Nothing ventured, nothing gained

Multiply 2.5 million by \$40 and you can see that Keith and Jean-Marie aren't likely to have to take up busking on the London Underground. This fact shouldn't be lost on the UK banks and venture capitalists, who, if they'd taken a more long-term outlook, could have had a slice of that. So, what's Keith's message to them now?

"I would ask them to take a closer look at America where people are taking more risks but getting the rewards from those risks. If I could make any contribution to the UK environment at all and had the power to do it, it would be to make venture capital more available to creative people. They get frustrated and irritated because they feel their creativity is not as fulfilled as it should be."

Jean-Marie nodded... vigorously. ■

**"After
Channel
Cyberia, I was
determined never
to try to launch
another big idea,
here in the
UK"**



#1
INTERNET



#2
BUILD YOUR OWN



#3
DIRECT

Trade

Choose life. Choose a PC, printer and business software. Of course, it helps if you've got £1,000 to spend. Five *PCW* writers were let loose with a grand in cash on five routes to computing retail therapy.

#4

RETAIL



#5

MOBILE



spotting

The annual spending spree is now a well-established tradition at *PCW*. Every year, five of us get a wad of money in our mitts, not to run off to South America with, but for buying a PC, printer and business software.

In years gone by we have bought systems with £1,500 or even £2,000. This year we decided to see if we could tighten our belts and cut it down to just £1,000 (ex VAT) for a full system. What we choose to buy always generates a good deal of argument, with each of us

swearing blue blind we have got the best value for money. This year was no different. But not all of us chose the traditional route and bought a pre-built PC.

Adele Dyer opted for a custom system from components bought from six different suppliers, while Gordon Laing abandoned the idea of a PC and decided on a portable and wireless approach. Adam Evans and Nik Rawlinson bought direct, one from the internet and one from the ads in the magazine, and we released Paul Trueman into the community to buy retail.

BUILD YOUR OWN: Adele Dyer

I had never seen myself as a DIYer: no traipsing round B&Q picking out timber for me. But after writing about the early days of home-brew computing for *PCW*'s 20th anniversary issue [May 98], the call of the screwdriver finally got to me and this year I opted to build my own PC.

Buying all the bits and pieces

As I was building from scratch I had to buy everything, from the case right down to the keyboard and mouse. This means you end up buying all kinds of bits and pieces you normally take for granted, like a floppy drive. These are cheap, but they do push the overall price up. Even if you are rebuilding an existing machine, the chances are you will need a new motherboard and processor.

I decided to take the more expensive but future-proofed route of a PII processor and BX motherboard, avoiding Socket 7. Looking at the adverts in the magazine I was really tempted to go the whole hog and opt for a Micronics board and a PII300, but when everything was totted up, I didn't have enough money. So instead I opted for a PII 233 from Dabs Direct and a Chaintech motherboard, supplied by Choice Systems.

The BX chipset gives me a little built-in future proofing, as it supports a processor running at up to 450MHz. The 100MHz system bus on the BX board will only work with processors running at over 350MHz, and will clock down to 66MHz with my PII 233; but if I upgrade the processor at a later date, I will not have to replace the board too. Remember that if you are going to buy an ATX motherboard, you will also need to get hold of an ATX case, as otherwise your ports will all be in the wrong place.

If, like me, you go for a Slot 1 processor rather than a Socket 7 chip, you will likely need new RAM as well, probably swapping to DIMMs from SIMMs. RAM is cheap at the moment, with DIMMs costing around £1 per megabyte. If you want to use your older SIMMs with new DIMMs, ensure they use the same voltage and run at the same speed, or the faster RAM will clock itself down to the speed of the slower RAM. I went for SDRAM DIMMs, although on the tight budget I was working to, I could only afford one 32Mb module. But as RAM is easy to slot in, upgrading won't be a problem.

Graphic detail

PCI and AGP graphics cards are the same price for what is essentially the same card, so not surprisingly I went for an AGP card which will give me much faster performance. I picked out an ATI Xpert@Work — one of the best cards around. Most direct vendors sell both OEM and full high-street retail cards. These cards are the same, the differences being in the warranty and the software. ATI gives a five-year warranty on the retail version and only three years on the OEM.



The software bundle, including games, varies depending on where you buy the card, which explains the differences in price you find. I bought mine from Dabs Direct and paid just £69 (ex VAT), minus any games.

When it comes to some other components, budget really comes into play again. For £99 from Tech Direct I got a 4.3Gb Quantum Fireball, which should provide enough space for the near future. The ATX-format case and power supply came from Dabs Direct again for just £51, although if you go for a non-ATX board you can get a cheaper deal.

The keyboard, mouse, CD-ROM drive and floppy drive all came from Watford Electronics, as well as the software bundle, Home Essentials. I chose the cheapest on each, but if I could stretch the budget a little I would have chosen a Microsoft Natural keyboard. Novatech had the best deal on my chosen printer, the excellent but low-cost Epson Stylus 400, and on the monitor, a 15in Microscan 4P from ADI.

Shopping List

<i>(all prices ex VAT)</i>	
PII 233	£135
Chaintech BX motherboard	£120
ATX case and power supply	£51
32Mb SDRAM	£32
Quantum Fireball 4.3Gb hard drive	£99
ATI Xpert@Work	£69
Floppy drive	£15
Aries CD-ROM drive	£36
Keyboard	£12
Mouse	£4
ADI MicroScan 4P	£145
Windows 95	£105
Home Essentials	£75
Epson Stylus 400 Color	£118
Total	£1,016

Contacts:

Choice Systems 0181 993 9003; Dabs Direct 0800 558866 www.dabs.com; Novatech 0800 072 7771 www.novatech.co.uk; Tech Direct 0181 286 2222 www.techdirect.co.uk; Technomatic 0800 338000 www.technomatic.co.uk; Watford Electronics 01582 745555 www.watford.co.uk

Shock to the system

The largest expense is the operating system. It comes as a shock to realise that a full version of Windows 95 will set you back a staggering £105, and that Technomatic was the only vendor that seemed to carry it. Nor can you transfer a copy of Windows without breaking the licensing agreement, so if you are building a new machine, the full version is the only legal option.

All I had to do then was put all the components together and I'd have the perfect PC. Well, almost. I could have done with a larger monitor, more RAM, a faster processor and a better keyboard. I also had to do without a

modem, a sound card and a speaker. But once you have built your PC, delving into it again to add parts will seem remarkably easy. ❖

INTERNET: Adam Evans

As I look around the bustling PCW office, it occurs to me that there must be an easier way to buy a PC. The other four participants in the challenge are either running around sweaty shops, making endless complicated phone calls, racking their brains over a "novel portable infra-red fun solution", or buried in the labs exploring the mysteries of BIOS configurations.

There has to be a way to check out the best deals without all those little stresses and strains... and it's staring me right in the face: the internet. To save time, I limited myself to a dozen or so companies which I knew from experience could build me a PC that I would probably be happy with.

Shop till you drop

The first site I went to was Dell www.dell.co.uk, long heralded (by itself) as the cutting edge of online PC buying. And to be fair, the figures are very impressive: globally it is doing four million dollars of business on the internet every day, and aims to be doing 50 percent of all its business on the internet by the year 2000. The Online Store gives you basic systems which you can configure to your liking. The price updates as you go along, so you can keep track easily. The use of baseline systems was handy as a starting point but I was frustrated by the lack of options for configuring the system; for instance, I had to go to another screen to choose another processor.

The other major direct PC company based in Ireland is, of course, Gateway www.gw2k.co.uk. Its site had many of the same features as the Dell, including online ordering and a price that updates automatically depending on the configuration you choose (though I could only see the top half of the characters on my browser). There were more options on this site, but it too suffered from too many restrictions, as I wanted to play around with all the bits and pieces to see what I could get.

Next, I took a look at some other multi-national companies: IBM www.uk.ibm.com, Compaq www.compaq.co.uk and HP www.hp.com/uk. They all had a decent amount of information on their product ranges, but it was a little tricky to find the PC sections on the IBM and HP sites. None of these companies allow you to set your own specification, so there is no need for an online configurator. Out of the three, only IBM actually shows prices on its web site. Very disappointing.

Buying British

Finally, I cast my beady eye over a random selection of homegrown British companies, all established names with good reputations. Armari www.armari.co.uk had lots of technical information and impressed me with its custom configurator which let me specify absolutely everything, although the individual parts did not have prices. Carrera's www.carrera.co.uk site was clear and easy to navigate, but there was no configurator and I couldn't find enough information on parts for my liking.



The Dan Technology www.dan.co.uk pages used a similar method to the Dell and Gateway sites, with baseline systems that I could change to a certain degree. Elonex's www.elonex.co.uk configurator was nearly as good as Armari and Dell's. The Panrix www.panrix.co.uk site was confusing at first: you have to click on "Sales" to find the PCs. It may be "Sales" to Panrix but it's "Buy a computer" to us punters. It had lots of information about various systems but no custom configurator.

Viglen's www.viglen.co.uk site also lacked a "build your own" page, and although there was plenty of information about various systems, it was not presented all that well: disappointing for the largest British PC company. On the plus side, the wealth of technical and support information was impressive.

Sites, sources and specifications

Overall, the sites I visited were good sources of information for making a buying decision, but not one had everything I was hoping for in terms of customising, pricing, specifications and clarity of design. Only some went into the kind of detail on specifications of peripherals that some people require, but this is not as big an issue as it was two or three years ago.

I found that the online configurators were the most useful tools, given that I had a strictly defined budget, but the best examples of these, Armari and Dell, did not have systems in my price bracket. Using the internet as my sole source of information (but using the telephone to order) I finally went for a Viglen Contender

2 PC with 233 PII processor, 32Mb RAM and 3.5Gb hard disk, for a bargain £859. I added on £71 to upgrade to full multimedia with 32X CD-ROM drive and sound card. It comes with Microsoft Works and the one drawback is the 14in monitor which, if I had the cash, would be the first thing I would upgrade. All I needed then was a printer. A quick jog over to the Dabs Direct site www.dabs.co.uk got me a Hewlett-Packard 400L colour inkjet for £66. I managed to get it sorted without removing myself from my comfortable chair, and the lot comes in at £996 ex VAT. ❖



MOBILE: Gordon Laing

Here's an experiment you may want to try at home: take one technical writer and a handheld PDA. Leave together in a room for a while, and hey presto! As long as you've chosen the right model, you've got yourself an evangelist.

I've seen it happen countless times. I'll be at a press conference reaching for my pen and paper when everyone else is tapping at PalmPilots and opening Psions, and looking over at yours truly with a mix of incredulity and disgust. I thought I'd better see what all the fuss was about, and opted to try the Psion 5.

I knew I'd get into it, but had no idea to what extent I'd be impressed. One weekend I had to quickly bang out a few notes, and instead of waiting for my PC to start up I flipped open the Psion, tapped away, and flipped it shut again — absolutely no fuss. The only downside is the 5's screen, which can be a bit tricky in low light. On the other hand, under bright outdoor conditions it excels where a backlit TFT would struggle. After sitting for a while in a sunny park I had the best part of 1,000 words written. At that moment, I realised I was hooked.

Red or dead

So the Laing shopping list starts with an 8Mb Psion Series 5, which comes with the required office applications. The new PsiWin 2.1 connectivity software even converts Office 97 documents. I use Office 95 on my PC and even that can't open Office 97 documents; I suppose there's that Word filter on the web, but still no hope of opening Excel 97 files. Psion's serial cable happily chatted with my PC, but when I saw that bit of dark red plastic on the back, I knew there was an even better way.

Yep, you've guessed it: infra-red. Surely the most under-used but possibly the most useful of all IT connectivity interfaces was begging to be employed. I decided to see if I could go completely mobile and wireless. The Shopping Spree spec demanded I get a printer, so I began the long search for an infra-red model.

Plea from the heart

What a nightmare. Can I just ask right now that all printer manufacturers get off their bottoms and start fitting infra-red as standard on all their models. It'll cost them pennies, save me tearing what little hair I have left out, and attract countless purchases from all those notebook and PDA owners who are wondering what they can point their infra-red ports at. Hewlett-Packard started doing this with its LaserJet 5 range, but seems to have abandoned the idea of fitting infra-red as standard.

HP does however do a widget that sticks into the parallel port of its portable DeskJet 340 printer, so that will have to do. The Psion already includes a driver, so you can point and print to your heart's content. The combination is known as the DeskJet 340CBI and I bought one from Technomatic for £186.33. While on the phone, I also ordered my Series 5 for £398.33. Exportech sold me an



additional 32Mb of flash memory for a very reasonable £203.87.

The next job was communications. I believe a handheld comes into its own when you can fax and email from it while on the move. You can buy expensive mobile data cards, but it is possible to emulate the hardware using software running on a sufficiently cunning 32-bit OS. Nokia has already done so with a package for Windows 95 which works with several of its latest phones. Psion demonstrated the same thing on the Series 5 at its launch.

Cheating on the phone

Psion's mobile phone software will not be available until nearer the end of 1998, so I'm going to cheat a bit. I've opted to buy the gorgeous Nokia 6110 with its new Lithium Ion battery (four hours talktime and up to a week in standby) which I'm pretty certain will have a software data solution from Psion within a few months.

Best of all though, the 6110 features infra-red so I won't even need a cable! The phone with a new connection to Cellnet or Vodafone GSM costs a penny under £130, with each network offering international roaming agreements with 74 and 81 countries respectively.

You could wait for Ericsson's SH-888 dual-band mobile phone. It features infra-red and built-in data hardware, letting it work with notebooks and PDAs without waiting for someone to write platform-specific software drivers. There were no prices or launch dates at the time of writing.

Psion games are great, but I fancy some colour and stereo sound. With the remainder of my budget I've treated myself to a Nintendo 64 with the Goldeneye

and Mario 64 games, along with a spare controller and decent-quality SCART cable. Nintendo aside, there's my entirely portable and wireless kit, and none of it is cream-coloured. Oh, and wouldn't you know it? Around a tenner left. So I've selected a bottle of Chateau Rollan de By, a rather satisfying Bordeaux from the Medoc region, to relax with after my exertions. ♦

Shopping List	
<i>(all prices inc VAT)</i>	
Psion Series 5, 8Mb	£398.33
HP DeskJet 340CBI	£186.33
Delivery on above items	£16.45
32Mb flash memory	£203.87
Nokia 6110 with Lithium Ion	£129.99
Nintendo 64 with Goldeneye	£144.95
Nintendo 64	£44.95
Nintendo 64 controller	£29.99
Nintendo SCART cable	£9.95
Chateau Rollan de By	£9.99
Total	£1,174.80
Contacts:	
Psion 0990 143050; Exportech 0181 682 3313;	
Technomatic 0800 338000; Nokia 0990 003110;	
Carphone Warehouse 0800 424800; Nintendo	
01703 653377	

DIRECT: Nik Rawlinson

Quite apart from the fact that it's a great read, there is a second reason to buy *PCW*: Direct Buyers World, where mail order PC manufacturers nationwide display their wares. This is in effect their shop window, so it's a great way of buying your new PC with the minimum of fuss.

Buying direct has numerous advantages over buying from retail. The most obvious is that you can specify exactly the PC you want, rather than just having to settle on one of the fixed configurations boxed and waiting in the back of the shop. As the machines are not made up until an order is placed direct, then you can also get the latest components rather than something that was available six months ago when the spec was decided by the manufacturer. Also, you get the price advantage of buying from a supplier who does not have to fork out for fancy high-street premises.

Page proof

So, sitting down with what *PCW*'s vending machine laughingly calls coffee, and a copy of the June issue, it was time to start spending. Several systems caught my eye, but three, from Watford Electronics, Tiny and Dabs Direct, seemed to be particularly good packages.

For £999 (leaving me just about enough to invest in a mouse mat) Watford Electronics seemed to be offering a good deal. Based around a 266MHz Pentium II, its Aries Power Media Pro was bundled with a colour Olivetti printer, Lotus SmartSuite 97 and a selection of Comptons applications. Unfortunately the printer came with only a mono cartridge. With 32Mb RAM and a 4.3Gb hard drive it was not the best-specified PC on my list, but it was adequate for my current needs and should last for some years to come. With 4Mb on the graphics card and a 15in monitor, it was holding its own with the rest of my contenders. But the lack of a modem was the final deciding factor: in today's connected society, could I really afford to be left out in the cold?

Tiny's Home Study Plus System, once again retailing at the £999 price point, utilised a 266MHz PII. With only 32Mb memory and 2Mb on the graphics card, the overall performance of this machine would be slightly less impressive although still more than adequate for almost any home or office user. A member of Tiny's sales team who did not identify himself picked up the phone within two rings and answered all of my questions without the need to refer to any further information or leave the line. The Epson Stylus 300 printer bundled with this system is no longer sold as a standalone unit. Its performance was disappointing in *PCW*'s January 98 inkjet group, test taking 45 minutes to produce five pages of high-quality text and holding only a single CMYK print head.

Success! A salesperson who's sussed

In the end I settled for the Atlantis Home Office from Dabs Direct. The phone was answered on the first ring in a professional and courteous way — and the assistant knew his stuff. All of my questions regarding screen resolutions, delivery times,



customisation options and even a question about whether the photo in the company's advert was the right one, were answered swiftly and with confidence. About warranty options, he was even able to direct me to the correct page in the advert for the relevant details. When I asked about information already made clear in the advert, the assistant took the time to explain the basic details once again in a lucid and patient way.

Good value for money

For the money, the spec was generous. The standard system, based around a 266MHz Pentium II processor, included a 4.3Gb hard drive and 32Mb of SDRAM. We were assured that the 15in monitor had a top resolution of 1280 x 1024 and was driven by a 4Mb Dabs-branded AGP graphics card. A 56K modem was bundled for external connectivity, and the package included the excellent Epson BJC-250 colour inkjet which, in our tests, produced standard-quality pages from Word at a rate of one every 36 seconds. The printer's current retail as a separate unit, stood at £99 ex VAT.

At a total package price of £949, I had £51 left and so opted to spend £45 of that on upgrading the memory to 64Mb. As 90% of Dabs PCs are built to order, this customisation

would do nothing to delay the one to two weeks delivery time quoted. A five-year warranty was included, the first year OSM parts and labour, then four years return to base labour costs.

An earlier version of the Dabs system was featured in *PCW*'s April 98 group test, coming first in our Quake test for screen redraw rates and fourth in its group when facing our BapCo business applications tests, although that model was based around a 233MHz processor and held only the standard 32Mb RAM allocation. ♦



RETAIL: Paul Trueman

Whatever happened to the good old-fashioned notion of walking into a high-street shop and snapping up a PC? I was keen to discover whether the myth of inept staff, poor customer support, and large overheads being passed on to the customer is still a realistic one nowadays. One would have thought that the one obvious advantage of retail — namely, that one can use and try out a PC before buying, would be particularly popular in the touchy-feely nineties. So, keen to touch and feel as much as possible without incurring criminal proceedings, I set off to drop a grand plus tax on the perfect retail PC.

Service with a smile, a bit of know-how, or neither

There were no assistants in sight in Comet, and I wondered round jabbing keys and wiggling mice, thoroughly unassisted. As far as I could ascertain, Comet's best offer for my price range was a P233 MMX with 32Mb of EDORAM, a 3.2Gb hard drive and a 15in monitor. I managed to find someone over by the televisions, and dragged her kicking and screaming into the Multimedia section, only for her to promptly flee, claiming ignorance but that she would "send someone over". They never showed up.

Next stop was Tempo, where the service was an improvement on that from Comet (in that there was some). Although the salesman seemed a little too keen to simply hand me a catalogue and push me out of the door, he seemed knowledgeable and Tempo did have much better offers than Comet. A CTX machine with a PII 233, a 4.2Gb hard drive and 32Mb of EDORAM meant it was a considerable improvement on Comet.

Heartened by this I checked out PC World, and while it had nothing that could compare with a PII processor and 4.3Gb hard drive, its in-store service was excellent. A helpful member of staff took me round all the PCs on offer at that price range and told me about their PC and printer bundles. I hadn't managed to try out any of the hardware though, in any of the shops, and had been told the display PCs weren't really "set up" to play around with.

The service was attentive and helpful in Dixons too, and I was allowed to browse after we had discussed specifications, although the basic specifications of all the machines was similar to that of PC World. First impressions were not favourable when I visited the John Lewis store on Oxford Street, with its single row of dusty PCs all looking rather forlorn and overpriced.

On a Carrera path

I found my dream system on Tottenham Court Road, from Carrera Technology. The service was impressively swift, and soon after walking in I was sitting down with a sales executive who whisked me through the Power Pro II's impressive specifications: PII 266 processor, 32Mb SDRAM, ATi 3D Rage II AGP card and 56K modem. As well as the PC, speakers and large software bundle I would get the Epson Stylus 400 Color printer and Carrera's three-year RTB warranty for 999 (ex VAT). Although the 400 is not the final word in inkjets, I was willing to accommodate its slow print times for the hefty specification of the PC. Carrera stressed that I



could always go for a lower PC specification and a quicker printer, but I was happy with the deal.

When we finally got to test the machine, the Final Reality scores were a little disappointing, although it scored more impressively in the 2D Sysmark tests. A large tower PC, the Power Pro had plenty of room for expansion inside and the software bundle was very impressive, including the excellent ClarisWorks Office, Hutchinson's 97 Encyclopedia and a few games. The LG Studioworks 55i 15in monitor struggled to produce a maximum resolution of 70Hz at 1024 x 768 resolution, and although it fared better at 800 x 600, there was some colour loss around the edges of the picture.

Sharing the experience

All in all, it was an interesting experience buying a retail PC but I wouldn't recommend it to everyone. "Shopping around" the major retailers isn't really anything of the sort of course, as the Dixons group owns a frightening number of different stores — Dixons, PC World and Currys. But if you are willing to put the legwork in, there is still plenty of choice.

The myth of being able to see what you are buying is one that needs a little debunking, as most of the time you'll be looking at demonstration screensavers and few shops will let you fiddle with the Windows OS. You can't exactly start running diagnostic programs or poking around inside for example, and you can't know how the machine will perform, but you can still test out the peripherals and the monitor — important parts of any PC system. My PC looked good on paper for example, but its 3D scores were disappointing, bearing in mind it had an AGP card. It did fare much better running 2D apps, however.

On the plus side, it's good to know there are still ways to buy a PC that let you wander round an actual store rather than a virtual one, looking at the products and pestering the staff. ♦



All shipped out: deals, deliberations and debunking

In an exercise like this, personal choice is everything, and there can be no winners and losers. But it's worth going into a judgmental huddle, as Lloyd Grossman would say, to deliberate, cogitate, and digest.

Paul Trueman's choice of Carrera was a bit of a cheat when buying from retail. Carrera is essentially a direct vendor, selling most of its PCs over the phone and building to order, so it's no wonder the company was able to offer a better deal than the Dixons and PC Worlds of this world. It's not unusual to find direct vendors on the high street. Tiny has shops around the country, and Gateway has a showroom in London's Covent Garden and plans to open more in other cities. Other direct vendors, such as Dan and Panrix, also have showrooms at their premises. But what is clear is that if you do not feel confident buying without seeing the product, the high-street stores effectively penalise you for doing so, charging you more for a less up-to-date product. So if you must touch and feel, go to the showroom of a direct vendor.

Buying direct still seems to offer the best value for money, and both Nik Rawlinson and Adam Evans got good deals for their £1,000, with Nik coming out ahead in terms of spec. Despite all the hype, however, there still seems to be very little alternative to actually speaking to someone on the phone when ordering. The internet can help you make

your decision and offer plenty of background advice, but consumers and most vendors, despite the rhetoric from some of the biggest direct vendors, do not seem comfortable with the idea of carrying out the whole transaction electronically.

If you build your own PC, you will never be able to get the same deals as if you were buying from a supplier who gets everything in bulk. But if you have limited means, it is probably the best way. You can of course cannibalise your existing PC to build a new one, which will bring the price right down, and you don't have to lay out the full amount all at once, but rather, start with a case and motherboard and build up from there. And, of course, you have the enjoyment and satisfaction of building it yourself. Gordon Laing's off-the-wall mobile system is an interesting concept from a theoretical point of view, but whether he could work full-time without a PC is doubtful.

Overall, the verdict is that £1,000 ex VAT can get you a pretty decent system, and another £500 on top could probably get you everything your heart could desire.

■ *Note: All prices were taken from the June issue of PCW so the deals we have picked may not be advertised in this month's issue, or if they are, they will doubtless be cheaper.*

Table of Features

	Adam	Paul	Adele	Nik
Manufacturer	Viglen	Carrera	N/A	Dabs Direct
PC	Contender 2 with multimedia	Power Pro II	N/A	Atlantis Home Office
Price ex VAT	£930	£874	N/A	£994 inc memory upgrade
Contact tel no	0181 758 7070	0171 830 0486	N/A	0800 558866
URL	www.viglen.co.uk	www.carrera.co.uk	N/A	www.dabs.com
Processor	PII 233	PII 266	PII 233	Pentium II 266MHz
RAM	32Mb	32Mb	32Mb	32Mb
Hard disk	3.5Gb	3.2Gb	4.3Gb	4.3Gb
CD-ROM drive	32X	32X	24X	24x
Graphics card	2Mb Cirrus Logic CL-5465 AGP	4Mb ATI 3D Charger Rage Pro	4Mb ATI Xpert@Work AGP	Dabs 4Mb AGP Card
Modem	None	56Kbps Fax modem	None	Dabs 56K modem
Sound card	Viglen 16 PnP	VideoLogic Sonic Storm PCI 3D	None	Creative 16 Vibra
Monitor	Viglen ENVY 14Si with speakers	Goldstar 15in 55i	ADI MicroScan 4P	Belinia 15in Digital
Software bundle	Microsoft Works	ClarixWorks 5 Office	MS Home Essentials	Lotus SmartSuite 97
		Hutchinsons 97		Mini Office bundle
		ATI Mech Warrior 2		Games bundle
		ATI Wipeout		
Printer	Hewlett-Packard 400L Colour	Epson Stylus 400 Color	Epson Stylus 400 Color	Canon BJC-250
Price ex VAT	£66	£125	£118	Bundled
Contact tel no	0800 558866	0171 830 0486	0800 072 7771	0800 558866
URL	www.dabs.co.uk	www.epson.co.uk	www.novatech.co.uk	www.dabs.com

How we've spent our money — and bought our wine — over the years

In years gone by, the amount of money we have had to spend for this feature has varied. Most years we had £1,500, a round figure that would not get us a top-of-the-range system, but one which each of us could be happy with. In 1996 we raised the budget to £2,000, mostly because we all whinged that we couldn't get a good enough system for the price. Last year we were down to £1,500 again as RAM prices started to drop, while this year, with budget PCs coming in for as little as £400 and with Intel being given a run for its money at the budget end of the market, we thought we could push it and go for just £1,000.

What would £1500 have bought you in years gone by?

1993 486SX 25MHz PCs with 4Mb of RAM were *de rigueur*. The memory may have seemed puny compared to today's machines, but Windows 3.1 and the apps that ran on it were not memory-gorgers.

1994 Still on a 486, but this time the speed had increased to a DX33 and the RAM was up to 8Mb. CD-ROM drives were still far from

standard and PCI local bus was still on the drawing board, but a *Personal Computer World* tradition was established, when Gordon Laing first found room in his budget for a £5 bottle of Australian wine.

1995 Pentium 90s were around but out of reach of most on a £1,500 budget, so we went for DX2s instead. As the team made their decisions just before Windows 95 was released, most could still make do with just 8Mb RAM.

1996 With the budget up to £2,000, Pentium 133s or better with 16Mb RAM and 1Gb hard disks were within reach. Gordon even managed to squeeze in a Chilean Pinot Noir at £6.50.

1997 With the budget back to its £1,500 mark, P166MMX processors and 32Mb of RAM were the most popular choice. And you could even get little extras like Zip drives, SCSI or a 17in monitor for the price as well. But much to his (and our) disappointment Gordon did not have enough money left to buy a bottle of fine wine. He had to settle for a nice fizzy pint of lager instead. ■

Fast PCs
from
£699

ADI ProVista

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15.5"

1600

1280

New chip on the block

Fast chips in cheap PCs? Bargain! But should you choose a new Celeron-powered machine or stick with AMD and Cyrix? Nik Rawlinson tries before you buy.

Launched amid much pomp and circumstance, Intel's latest family of processors met the public on 15th April. The Celeron, Intel's contender in the battle for the sub-£1,000 PC market, was revealed at the same time as its fastest processors to date, the 350MHz and 400MHz Pentium II chips. With such powerful siblings Celeron was only ever going to be able to play second fiddle, but that hasn't stopped Intel pushing it as the next great thing in baseline computing.

Intel has launched the Celeron into a sector of the market that already has two key players — AMD and Cyrix. Both took advantage of the fact that Intel moved away from Socket 7 processors when it launched the relatively expensive PII in its proprietary Slot 1 form. AMD's K6 and Cyrix's 6x86 processors, both using existing tried-and-tested Socket 7 motherboards, won fans and sales by offering excellent performance at a low price. Intel sensed the threat, and the widening gap in its own product range, so it stripped the expensive L2 cache off the PII and launched it as the Celeron. But this processor is still around the same price as the K6 and the 6x86, and without the all-important L2 cache it was written off by many industry experts as too slow, even before it was launched.

The opportunity to put Intel's Celeron head to head with processors from AMD and Cyrix was too good to miss. We took machines from five manufacturers. Each built us one system around a Celeron, and another around either an AMD or a Cyrix chip, with all the chips running at 266MHz. Internal architecture, business application performance and graphics handling were closely scrutinised. This test was as much about the comparative benefits of each chip type as it was about which manufacturer could produce the best machine.

Instead of setting a price limit we requested 15in monitors, 32Mb RAM, a 33.6Kbps modem, a hard drive of 4Gb or more and any bundled software normally included with these machines, feeling that this would be a fairly typical spec for those investing in a lower-powered processor. By definition, the machines would use different motherboards and so one might expect the differing chipsets to have some effect on the performance results. More importantly though, in an attempt to keep the price low, the Celeron is designed to work without a cache. As it is this, rather than the slower system memory, that passes information to the processor, we were expecting the chip to be less impressive than its competitors. So, to find out if what we suspected really happened, and to take a first look at this new cut-price processor, read on.

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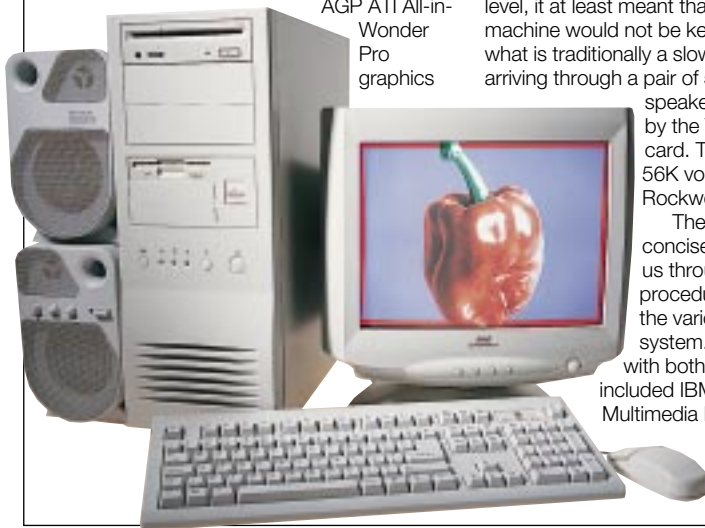
Ratings

- ★★★★★ Buy while stocks last
- ★★★★☆ Great buy
- ★★★☆☆ Good buy
- ★★☆☆☆ Shop around
- ★☆☆☆☆ Not recommended

Actinet Netrunner C

Actinet's Celeron PC was one of only two PCs in the test to use a BX motherboard, in this case from the EliteGroup. The BX chipset supports an external bus running at 100MHz, although with the Celeron chip it will run at only 66MHz. However, should you decide to upgrade to faster, better processors, including the 400MHz and the soon-to-be-released 450MHz PIIIs, you will be able to make full use of the faster bus on this board.

Graphics were delivered courtesy of an AGP ATI All-in-Wonder Pro graphics



card (an impressive piece of kit incorporating TV tuner and video capture) with 8Mb RAM on-board. The 4.2Gb UltraDMA Fujitsu hard drive performed at an impressive rate of 7.7Mb/sec in our read/write benchtest. The 32Mb SDRAM was supplied on a single DIMM module, leaving two of our three memory slots vacant. By replacing the existing RAM we would be able to increase the amount of memory to a massive 384Mb.

A 32X CD-ROM came as standard. While no drive is likely to sustain transfer rates at this level, it at least meant that the rest of the machine would not be kept waiting around for what is traditionally a slower device. Sound, arriving through a pair of 50W generic speakers, was processed by the Yamaha OPL3-SAX card. The modem was a 56K voice/fax model from Rockwell.

The documentation was concise and helpful, guiding us through the setup procedure and explaining the various parts of our system. Software bundled with both Actinet systems included IBM Worldbook 98, Multimedia Encyclopedia and Lotus SmartSuite 97.

The otherwise

disappointing Shinho monitor demonstrated no evidence of raster lines across our five test patterns, although there were clear instances of moiré. Colour registration was accurate with no offset guns, and we were pleased to see no evidence of streaking or ghosting. Dramatic image expansion was clearly evident when a white box was flashed on the screen, showing very poor screen regulation.

After using this monitor for some time, we began to suffer eye strain. We would recommend that those considering purchasing this system look into the possibility of changing or upgrading the monitor.

PCW Details

Price £938.83 (£799 ex VAT)

Contact Actinet 01952 270703
www.actinet.co.uk

Good Points Graphics card. Memory configuration.

Bad Points Keyboard. Monitor.

Conclusion If you're considering a Celeron, you won't go far wrong here.

Build Quality	★★★★☆
Performance	★★★★☆
Value for Money	★★★★☆
Overall Rating	★★★★☆

Actinet Netrunner MX

Actinet's AMD K6 machine was based around an AGP-enabled Socket 7 motherboard. AGP slots were originally only supported by Intel chipsets designed for Slot 1 and PII. Initially there was no support for AGP on Socket 7 boards — another selling point for Intel's PII. Eventually third-party board makers hit back, coming up with a chipset that would support AGP and Socket 7. These boards have gradually become more common but, up until now,

very few manufacturers have been including them in their test machines.

The interior of the Netrunner MX was not as tidy as we might have liked. Although they were not particularly obtrusive, a crumpled ribbon cable was not tied with the rest and a rainbow of power cables protruded into the main body.

The memory was supplied in the form of a single 32Mb SDRAM module, leaving a further SDRAM slot and four SIMM sockets free for future expansion. Likewise, two free PCI and one free shared slot would allow us to increase the number of expansion cards within the machine at a later date.

Those already inside were an ATI All-in-Wonder Pro graphics card, a Rockwell 56K modem and a Yamaha OPL3-SAX Sound System sound card to drive the generic 50W speakers.

The two 3.5in and two 5.25in forward-facing drive bays, all of which were external in this rather plain case, were supplemented by a further single 3.5in internal bay

that housed the hard drive. The common floppy drive was replaced by a SuperDisk drive taking LS120 disks. [For more information on this drive, see our Removable Storage group test, p116.]

The keyboard was not very comfortable to use. It was too springy for our liking and had a smaller-than-usual backspace key that we missed every time we went to use it.

The monitor was a disappointing 15in Shinho AV2 with a viewable diagonal of 13.8in. The image was blurred throughout our tests and unpleasant to look at. Colour intensity was uniform across the display, and bright image detail remained sharp in comparison to darker equivalents.

PCW Details

Price £880.08 (£749 ex VAT)

Contact Actinet 01952 270703
www.actinet.co.uk

Good Points AGP on Socket 7 board. Graphics card. LS120.

Bad Points Keyboard. Messy interior. Monitor.

Conclusion Great features.

Build Quality	★★★★☆
Performance	★★★★☆
Value for Money	★★★★☆
Overall Rating	★★★★☆



Read all about it: the Intel Celeron chip

Launched in London on 15th April alongside the 350MHz and 400MHz Pentium II processors, Intel's muted addition to its x86 processor range, the Celeron, is a cacheless, caseless Pentium II that is about one-quarter of the price of those Pentium IIs used in more powerful machines. It is built around a Pentium II or P6 0.25-micron 7.5m transistor core, but lacks one very important feature: a built-in Level 2 cache.

This cache is designed to speed up the internal processing of the chip, minimising the time the speedy core must wait for instructions from comparably slow memory. The Celeron thus mirrors the original Pentium CPU, the processor it ostensibly replaces, in having only an integral L1 cache. In fact, it does have two separate 16Kb L1 caches: one each for instructions and data. Unlike the Pentium, which made provision for an external L2 cache on the motherboard, this option does not seem to be available for the Celeron.

On the edge

The Celeron differs from the Pentium II in other ways, too. For a start, it ships in the Single Edge Processor Package (SEPP), which is essentially the same as the Pentium II Single-Edge Contact Cartridge (SECC) form factor of the Pentium II processor minus the cover and the thermal plate. Like the original Pentium II, the Celeron sits in a Slot 1 socket running at a maximum of 66MHz.

In addition to being able to work with most LX and recent BX chipset-based motherboards, the Celeron processor will also work with newer, low-cost motherboards based on Intel's new EX chipset. The EX is basically a cut-down version of the LX and does not offer a 100MHz front-side bus. Furthermore, the EX chipset only allows for three PCI slots, which will make it unattractive to many home users.

Performance comparison

According to Intel's own iCOMP 2.0 benchmarks, the 266MHz Celeron is no screamer, returning an index of 213 compared to the 266MHz Pentium II's 303. Intel is careful not to compare it in its published tables with its closest rival, the 266MHz Pentium MMX.

Compared with a 233MHz Pentium MMX, the 266MHz Celeron performs 30 percent better on floating point operations and 15 percent better on multimedia applications, according to Intel. On integer performance,

Improvements to the Celeron

At the time of writing, the 266MHz Celeron, originally codenamed Covington, was due to be joined by a 300MHz version in June. Three months later a 333MHz version, codenamed Mendocino, is due to be launched. Curiously this *will* have an on-die L2 cache but only 128Kb, a quarter that of the standard Pentium II. By embedding the cache in the CPU, performance will be improved slightly. So by delaying your purchase a couple of months, you'll probably be able to get a cheaper and/or more powerful Celeron.



Celeron: a cut-down chip with cut-down power. But will it still deliver what you need?

Celeron suffers slightly. However, initial independent testing in the US has revealed that the Celeron is slower even than systems built around the older Pentium processor: one magazine found the 266MHz Celeron to be slightly slower than a 166MHz Pentium on some benchmarks. Imagine — a 166 beating a 266!

The bottom line is inescapable. If you want performance, the Celeron is not for you.

Competing at the low end

The L2 cache was sacrificed in the name of price competition — i.e. to make the chip cheaper. According to US figures, some 50 percent of February sales of PCs were in the sub-\$1,000 market, an area in which both AMD and Cyrix have a sizeable market presence. If Intel was to compete at the low-end, it needed a cheap CPU very quickly; hence the bargain-basement Celeron.

Pricing for the Celeron is \$155 in 1,000-unit lots. By comparison, the pricing for the 350MHz Pentium II is \$621 in 1,000-unit quantities and \$824 for the 400MHz chip.

The Celeron is also a strategic CPU for Intel. As well as establishing a presence in the "Basic PC" market, Intel's other motive was to drive PC buyers towards Slot 1. If motherboard and PC manufacturers embrace the proprietary Slot 1, that is bad news for AMD and Cyrix and their Socket 7-only designs. The Slot 1 bus is in fact far superior to the Socket 7 bus for multi-processor systems, but its advantages in systems with a single processor (i.e. most PCs) are slight.

Its biggest selling point is that it is an Intel standard. No doubt many PC vendors will follow suit and make the transition to Slot 1, excluding AMD and Cyrix from the market.

Doing the decent thing

Intel continues to dominate the PC processor market but for the first time it is faced with some decent competition from AMD, Cyrix

What's in a name?

In case you hadn't realised, Celeron is a synthetic name. But it does have meaning. It comprises three elements: *celerity* (swiftness or speed), *cell* (room) and *on* (a suffix for unit). Put them all together and you have something that is supposed to mean "a small, integral unit and hints of a living force", according to Intel. Hmmm...

and IDT, particularly in the basic PC market. Even though they still use Socket 7 technology, the AMD K6 and Cyrix 6X86MX processors generally perform as well as systems based on lower-speed Pentium IIs, but at Pentium price levels. And with the Celeron being slower than the slowest PII, this means it operates at a significant performance disadvantage to its rivals, giving the rival CPUs an even greater edge. Of course, they currently also enjoy a cost advantage over the Pentium II Slot 1 design by adhering to the tried-and-trusted Socket 7 technology. And the lacklustre interest shown in the Celeron by manufacturers because of its weak performance means that far from killing off the Socket 7, the Celeron may actually be prolonging it.

Bash street chips

Make no mistake, there's plenty of life left in the Socket 7 (both AMD and Cyrix have Celeron "bashers" in the pipeline). Cyrix has announced the MII 300 (formerly the 6x86MX) processor which, it claims, is up to 25 percent faster than the Celeron. Forthcoming CPUs will feature on-chip L2 caches, 3D instruction-set extensions, enhanced MMX and floating-point units and a 100MHz bus, which will give both manufacturers a strong competitive edge over Intel in the run-up to Christmas.

Roger Gann

● www.intel.com/celeron

Mertec Home Media C266 AGP

Both Mertec's machines arrived in no-nonsense mini-tower cases, leaving two 5.25in bays and one 3.5in external bay free. Inside the case there was an extra free 5.25in bay to increase the number of hard drives without using up valuable forward-facing slots that can be used for Zip drives, DVD drives and the like.

The Mertec Celeron was one of the only two in this group test to be wrapped in a black plastic casing, much like the traditional Pentium II chip. It was also one of only two PCs to have a

BX motherboard, which supports the faster front-side bus for the faster PII processors. This may seem like overkill for the Celeron but would be useful if you decided to upgrade the processor at a later date (see page 164). The 32Mb memory is supplied on a single SDRAM DIMM module, leaving three of the four slots vacant for future expansion.

There were four free PCI slots for expansion cards, but adding ISA cards was out of the question as the Vibra 16 sound card and 56Kbps modem already took up the only ISA and shared slots. The 4.3Gb hard drive had a seek rate of less than 10ms and achieved a read/write data transfer rate of 4.4Mb/sec.

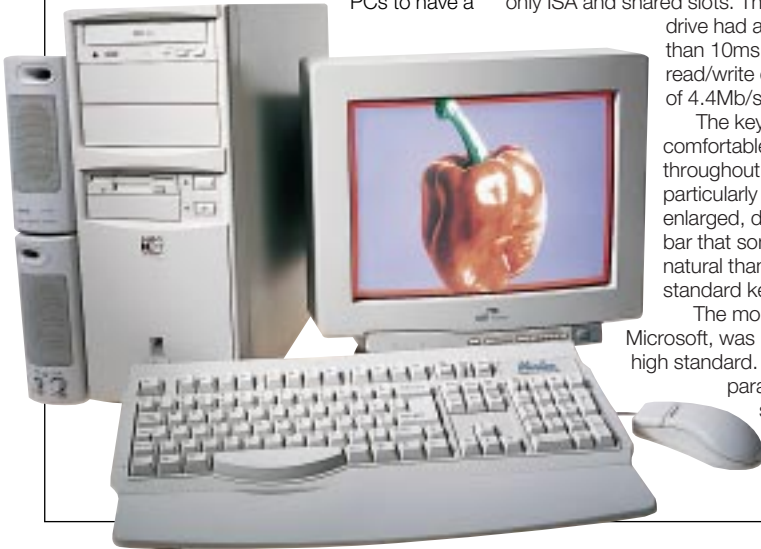
The keyboard was comfortable to use throughout our tests and we particularly liked the enlarged, drooping space bar that somehow felt more natural than that found on a standard keyboard.

The mouse, from Microsoft, was up to its usual high standard. The single parallel and dual serial ports were supplemented by two USB sockets.

Graphics were handled by an AGP ATI 3D Rage Pro card with 4Mb on-board, located in the AGP port, while the monitor was a 15in ADI ProVista with easy-to-use LEDs and icons on the front to do away with an OSD.

The monitor demonstrated unsurpassed colour-intensity uniformity in our tests, with an even shade across the entire screen surface.

Additionally, video bandwidth and transient response tests demonstrated that the graphics card, monitor and cable setup was sufficient to accurately reproduce the distinct transitions between video modes at the high speeds required by an 85Hz refresh rate.



PCW Details

Price £821.33 (£699 ex VAT)

Contact Mertec Computers 01792 473700 www.mertec.co.uk

Good Points Keyboard. Available memory slots. Monitor.

Bad Points None to speak of.

Conclusion A well-built PC.

Build Quality ★★★★★

Performance ★★☆☆☆

Value for Money ★★★★★

Overall Rating ★★★★★

Mertec Home Media K266 AGP

Access to the K6 processor could not have been easier on this ATX motherboard, but it effectively made the free shared slot and the lower of the two free PCI slots unusable for all but the shortest of cards. A further PCI slot was inaccessible because the PS/2 port had been installed on a blanking plate beside one of the slots.

Altogether there were no available slots for anything longer than a 6.5in PCI card — something of a

downer, as most 3D graphics cards and the new PCI sound cards are longer than this.

Hard, floppy and CD-ROM ribbon cables were secured tightly in front of the memory slots, making access impossible without first snipping the ties. The memory itself was supplied in the form of a single SDRAM module in one of the two 168-pin DIMM slots which were backed up by two more SIMM sockets. Two DIMM slots could prove miserly when upgrading, and remember that unless your DIMM and SIMM memory runs at the same voltage and the same speed, you cannot mix memory types.

The one redeeming feature of this otherwise very disappointing board was the fact that it incorporated an AGP slot to seat the ATI Xpert@Work graphics card.

We were disappointed that unlike some of the other Socket 7 machines in our test, this PC did not incorporate a USB hub, which, with Windows 98 support and new peripherals both due soon, is a major oversight. The generic 50W multimedia speakers were driven by a SoundBlaster 16 card.

The keyboard was comfortable to use in our tests, but a lack of forethought meant that the keyboard settings were for a US setup (this is easily changed in Windows).

The ADI ProVista monitor performed well, showing no evidence of rasterisation. Image focus was uniform across the screen surface, and even at the edges there was no discernable degradation from the often higher-quality detail found at the centre. Screen regulation could have been better, with image size variance evident, depending on image brightness, but this was much less pronounced than on other models here.



PCW Details

Price £821.33 (£699 ex VAT)

Contact Mertec Computers 01792 473700 www.mertec.co.uk

Good Points Monitor.

Bad Points Badly-designed motherboard. Keyboard setup.

Conclusion Disappointing. Not up to the standard of its Celeron sibling.

Build Quality ★★☆☆☆

Performance ★★☆☆☆

Value for Money ★★★★★

Overall Rating ★★☆☆☆

Panrix Nexus

Like the offering from Mertec, the Celeron chip in the Panrix machine had a casing for protection and a low-profile heat sink. As with Panrix's Socket 7 ATX board, it was positioned close to the external fan for extra ventilation (unlike those supplied by some manufacturers).

The only expansion slots left vacant were three PCI slots. The shared slot was occupied by the SupraExpress 56K modem while the NuSound 3D sound card took up another.

A Diamond Viper V330 graphics card occupied the AGP slot.

With two vacant SDRAM slots we would be able to increase our memory allocation to a maximum of 288Mb while retaining the existing memory, or, by replacing it, take our allocation up to a massive 384Mb which should be enough to suit anybody's needs.

Utilising the same case as the other Panrix machine in this group test [below], the hard drive had been mounted vertically and out of the way of the two free 5.25in external bays and one free 3.5in bay.

The ASUS CD-ROM drive was clocked as 34-speed, making it technically faster than any other drive submitted for our test. However, as with all high-speed CD drives it is unlikely it would be able to sustain this rate of data transfer across most of the disc surface. The keyboard was

sturdy, had a feeling of quality and was comfortable to use for extended periods. The Microsoft Intellipoint mouse was all we had expected. Bundled software was sparse, although Lotus SmartSuite 97 was included to take care of office application requirements.

The CTX monitor held a sharp image across the entire screen with little variance between the centre and edges. Fine line, dot, sparse dot and sparse slot test patterns all showed evidence of slight moiré, although this was localised and not sufficiently evident to be of concern during normal use. With a 13.8in viewable diagonal, this 15in monitor had excellent horizontal and vertical colour registration with no misaligned guns, and showing no undesirable ghosting or streaking.



PCW Details

Price £938.83 (£799 ex VAT)

Contact Panrix 01132 444958 www.panrix.com

Good Points Screen controls. Hard-drive location.

Bad Points Limited expansion slots.

Conclusion One of the best Celerons around.

Build Quality ★★★★★

Performance ★★★★★

Value for Money ★★★★★

Overall Rating ★★★★★

Panrix Lynx

The covers of both our Panrix machines were easy to remove, and looking inside the Cyrix 6x86MX model we were pleased to see a tidy and well thought-out construction. The processor was positioned close to the external fan for maximum ventilation and with no chance of obstructing our expansion slots. The memory was supplied with a single 32Mb SDRAM DIMM module, leaving two of the three slots free for future upgrades. Two PCI, one ISA and one shared slot remained vacant, with

those occupied being home to two ISA cards: a SupraExpress 56Kbps modem and a NuSound 3D Audio card that drove a pair of 50W Arowana multimedia speakers.

An A3-sized Quick Start Connection Guide got us up and running straight out of the box, explaining the relevant external features of the PC and acting as a quick-reference guide for support contacts, while the modem came with its telephone cable attached and a socket doubler for ease of use. Two external 5.25in bays offered room for extra drives but

the only free 3.5in bay was internal. We were impressed with the the hard drive being mounted on the front right-hand side of the case instead of taking up a bay.

Graphics were via a Diamond Viper V330 card with 4Mb RAM on-board utilising this Socket 7 motherboard's AGP slot. The two serial, one parallel and two USB ports at the rear of the machine were

supplemented

by an infra-red port at the front. This was an impressive addition that would allow enabled devices to transmit data between each other without the need for any physical connection.

The Panrix-branded CTX monitors had some of the best controls we have seen, with an easy-to-use on-screen display and an exit button that allows the OSD to be instantly removed. It passed our screen colour test with flying colours, showing even luminance in all screen areas and only slight degradation in brighter characters on a plain black background. The handling of fine image detail was the best we saw from any monitor in this group.

PCW Details

Price £938.83 (£799 ex VAT)

Contact Panrix 01132 444958 www.panrix.com

Good Points AGP on Socket 7 board. Infra-red.

Bad Points Disappointing software bundle.

Conclusion An impressive PC to suit most needs.

Build Quality ★★★★★

Performance ★★★★★

Value for Money ★★★★★

Overall Rating ★★★★★



Simply Computers Multimedia 210P

The casings of Simply's PCs break from the norm, with their bevelled fronts matching bulbous power and reset buttons. It certainly makes them stand out from the crowd.

Being based around a Slot 1 rather than a Socket 7 motherboard, this Celeron machine included no provision for SIMM modules and

compensated by increasing the number of more desirable DIMM slots to four, of which three

remained vacant. Furthermore, because of the Slot 1 design this motherboard included an AGP interface, allowing the use of an ASUS 3DExplorer 3000 graphics card with 4Mb of video RAM. This was supplemented by an Orchid Righteous 3D Voodoo 1 card with 2Mb frame buffer and 2Mb texture buffer on-board to boost the machine's graphics-rendering capabilities. When running 3D applications, 3dfx will take over and run at the speed of the PCI bus, but in our Final Reality tests it was still almost as fast as some of the AGP 3D cards.

The powered Cambridge Soundworks speakers (supplied with both Simply PCs) provided great sound. The woofer and two satellite speakers gave rounded, quality sound at all volume levels thanks to an Apocalypse 5D sound card.

A K56Flex modem kept us connected to the outside world and a selection of bundled software included educational titles, games and budget business applications. In contrast to Simply's K6 machine, the keyboard bundled with this Celeron was a disappointing Mitsumi model with a spongy feel that did not encourage extended use.

The Hitachi CM500ET monitors supplied with the Simply machines held a steady picture with a maximum non-interlaced resolution of 1024 x 768 pixels at a flicker-free refresh rate of 85Hz.

These monitors demonstrated good colour uniformity across their entire surface. There was no evidence of pincushion distortion and only barely discernible geometric distortion. Horizontal and vertical colour registration was good, but screen regulation was unsteady with noticeable differences in screen size being evident when a flashing white block was applied.



PCW Details

Price £1,126.83 (£959 ex VAT)

Contact Simply Computers 0181 498 2140
www.simply.co.uk

Good Points Monitor. Graphics cards. Four memory slots.

Bad Points Nasty keyboard.

Conclusion Fairly expensive. Not all that fast.

Build Quality ★★★★★☆

Performance ★★☆☆☆☆

Value for Money ★★☆☆☆☆

Overall Rating ★★☆☆☆☆

Simply Computers 210K

The interior of this K6 machine was not the tidiest we have seen. Ribbon and power cables made access to the SDRAM memory modules difficult but left the SIMM slots unobstructed.

As there were only two SDRAM slots on the motherboard, one of which was already occupied by the 32Mb module, we would only be able to expand our initial memory allocation

to a total of 170Mb without first removing the modules for which we had already paid. These slots

were supplemented by four SIMM slots should we, for some reason, wish to swap to this slower type of memory at a later date. The Ultra ATA IBM hard drive had a 4.3Gb capacity. All sound processing was taken care of by the Apocalypse 5D SonicStorm card.

The Socket 7 motherboard did support AGP and so graphics were supplied courtesy of an AGP 2D Matrox Millennium II card with 4Mb SGRAM onboard, with 3D capabilities being added by an Orchid Righteous card. As on the Celeron machine, the PCI 3D card does not seem to perform significantly worse than other 2D/3D AGP cards in the test.

Simply's standard case offers users two external 5.25in bays but no available 3.5in bay with exterior access. The only 3.5in bay left free is on the inside, which makes it suitable for mounting a further hard drive but unsuitable for use in housing a Zip or SuperDisk drive.

Simply impressed us with the keyboard on this machine. In contrast to the choice accompanying their Celeron PC, this one was quiet and comfortable to use for extended periods of time throughout our tests. The mouse was a Microsoft Intellimouse incorporating the scrolling wheel for fast screen navigation. Both

Simply machines were accompanied by a software bundle, including the likes of Mini Office business titles and online trials for use with the K56flex modem.

The Hitachi monitors supplied with the Simply Computers PCs were impressive and their 15in tubes had a viewable diagonal of 13.7in. Grey, dark grey, and white images demonstrated good uniformity and indicated only slight evidence of blooming and halos. Good video bandwidth regulation allowed them to reproduce the sharp transitions needed to distinguish narrow lines and there was no visible rasterisation of closely positioned fine lines.



PCW Details

Price £1,126.83 (£959 ex VAT)

Contact Simply Computers 0181 498 2140
www.simply.co.uk

Good Points Setup of graphics cards. Monitor. Keyboard.

Bad Points Lack of free 3.5in bays.

Conclusion Worth considering. It performed well.

Build Quality ★★★★★☆

Performance ★★★★★☆

Value for Money ★★☆☆☆☆

Overall Rating ★★☆☆☆☆

Watford Aries Perfecta 6120



Utilising the same case as the Aries K6 machine, this Celeron-based PC had plenty of room for external expansion. Inside was a slightly different story, because instead of a mixture of expansion slots it had four vacant PCI slots and no free ISA or shared slots free. One slot was occupied by a SoundBlaster AWE-64 card to drive the generic 80W PMPO stereo speakers.

Although the CD audio cable had been neatly tied

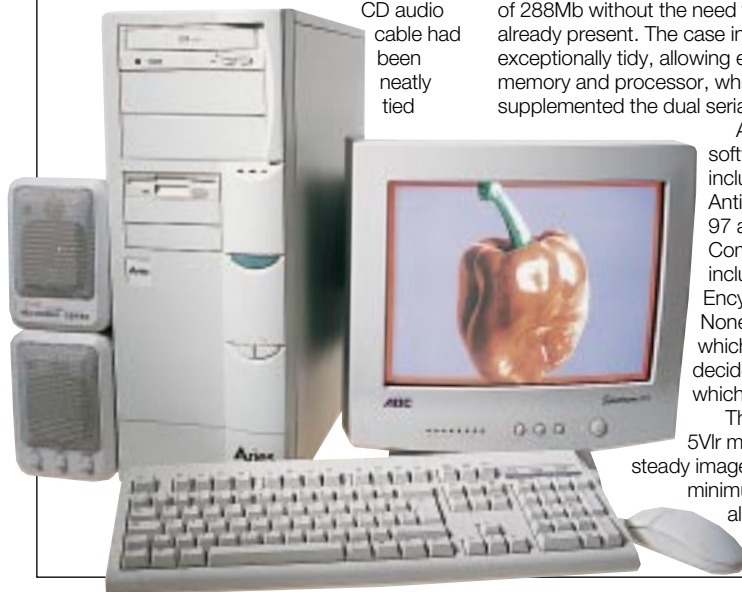
along the inner wall of the casing, we were disappointed to see that it was not attached to the sound card. It had not fallen out in transit either, as it had to be pulled further through the ties before it would reach the AWE-64. Although not a serious problem, we felt this pointed to poor quality control.

With three SDRAM module slots, only one of which was occupied, we had plenty of room to increase our memory to a maximum of 288Mb without the need to touch what was already present. The case interior was exceptionally tidy, allowing easy access to the memory and processor, while two USB slots supplemented the dual serial ports.

A generous software bundle included IBM AntiVirus, SmartSuite 97 and several Comptons titles, including Interactive Encyclopedia 1998. None were pre-loaded, which allows users to decide for themselves which they would use.

The AOC Spectrum 5Vlr monitor provided a steady image with the minimum of glare and almost no reflection. There was slight

evidence of moiré. The image showed only slight focus degradation at the corners of the screen, but demonstrated excellent horizontal colour registration and only minimal misalignment of blue vertical registration test bars. Undesirable streaking and ghosting were not evident and screen regulation was fair, with slight image size variance on the appliance of a flashing white box to a black background. Driven by a 2D Matrox Productiva MGA-G100 with a whopping 8Mb RAM on-board, this card was impressive on business applications although the 3D Final Reality test scores were poor.



PCW Details

Price £844.83 (£719 ex VAT)
Contact Watford Electronics 01582 745555
www.watford.co.uk
Good Points Monitor. Graphics card.
Bad Points CD audio cable problem.
Conclusion A sturdy contender worthy of high commendation.
Build Quality ★★★★★☆
Performance ★★★★★★
Value for Money ★★★★★★
Overall Rating ★★★★★★

Watford Aries Perfecta K6 98



For its AMD K6 machine Watford had not opted for an AGP-enabled board so the PCI-only Matrox Mystique card took care of the graphics. The 32Mb RAM was supplied as a single SDRAM DIMM module, leaving one DIMM and four SIMM slots free. The cabling inside this machine was well taken care of — the sign of a well-built PC. Access to the memory slots and processor was easy and unobstructed. Two free 3.5in and two free 5.25in drive bays, all of which

had external access, could be used to

improve on the 32-speed CD-ROM and floppy, or to add further hard drives to supplement the 4Gb Quantum Fireball SE4 hard drive.

Two free PCI, two free ISA and a single free shared slot allow future expansion-card additions to be made, aided partly by the fact that the sound processing chips are on the motherboard. We were impressed with the inclusion of two USB ports for utilisation when Windows 98 is released and more USB peripherals become available.

A 56K modem provided us with external connection abilities on this nice-looking PC. The keyboards supplied with both Watford

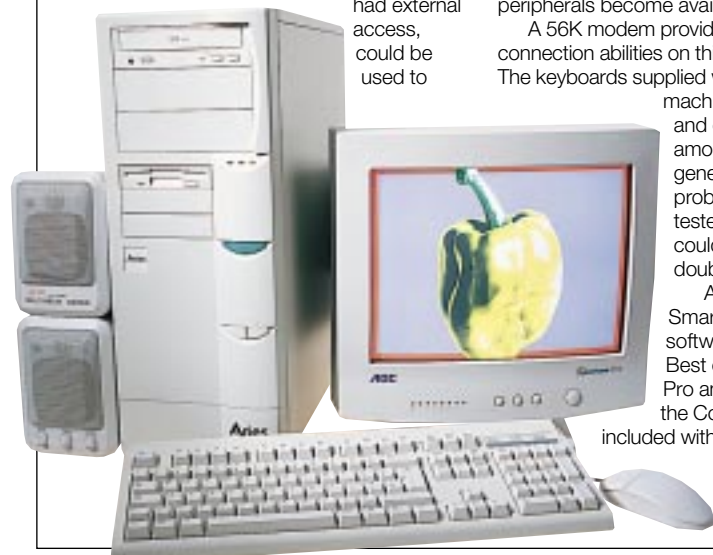
machines were comfortable and offered the right amount of feedback. The generic mice provided problems for one of our testers, however, who couldn't perform a double click.

As well as Lotus SmartSuite 97 the software bundle included Best of the Web, Web Edit Pro and Zip in addition to the Comptons bundle included with the Aries 6120.

The monitor was an AOC Spectrum 5Vlr with a viewable

diagonal of 13.8in. With no on-screen display it used a series of LEDs and icons on the fascia to indicate the alterations being made with the three control buttons. Screen-wide colour intensity was uniform and showed accurate geometric linearity. There was slight evidence of blooming on high white characters when compared to light and dark grey alternatives (not particularly uncommon).

Image detail was excellent, with fine test patterns reaching the required lab standards in both normal and reverse video modes, and all the test patterns showed an absence of raster lines.



PCW Details

Price £821.33 (£699 ex VAT)
Contact Watford Electronics 01582 745555
www.watford.co.uk
Good Points Monitor. Keyboard.
Bad Points Mouse.
Conclusion A sturdy contender.
Build Quality ★★★★★☆
Performance ★★★★★★
Value for Money ★★★★★★
Overall Rating ★★★★★★

What the industry thinks about Celeron

Whatever else you say about Intel, you've got to hand it to the company's advertising department. When handed a brief that must have been the stuff of nightmares — to popularise something that most consumers will never actually set eyes on — it came up with the inexplicably successful Intel Bunny People campaign. No other chip manufacturer has spent so much on promoting its wares. But as your granny always said, it's what's inside that counts, and some commentators fear that Intel has

taken a step onto shaky ground here.

When Celeron was launched we noticed a lack of enthusiasm from manufacturers. Normally we are flooded with calls from OEMs trying to get us to review their machines. Celeron was released on the same day as the PII 400 so we expected a few more calls than normal. How many did we get about Celeron? None at all. So, with so much negative comment coming from industry analysts, we decided to see if we could find out what is the true reaction to this chip.

One manufacturer, which did not want to be named in case its relationship with Intel was harmed, says that it was recommending that customers either go for a "full function PC" or a cheaper chip. The source explained: "I don't think anybody has any faith in the Celeron. They aren't as cheap as they would appear to be and the price difference isn't enough for people to say they'll go for it." The company hasn't sold many Celeron systems yet, but was quick to point out that there had been absolutely no pressure from Intel to offer the chip. "It will last, but whether it will take the market share they expect, remains to be seen," the source added. "Intel might just be trying to grab a bit more of the Socket 7 market and make some extra money before they leave everyone else behind."

Aideen McCracken, consumer segment manager for Gateway, says that the company has no

plans to add the Celeron to its product range. "It currently doesn't fit well into the Gateway product line," she says. "We are pushing our customers to the Pentium II because it makes better sense for them from a price, performance and long-term investment perspective." She thinks that customers might also be confused by the fact that current Celerons don't have Level 2 cache, meaning that a 333 Celeron chip might actually be slower than a 300 Pentium MMX in some situations. "It's cause for concern that customers may be misled or might misunderstand the clock speed," she says. "Intel is certainly going to have to educate its customers." She adds, though, that when Celeron chips offer a better level of performance, Gateway will consider them again.

The Panrix view is that although it is now offering a few Celeron machines, it too is awaiting improvements.



Top Simon Panesar, General Manager of Panrix, is looking forward to the release of the new 333MHz Celeron
Above Rana Mainee of AMD is waiting to see the results



"Intel has always said that clock speed isn't the only thing you should judge a PC by"

General manager, Simon Panesar, says: "Early feedback from our client base fails to show much enthusiasm for the Celeron chip within the sub-£1,000 sector. Socket 7 vendors such as AMD and Cyrix offer better price and performance results." He says that Panrix doesn't envisage the 266 Celeron becoming part of its standard inventory but is looking forward to the 333MHz Celeron with Level 2 cache (codenamed Mendocino) which will be released in the autumn.

Unsurprisingly, AMD states that it was disappointed with the direction Intel has taken. Rana Mainee, market planning manager for AMD Europe, says: "If you're concerned about what's best for the user and the market, then the Celeron does leave quite a bitter taste in the mouth." He says the biggest test will be how the products perform at the end of the day, admitting that performance benchmarks for the Celeron have varied wildly. But he doesn't think customers will rush out to buy it, calling it a "stopgap product".

Mainee says that if Intel had been serious about delivering a valid competitor, it would have taken the Pentium MMX Socket 7 standard and made a 266MHz from it. "But that would have legitimised it, and they'd already said Socket 7 was dead," comments Mainee. "They're desperately trying to move to Slot 1, but no-one is out there saying they want it." He is also concerned that customers know what they're getting with the Celeron. "They might look at a 266 and think they're getting a great deal when they might not be," he says. "It's bad for the industry if customers make the wrong decision, and the last thing we want to do is screw-up people who are just coming into the market, as many Celeron customers will be."

Intel, though, remains sanguine about the Celeron's prospects in anticipation of the Mendocino launch, and says that orders are flooding in. Spokesperson Andrew Thomson is hesitant to place the Celeron into a particular niche but says it fits in quite well with big corporates who don't need a lot of extras, and also points to the favourable reviews it's been receiving as a games machine. He doesn't think customers will have a problem figuring out whether it's suited to their needs or not. "Intel has always said that clock speed isn't the only thing you should judge a PC by," he says. "It's becoming important to describe them by their functionality rather than their price tag."

Fujitsu, for one, says it is behind the Celeron and thinks that it meets the price needs of an important market segment. HP is also pushing the Celeron into its Vectra range, saying that its corporate customers are particularly interested.

Dr Mitul Mehta, senior research manager for Frost and Sullivan [market analysts] says that although the Celeron is going through the "initial problem stage", he thinks it will make inroads. He thinks it's too early to give too much credence to negative benchmark tests.

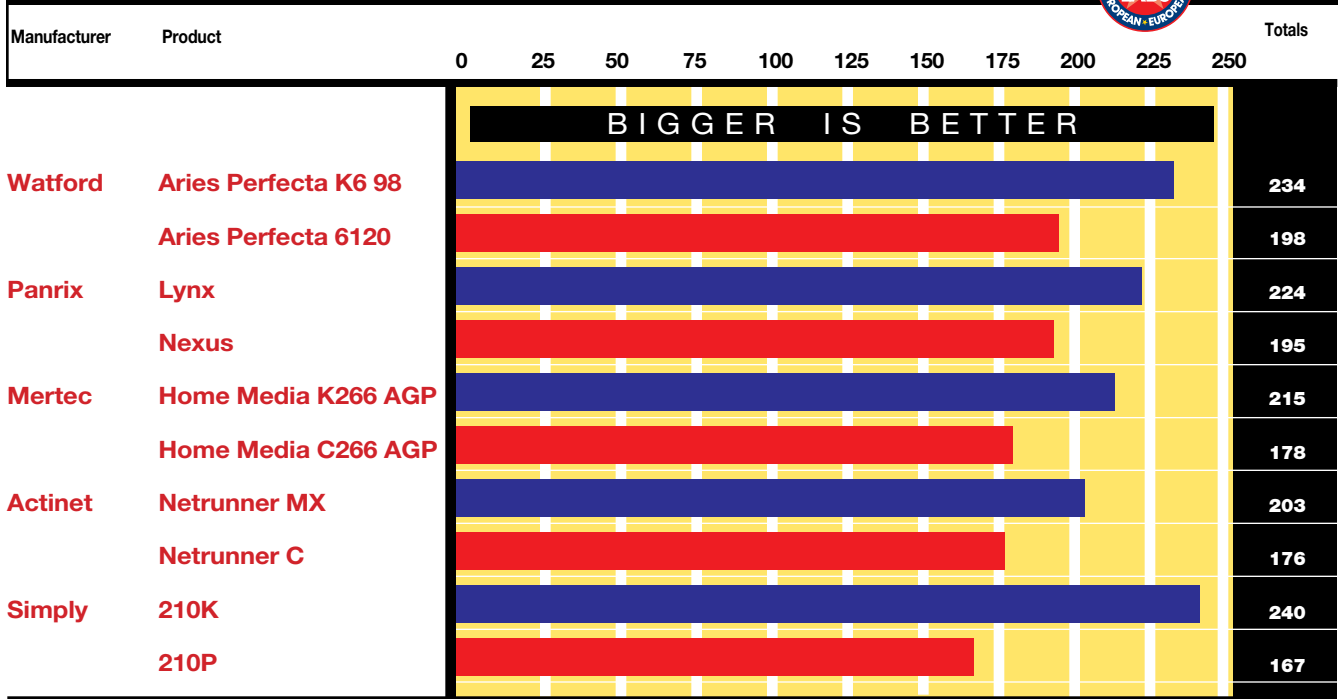
He says that its success will come down to how powerful the low-end market becomes. "Does the low-end need MMX?" he asks. "If it doesn't, then the other chip manufacturers are going to grab it and Intel is going to have to put more into it again."

Susan Pederson

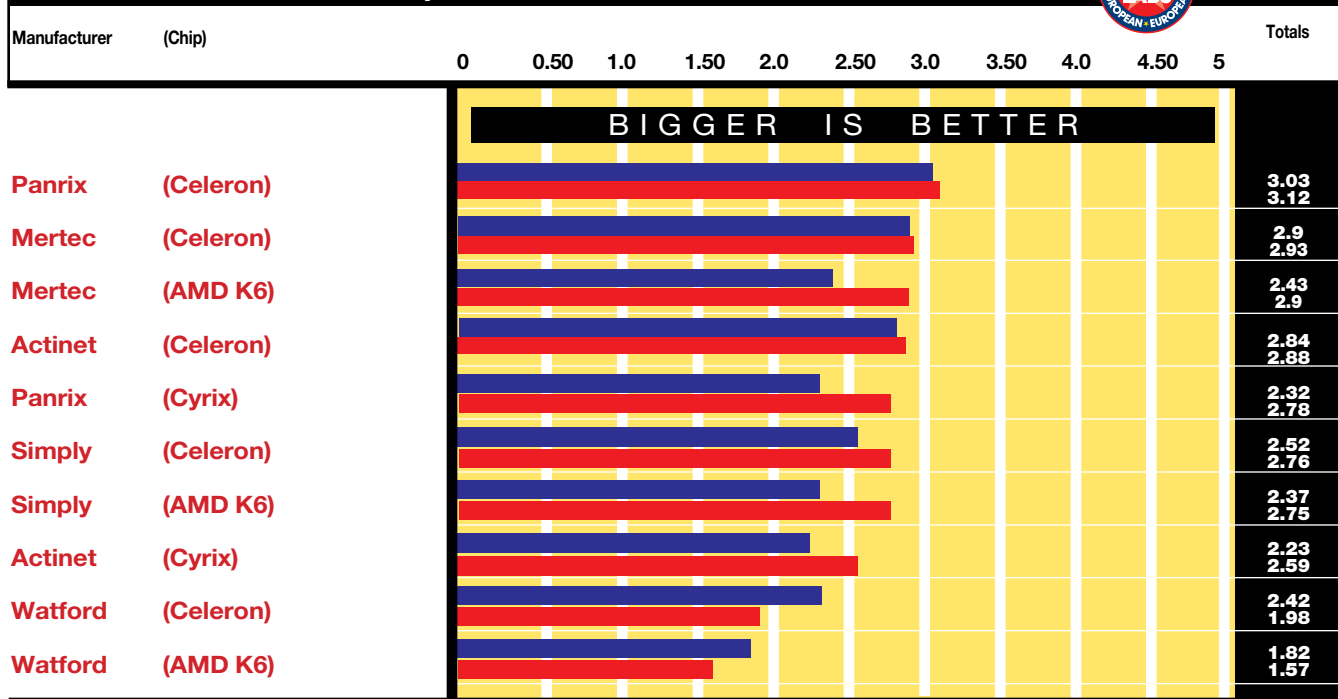




BAPCo Sysmark Results



Final Reality Results



Blue bar: Overall Final reality score
Red bar: Final Reality 3D score

How we did the tests

The SYSmark test we run on every PC in the group test is provided by BAPCo which specialises in designing tests based on widely-used applications. The BAPCo SYSmark tests measure the speed of the computer, running a series of common office applications. The test measures the time taken by the PC to perform a variety of tasks in each application and each test is performed three times to ensure the results are consistent.

The performance depends on a variety of factors: processor speed, RAM, graphics card and disk I/O. As the tests are based on business software packages, the result reflects how the PC will perform in a real-world situation. The better the score, the longer the bar on the performance graph.

Final Reality is a suite of graphical tests designed to examine the processing power of the 3D accelerator on your graphics card, 2D image processing and AGP. It runs under Windows 95 and DirectX 5 and uses a 3D engine developed by Remedy. It supports Direct3D and looks at how the graphics accelerator handles the kind of data it would have to process when you are playing a game. Final Reality tests both the speed of the processor and visual appearance. The visual appearance factors are weighted in importance and are combined with the overall processing speed to produce an overall mark. Again, the higher the score, the better the result.





Monitors are scrutinised using Display Mate for Windows and tested at a number of resolutions and colour depths.

Table of Features



Manufacturer	Actinet	Actinet	Mertec Computers	Mertec Computers	Panrix
Model	Netrunner MX	Netrunner C	Home Media K266 AGP	Home Media C266 AGP	Nexus
Price with delivery (inc VAT)	£880.08	£938.83	£821.33	£821.33	£938.83
Price with delivery (ex VAT)	£749	£799	£699	£699	£799
Telephone	01952 270703	01952 270703	01792 473700	01792 473700	01132 444958
Fax	01952 270090	01952 270090	01792 473887	01792 473887	01132 444962
Web site address	www.actinet.co.uk	www.actinet.co.uk	www.mertec.co.uk	www.mertec.co.uk	www.panrix.com
Sales hours	9-6.30 M-F, 9-4 Sat, 12-4 Sun	9-6.30 M-F, 9-4 Sat, 12-4 Sun	M-F 9-6	M-F 9-6	M-F 9-5.30, Sat 10-4
Technical support hours	9-6.30 M-F, 9-4 Sat	9-6.30 M-F, 9-4 Sat	M-F 9-6	M-F 9-6	M-F 9-5.30, Sat 10-4
Standard warranty	1yr OSM + 4yr Labour	1yr OSM + 4yr Labour	5yr RTB	5yr RTB	1yr OSM
Warranty options	3yr OSM £199	3yr OSM £199	1yr OSM	1yr OSM	N/A
Hardware Spec					
Processor	IBM 266MX	Intel Celeron 266	AMD K6 266	Intel Celeron 266	Intel Celeron 266
RAM	32Mb	32Mb	32Mb	32Mb	32Mb
RAM type/pins	SDRAM/168	SDRAM/168	SDRAM/168	SDRAM/168	SDRAM/168
Hard disk	Fujitsu	Fujitsu	Western Digital Caviar	Western Digital Caviar	IBM DHEA 34330
Size(Gb)/Access (ms)/Interface	4.2Gb/10ms/EIDE	4.2Gb/10ms/EIDE	4.3Gb/<10ms/EIDE	4.3Gb/<10ms/EIDE	4Gb/11ms/EIDE
Motherboard Components					
Motherboard manufacturer	Elite Group	Elite Group	SOYO	SOYO	ASUS
Motherboard model	P5SDA	P6BXA+	5EH	6BA	P2L97
Chipset	SIS 5SYS TX	440BX	ETEIQ AGP	440 BX	LX
L2 cache	512Kb	○	512K	○	○
Expansion and I/O					
Spare bays 3.5in/5.25in	1x3.5in/2x5.25in	1x3.5in/2x5.25in	2x3.5in/2x5.25in	2x3.5in/2x5.25in	2x3.5in/2x5.25in
PCI slots/ISA slots/shared slots	3PCI/3ISA/1shared	5PCI/2ISA/1shared	1PCI/2ISA/1shared	PCI/4ISA/1shared	5PCI/2ISA/1shared
USB/serial/parallel/PS2	2USB/2S/1P/2PS2	2USB/2S/1P/2PS2	2USB/2S/1P/1PS2	2USB/2S/1P/1PS2	1USB/2S/1P/2PS2
Multimedia					
CD-ROM manufacturer	Pioneer	Pioneer	LG	LG	ASUS
CD-ROM speed/interface	32X/EIDE	32X/EIDE	32X/ATAPI	32X/ATAPI	34X
Sound card manufacturer	Yamaha	Yamaha	Creative Labs	Creative Labs	Orchid
Sound card model	OPL3-SA	OPL3-SA	SoundBlaster 16	SoundBlaster 16	NuSound
Speakers	Generic 50W	Generic 50W	50W Multimedia	50W Multimedia	Arowana
Graphics & Monitor					
Graphics card	ATI All-in-Wonder PRO	ATI All-in-Wonder PRO	ATI Expert@Work	ATI Expert@Work	Diamond Viper 330
Graphics card interface	AGP	AGP	AGP	AGP	AGP
Graphics card RAM	8Mb	8Mb	4Mb	4Mb	4Mb
Monitor model	Shinho AV2	Shinho AV2	ADI E40 Provista	ADI E40 Provista	CTX 1569
Monitor size (inches)	15in	15in	15in	15in	15in
Max refresh rate 1,024 x 768 (NI)	85Hz	85Hz	85Hz	85Hz	85Hz
Other Information					
Modem make	Rockwell	Rockwell	Rockwell	Rockwell	Diamond Supra
Modem speed (Kbps)	56K Flash	56K Flash	56Kbps	56Kbps	56.6Kbps
Other extras	LS120 Drive	LS120 Drive	N/A	N/A	N/A
Software	SmartSuite, Ultra Pack, Simply Speaking, Corel Draw, Hutchinsons, World Atlas, How Your Body Works, 3D Home Designer, Collins Dictionary, Formula 1, Ami Pro, Egon Ronay, Library of the Future	SmartSuite, Ultra Pack, Simply Speaking, Corel Draw, Hutchinsons, World Atlas, How Your Body Works, 3D Home Designer, Collins Dictionary, Formula 1, Ami Pro, Egon Ronay, Library of the Future	MS Works 4, Encarta 98, Money, Golf, Scenes, Cinemania 97, 3D Movie Maker, CorelDraw 4	MS Works 4, Encarta 98, Money, Golf, Scenes, Cinemania 97, 3D Movie Maker, CorelDraw 4	SmartSuite

Key: ● Yes ○ No

Table of Features	Personal Computer World Highly Commended		Personal Computer World Editor's Choice		Personal Computer World Highly Commended		
							
Manufacturer	Panix		Simply		Watford Electronics	Watford Electronics	
Model	Lynx		Multimedia 210K		Multimedia 210P	Aries Perfecta K6-98	Aries Perfecta 6120
Price with delivery (inc VAT)	£938.83		£1,126.83		£1,126.83	£821.33	£844.83
Price with delivery (ex VAT)	£799		£959		£959	£699	£719
Telephone	01132 444958		0181 498 2140		0181 498 2140	01582 487777	01582 487777
Fax	01132 444962		0181 523 4002		0181 523 4002	01582 488588	01582 488588
Web site address	www.panix.com		www.simply.co.uk		www.simply.co.uk	www.watford.co.uk	www.watford.co.uk
Sales hours	M-F 9-5.30, Sat 10-4		M-F 8-8, Sat 9-5		M-F 8-8, Sat 9-5	9-7 M-F, 9-6 Sat	9-7 M-F, 9-6 Sat
Technical support hours	M-F 9-5.30, Sat 10-4		M-F 8-8, Sat 9-5		M-F 8-8, Sat 9-5	9-5 M-F, 10-4 Sat	9-5 M-F, 10-4 Sat
Standard warranty	1yr OSM		5yr RTB		5yr RTB	5yr RTB	5yr RTB
Warranty options	N/A		12 months osm		12 months osm	N/A	N/A
Hardware Spec							
Processor	Cyrix 6x86MX		AMD-K6 266MHz		Intel Celeron	AMD K6 266	Intel Celeron 266MHz
RAM	32Mb		32Mb		32Mb	32Mb	32Mb
RAM type/pins	SDRAM / 168		SDRAM / 168		SDRAM / 168	SDRAM / 168	SDRAM / 168
Hard disk	IBM DHEA 34330		IBM Deskstar 8		IBM Deskstar 8	Quantum Fireball SE4	Quantum Fireball SE4
Size(Gb)/access (ms)/interface	4Gb/11ms/EIDE		4.3Gb/9ms/UDMA		4.3Gb/9ms/UDMA	4.3/9.5/UltraATA	4.3/9.5/UltraATA
Motherboard Components							
Motherboard manufacturer	Microstar		Gigabyte		Abit	ASUS	ASUS
Motherboard model	5169		TX3		LX6	TX97-XE	P2L97
Chipset	ALI		TX		LX	TX	LX
L2 cache	512Kb		512Kb		○	512Kb	○
Expansion and I/O							
Spare bays 3.5in/5.25in	2x3.5in/2x5.25in		0x3.5in/2x5.25in		0x3.5in/2 x 5.25in	2x3.5in/2x5.25in	2x3.5in/2x5.25in
PCI slots/ISA slots/shared slots	4PCI/3ISA/1shared		3PCI/2ISA/1shared		3PCI/2ISA/1shared	4PCI/3ISA/1shared	4PCI/2ISA/1shared
USB/serial/parallel/PS2	1USB/2S/1P/2PS2		0USB/2S/1P/0PS2		2USB/2S/1P/2PS2	2USB/2S/1P/2PS2	2USB/2S/1P/2PS2
Multimedia							
CD-ROM manufacturer	ASUS		Philips		Philips	LG	LG
CD-ROM speed/interface	34X		32X/EIDE		32X/EIDE	32X/IDE	32X/IDE
Sound card manufacturer	Orchid		VideoLogic		VideoLogic	Creative Labs	Creative Labs
Sound card model	NuSound		Sonic Storm PCI		Sonic Storm PCI	Vibra 16	AWE 64
Speakers	Arowana		Labtec 2420		Labtec 2420	Generic	Generic
Graphics & Monitor							
Graphics card	Diamond Viper 330		Matrox Millennium II Orchid Righteous		ASUS 3DecPlover 3000 Orchid Righteous	Matrox Mystique	Matrox Productiva
AGP	PCI		AGP		PCI	AGP	
Graphics card RAM	4Mb		4Mb		4Mb	4Mb	8Mb
Monitor model	CTX 1569		Hitachi CM500ET		Hitachi CM500ET	Aries Energy Pro 15in	Aries Energy Pro 15in
Monitor size (inches)	15in		15in		15in	15in	15in
Max refresh rate 1,024 x 768 (Hz)	85Hz		85Hz		85Hz		
Other Information							
Modem make	Diamond Supra		Simply		Simply	Aries	Aries
Modem speed (Kbps)	56.6Kbps		56Kbps		56Kbps	56Kbps	56Kbps
Other extras	N/A		3DFX Video Card		3DFX Video Card	N/A	N/A
Software	SmartSuite		Europress Encyclopedia 98, Mini Office Works, Home Finance, CorelDraw, Publish, Theme Hospital, Little Big Adventure 2, Croc, FIFA 97		Europress Encyclopedia 98, Mini Office Works, Home Finance, Corel- Draw, Publish, Theme Hospital, Little Big Adventure 2, Croc, FIFA 97	SmartSuite, Comptons Bunde	SmartSuite, Comptons Bunde

Key: ● Yes ○ No

Editor's Choice

The performance results speak for themselves in this group test. In all cases the Celeron processors underachieved when compared to rival chips in otherwise identical machines. Even the fastest Celeron, that in the Watford Electronics Aries Perfecta 6120, was put to shame by the slowest Cyrix.

So why should users, many of whom will be first-time buyers, want to invest money in a machine built around this new technology? First and foremost is the price aspect. For well under a thousand pounds you can get yourself a genuine Intel-chipped PC running at 266MHz, which is far less than you would pay for an equivalently clocked PII.

However, if Celeron's performance is far outranked by similarly priced Cyrix and AMD processors, why should that be important? Many would argue that it is not the chip itself that is important, but rather, where it sits. Investing in a Celeron chip opens up the wonders of the Slot 1 motherboard, making this a cheap way in and allowing you to upgrade your system to 400MHz or the imminent 450MHz PII processors. But if you want to take this route, be careful when choosing a motherboard — make sure it has the right chipset. Although the EX chipset with its limited feature set was developed with the Celeron in mind, Celeron will in fact run on any of the PII motherboards, including LX and BX boards. However, only the BX supports the faster 100MHz front-side bus. Two manufacturers in this group test, Mertec and Actinet, mounted their systems on BX boards.

In short, if you're looking for a budget machine with plans to upgrade it significantly in the future, a Celeron machine is still a good buy. If on the other hand you need instant gratification, you may want to look at one of the alternatives.

As mentioned, our results show the Socket 7 AMD and Cyrix chips as being far superior to the Celeron, largely on account of their use of L2 cache. AMD and Cyrix are both continuing the fight with plans for faster chips running with improved architectures. AMD has just released a 300MHz processor with improved MMX functionality and 24 3D instructions (see *First Impressions*, p78). IDT also plans to produce a very low-cost MMX version of its WinChip, which will appear soon and introduce yet more competition into this budget end of the market. Whether Intel's counter-offensive of a Celeron with 128Kb cache (just a quarter of that found on a PII) is successful, remains to be seen. It will not be launched until September.

Of those manufacturers bold enough to incorporate the Celeron, Watford Electronics particularly impressed us with the Perfecta 6120. Although it had a disappointing showing in our Final Reality benchmark test, coming bottom of its group, it excelled in its handling of business applications. The Celeron was never truly destined to be a games machine, despite Intel's protestations that it is really quite good at games. In this case, its less-than-desirable Final Reality results are probably down to the use of a 2D-only graphics



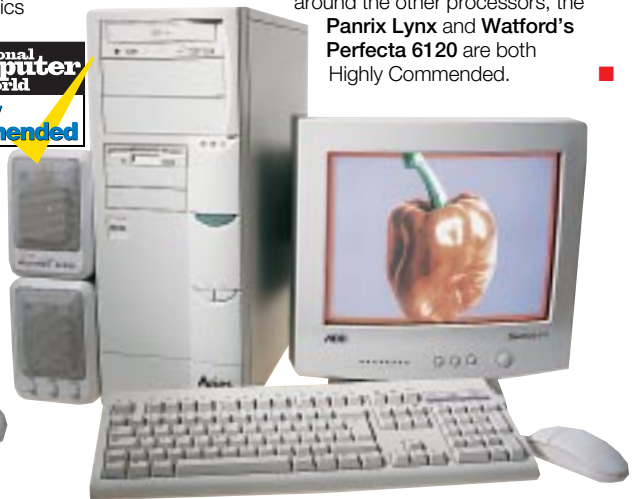
card. Otherwise, this was a roomy machine with plenty of space for expansion. The monitor provided us with an impressive display, and the generous installation of 8Mb on the graphics card ensured it should have no difficulty in displaying even the most complex of high-resolution full-colour output on much larger monitors than the 15in model we requested for this test.

We were not surprised that the Cyrix chips were slower overall than the AMD versions, as Cyrix did not licence its MMX technology from Intel, as did AMD. More importantly, the Cyrix chips are only rated as 266s and run at an actual clock speed of 233MHz (although the motherboard runs at a bus speed of 75MHz). However, the Panrix Lynx was of exceptional quality, gaining full marks for its construction. The Socket 7 motherboard had an AGP slot for faster graphics handling, freeing expansion slots and making it the second highest rated non-Celeron PC to run Final Reality.

The AMD K6 machines all performed admirably, with Simply Computers attaining the top score of 240 in our BAPCo Sysmark benchmark test. But Simply was just pipped to the post by Watford Electronics, which provided a best-of-class PC with its Perfecta K6 98. Well built and easy to get around inside, with a quality monitor, sturdy peripherals and a fair collection of bundled software, this machine was a joy to use.

All things considered, it seems that Celeron machines are perhaps not the best buy. Their performance results still do not do them justice when many manufacturers are selling faster, more powerful processors at the same or lower price. Of all the processors in this group test, the AMD seemed the best overall performer, and for this reason the **Watford Electronics Perfecta K6 98**, which scored highly in every category, is our Editor's Choice. For the best machines built

around the other processors, the **Panrix Lynx and Watford's Perfecta 6120** are both Highly Commended. ■





- DIARY -

26-6-1998

9.30-BANK

11.00-ACME CO.

1.00-TENNIS

* BIRTHDAY *

MUM ←

ACME CO.
11.00 AM
MS BROWN

Order of the day

In busy times full of contacts, details, appointments and things to remember, you can benefit from getting things organised. Paul Begg looks at PIMs and Contact Managers that make life run more smoothly.

Hands up all those who have ever written a telephone number or an address on a piece of paper and then lost that bit of paper? And who can lay their hand on their heart and say they have never missed an appointment or double-booked themselves?

Whether you just need something to organise your life, or a dedicated package to get the most out of your time and gain the best advantage from your list of clients and contacts, the answer lies with the eight packages reviewed on the following pages.

To some extent, both contact managers and PIMs (personal information managers) are used to do the same thing, although there are distinct differences (see page 205). Both store information about people: addresses, various phone and fax numbers, email addresses, URLs and so on. Depending on their complexity, they will maintain a record of your dealings with people — appointments, meetings, lunches and so on. Some will even log phone calls, letters and emails, and provide a complete historical record of dealings with your contacts.

One certainty about contact and personal information managers is that they work. It is quick and easy to find contacts, you can store all sorts of information about them, you'll forget fewer to-do items, find "lost" information with a keystroke, and become better organised and more efficient.

The contacts manager and PIM market seems to be settling down at long last. In previous years' group tests we have reviewed a dozen or more packages, each vying for pretty much the same market. Now some products are emerging as market leaders and each seems to have carved out a niche for itself. So, instead of comparing over a dozen products we have selected four contact managers which in our view represent a particular niche, and four PIMs.

GoldMine is a contact manager for large businesses or for firms with a large customer database which need to undertake sophisticated contact analyses. Maximizer is an equally powerful contact manager that is sales-orientated and targeted at a single user or small workgroup. Act is excellent for the single user or small workgroup engaged in face-to-face contact work and who needs to maintain total control over all contact dealings. And the new Outlook 98 from Microsoft demands attention just because it's from Microsoft. A cut-down version comes bundled with Windows 98. It's not a bad contacts manager, and it is a very effective email client.

PIMs are very much in competition with each other. Being essentially an address book, appointments diary and to-do list, some, like Sidekick and Organizer, have solid workgroup capabilities while others, like Davi-Address, are simply address books. Time & Chaos was chosen because

it is neat, attractive, deceptively powerful and almost unique in showing all your information on a single screen.

If you use a PDA (personal digital assistant) and want to keep your data synchronised between it and your PC, you can get the low-down on the best packages to use on page 202.

PIMs & Contact Managers Contents

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- 195 GoldMine 4.0
- 196 Maximizer 5.0
- 198 Microsoft Outlook 98
- 203 Davilex Davi-Address 6.0
- 203 Lotus Organizer 4.1 Premium Edition
- 204 Starfish Sidekick 98
- 204 Time & Chaos 5.3

- 202 PIM/PDA integration
- 205 **Editor's Choice**
- 205 Contacts Manager or PIM: what's the difference?
- 206 Table of features

Ratings

- ★★★★★ Buy while stocks last
- ★★★★★ Great buy
- ★★★★★ Good buy
- ★★★★★ Shop around
- ★★★★★ Not recommended

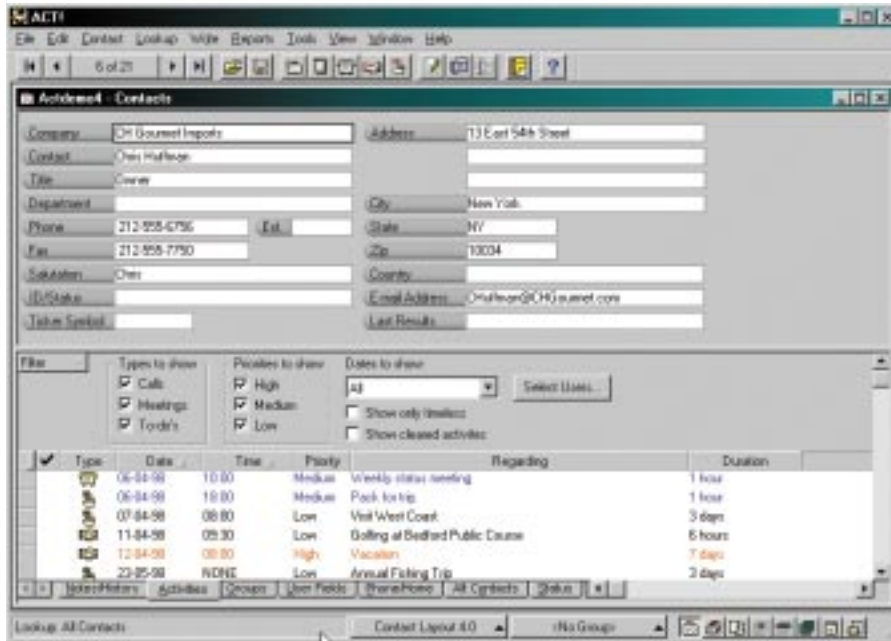
Symantec Act! 4

Both GoldMine and Maximizer are superb at providing the means to analyse contact data, in exactly the same way as any database is used to structure and analyse raw information.

Act is different. It is the better contacts manager for the person who wants to keep tabs on the people with whom they directly do business. Act is great for checking when last you contacted a client and what you spoke about, and for being reminded of personal information like the name of the contact's children and that when last you spoke they were taking a month off in the Bahamas.

Act has been around for a long time (it was launched in 1987) and it almost single-handedly created the market for contact managers. Over the years, and especially since its purchase by Symantec in 1993 from Contact Software International, it began to lag behind the competition. Version 3.0 was a welcome update that brought Act in from the cold, so to speak, and version 4.0 firmly puts Act back in with the big boys.

Act uses a cardfile format with smart, moulded titles for the fields. The screen is effectively split into two halves. The top half is fixed and contains the primary contact details: company name, contact name, address, phone and fax. Below that, the screen changes according to which of seven tabs you have selected. These reveal notes about the contact, home address details, alternative contacts and so on. Alternatively, you can choose a list view. You can view your contacts according to the list, alphabetically, by company name, business name or even by phone number. You can also assign your contacts to a group and view them all according to the group. Groups can be anything from a specific business to something more general such as "family" or "friends".



Act uses contact cards, primary details on top and details on tabbed cards below

Act handles all the additional contact management chores. A calendar and task list enable you to keep strict control over your appointments and to-do items, and you can import your emails for ready reference. Being already fully-featured, the newly updated version, 4.0, offers little that is shatteringly different and nothing like a "must have" feature to get you reaching for the corporate cheque book. Many of the new features merely bring Act into line with other products.

A new applet, called SideAct, lets you jot down contact information even when Act isn't running. If you need to make some notes in a hurry and don't have the time to open Act, all you have to do is use SideAct. When you press Enter, the information is transferred to Act.

Another new feature enables you to type in the first few letters of a personal name or organisation and the program takes you to the contact (or at least to one that sounds the same). You can add new contacts from within the Schedule Activity dialog, which is useful, and the contact record card at last allows you to enter multiple email addresses.

Act boasts improved internet support. Already supporting cc:Mail, CompuServe and Microsoft Exchange, it now allows internet email (POP3/SMTP) through its own non-MAPI mail client. However, it neither supports live URLs nor HTML text. And neither does Act support other email clients such as Netscape Navigator, but there is integration with WinFax.

Act is very powerful and easy to use. It will do almost everything anyone could want from a contact manager, but it retains a more personal-information feel about it than GoldMine does. So, if you need to know which of 10,000 clients wear blue, bought 5,000 widgets before July of last year and follow test cricket, GoldMine should be your choice. But if you want to know all about your dealings with Jack Frost (i.e. meetings, phone calls, emails and letters) before calling on him, then you should look no further than Act.

Case Study

Charles Kennard, Computers Unlimited

Although Act is a very powerful contact manager that will handle even heavyweight tasks almost on a par with GoldMine, it truly shines as a contact manager for single users, small businesses or small workgroups where there is an emphasis on face-to-face relationships. The reason is that Act is tremendously good at maintaining a detailed contact history and at transferring data across multi-platforms. This is why Act is the contacts manager of choice for Charles Kennard.

As a freelance currently working as acting sales director for distribution company, Computers Unlimited, it is vitally important that he keeps a detailed and strictly accurate history of his dealings with a large and varied group of contacts. Dealing with between 20 and 30 customers a day generates a lot of to-do information and it is important to him that he keeps track of what he's promised to do for people, as well as the things they have undertaken to do for him.

Because he has a lot of contacts and needs to have quick access to a complete dossier of his dealings with them, he finds Act's links to the Visioneer PaperPort scanner invaluable. "They work incredibly well together," says Kennard. He is able to scan in every letter received from his contacts: "I can keep a complete audit trail of every piece of documentation." As a user of several platforms (PC, Mac and Newton) Charles Kennard also values the ability to synchronise his database between his desktop and PDA, and sees it as a tremendous benefit. As a user of Act for over six years he is "perfectly content" with it. As for missing features, he reports that nothing springs to mind.

PCW Details

Price £233.83 (£199 ex VAT).
Upgrade £92.83 (£79 ex VAT).

Contact Symantec 01628 592222
www.symantec.co.uk

Good Points Easy to use and ideal for direct sales.

Bad Points Lacks the overall power of GoldMine.

Conclusion A market leader. It's a great tool for storing contact information but not quite as powerful as GoldMine when it comes to analysis.

★★★★★

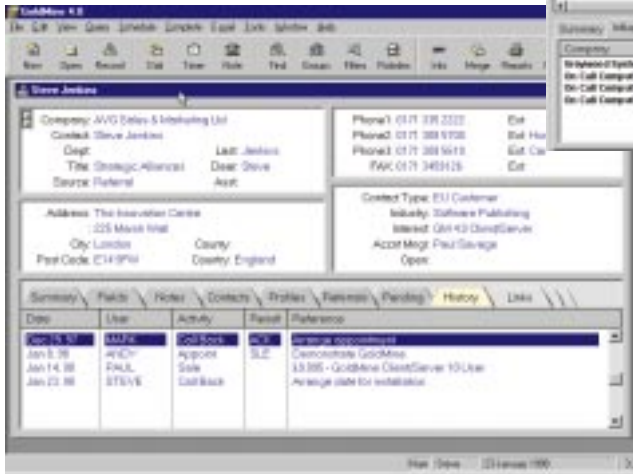


GoldMine 4.0

GoldMine won our Editor's Choice award in 1996 and 1997 and it seemed unlikely that it could achieve the hat-trick: surely the competition would have caught up with, and even exceeded, GoldMine by now? It was interesting to see how it measured up.

GoldMine is a high-end contact manager, which essentially means that it is designed for large businesses which have very sophisticated contact tracking needs and require some of the tools, customisation and power available with specialist and high-cost Sales Force Automation (SFA) software. Companies which don't need full-blown SFA software, or cannot reasonably justify the financial investment in SFA or GroupWare, can turn to GoldMine for an out-of-the-box solution to their needs. It is one of the few contacts managers to focus on workgroup and sales force automation and over 80 percent of GoldMine's users are workgroup users, which to some extent sets it apart from Act and Maximizer.

Contact data is presented in several boxes on-screen and additional information is available on one of a series of



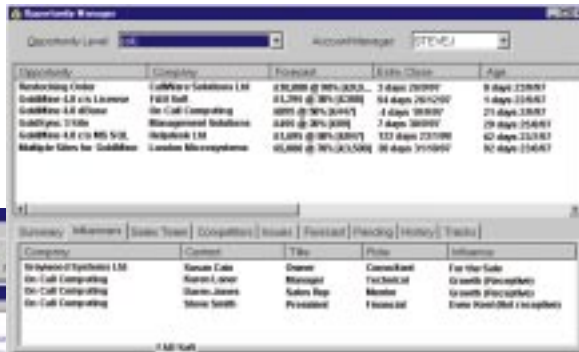
cards available by clicking on a tab at the bottom of the screen. All your most-needed contact information is therefore on-screen and can be seen at a glance, unlike the list-based Maximizer and Outlook. GoldMine also has very sophisticated group scheduling, conflict

checking and analysis tools to keep control of all to-do lists, appointments and other tasks, be they on an individual basis or company-wide.

Of course, at the top-end of the market we are dealing with established products already laden with almost every feature you can think of, so enhancements tend to be minor. In the case of version 4.0 they are in the areas of improved performance and ease of use, improved Help, and a couple of new features such as the E-Mail

Centre and an Opportunity Management module.

GoldMine's great strength is that it is highly customisable, which means that as an out-of-the-box program it can be adapted to suit the specific requirements of various departments within a large business. It goes without saying that



Above Opportunity Manager: just one of several modules that come as standard

Left GoldMine has an easy-to-use contacts screen

GoldMine does all the things you would expect a contact manager to do. What distinguishes it, is that modules you'd generally have to purchase separately come as standard. Among them is the new Opportunity Manager.

The opportunity management module gives you an overview of sales activity from the progress of the people involved in making the sale to those responsible for closing the deal. You can use it to study the life of a sale, gaining ideas about how the sales approach might be made more efficient. But it is not solely a sales tracking tool. It can be used to track any project, or projects, sales or non-sales.

A new Territory Alignment Wizard provides sales managers and systems administrators with continuous maintenance of account ownership and territory assignments. Territory assignments are then automatically synchronised to the field and any distributed offices.

Electronic commerce is becoming an increasingly important element in most businesses these days and most contact managers and PIMs are addressing the particular requirements of email and the internet. GoldMine's new E-Mail Centre gives you an integrated tool for sending, receiving and otherwise performing any maintenance on all your email communications. GoldMine lets you perform multiple tasks (Background Processing) as well as scheduling activities to be automatically carried out by the program when you are busy elsewhere (Automated Processes) — global replace/delete, synchronisation, mail merge, reports, email, group building, and importing and exporting data.

GoldMine is a complex piece of software and some training will almost certainly be needed to make full use of its power and features. It has a reasonable price tag, especially given the inclusion of modules for which you could otherwise pay extra. It has good backup and training support from AVG. It has been setting the standard the competition has to meet, and it's a tough bundle to beat.

Case Study

The Royal Bank of Scotland

GoldMine's customisability makes it a one-stop, off-the-shelf, solution for large businesses. This was why it was selected by The Royal Bank of Scotland for use across the board in its corporate, commercial and retail divisions.

GoldMine was chosen following a major corporate restructure of the bank, in 1995, in which traditional branch managers were replaced by specialist relationship managers who would look after customers according to their specific needs. It soon became apparent that a contact tracking system was a necessity, especially in the corporate division where the need was fairly urgent. This urgency, as well as the cost, meant that bespoke software was out of the question.

High on the "must have" list was customisability. The program had to be one which could be tailored to suit the needs of different departments. GoldMine was selected as the most likely to fit those needs, and after a successful pilot scheme the software was chosen for across-the-board implementation.

Douglas Alston, of The Royal Bank of Scotland's Corporate Institutional Banking, commented: "The system is certainly meeting expectations...GoldMine is enabling our managers to spend more time on customer-facing activities and, through its reporting and analysis, has helped us to identify best working practices."

PCW Details

Price Single-user licence £229.13 (£195 ex VAT), five-user licence £699.13 (£595.00 ex VAT).

Contact AVG Sales and Marketing
0171 335 2222 www.goldmine.co.uk

Good Points Highly customisable. Excellent support.

Bad Points GoldMine 4.0 databases are not backwards compatible.

Conclusion You probably can't do better than GoldMine.



Personal Computer World
Highly Commended

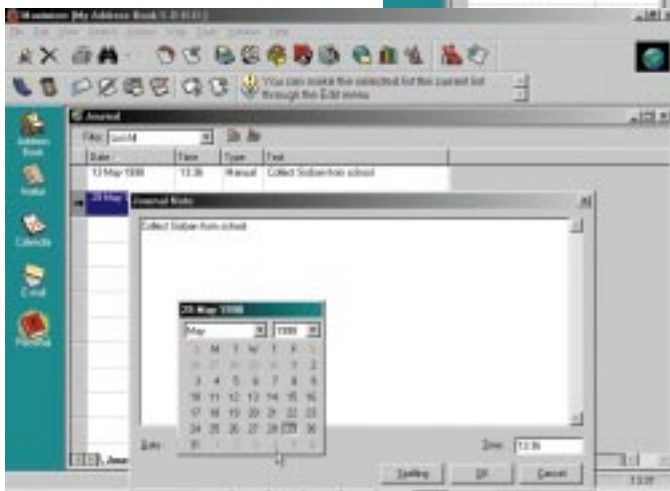
Maximizer 5.0

Maximizer is a contacts manager designed for a sales environment, although this has been played-down over the past few releases. However, since the product has not undergone a thorough revision, the purpose for which it was originally designed remains relevant. Now though, Maximizer is aimed at the single user and small business while a more advanced product, Maximizer Enterprise, which will set you back over £100 extra, is available for larger businesses requiring more complete customer information management, client/server networking, data synchronisation and opportunity management.

Depending on your point of view, this is either a good thing because you don't get bogged down with features you don't need, or it is a black mark against the product because some of the features you have to buy as expensive add-on options come as standard in GoldMine and Act.

Maximizer has a rather messy and dull interface. This is a minor point but an important one, because it makes Maximizer just a tad boring to use. Address details aren't as clearly structured as they are with Act, for example, although you can view the contact data in a variety of ways, such as by telephone number, company information and internet details. Clicking on the contact in the list brings up a tabbed file card with fields for the usual contact details such as name and address.

The screen also has other boxes showing various details, one of them being a list of your dealings with the contact such as letters sent and to-do lists. Across the top of the screen are two rows of icons, with another row down the left-hand side. These take you from the address book to your calendar, emails and a personal file for information relating to you, like "pick up some sprouts on the way home" or to remind you about the school play a week next Tuesday.



Above The screen is messy and could be annoying after a while, but this is a powerful contacts manager

Left Remember your personal life: Maximizer makes notes about the things you have to do

We've now reached version 5 of Maximizer (version 4.0 was called Maximizer 97) and there are over 50 contact management, workspace, scheduling and reporting enhancements. The most significant new edition is E-Commerce, which is an easy-to-use web-site creation wizard that aims to give

users a professional-looking web presence in less than an hour. Once on the web and taking orders online, the order information is automatically entered into your Maximizer database.

There's an enhanced email centre which now has a separate tree-view folder window and looks very similar to Microsoft Outlook. Otherwise the enhancements are largely cosmetic (though nonetheless welcome), such as the facility to view free time, a "peg board" which displays where associates are to be found, a world clock, and improved integration with other applications. Interestingly, there is a Personal Window where you can store non-contact-related information.

Maximizer is a powerful contact manager which does all the things you are likely to want and from which you can advance to Maximizer Enterprise when the need arises. Even so, you can expand Maximizer because you have multiple contact databases: one for prospects, another for clients, a third for non-business contacts, and more. And you can attach an unlimited number of contacts to a specific company.

There are unlimited, searchable, user-defined fields, all communications with a client are automatically logged and you can attach notes to each company or contact. The integrated word processor includes a spell-checker and thesaurus and a selection of pre-defined templates for letters and other documents.

Maximizer is a powerful product and a good choice, although some training is essential despite its deceptive easy-to-use appearance, straight out of the box.

Case Study

British Medical Journal Publishing Group

As a result of an efficiency review, the BMA Publishing Group decided to introduce a contacts database. In the main it was required to hold information about 1,200 customers: those who had been interested in display advertisements in BMA publications, and others who would be approached about other BMJ products.

Nick Supple, group sales and marketing manager, had in a previous company been involved in a year-long evaluation of two contact management databases. It had settled on Maximizer. At the BMJ Group he took another look at Maximizer, was pleased with the enhancements to the version he saw, and bought it.

Most of the staff found Maximizer relatively easy to use and even the most technophobic employee was up to speed following some training. Time management improved right from the start, and for the first time the sales team had access to historical data such as information about a client's past activities.

Supple is pleased with Maximizer, which is used on a daily basis by eight users. "It's quite an intuitive package," he says. Staff can better organise themselves and some are able to work from home occasionally. If there is anything which he thinks would improve Maximizer, it would be greater internet connectivity.

PCW Details

Price £175.08 (£149 ex VAT)

Contact Multiactive Software 0628 58777
biznet.Maximizer.com/multiactive.uk

Good Points Powerful. Will do almost anything. A good price for a high-end contact manager.

Bad Points You need expensive add-ons.

Conclusion Essentially a selling aid for the one-man-band or small company.

★★★★★



Microsoft Outlook 98

Strictly speaking, Outlook 98 is a personal information manager, but it is also a very low-end contact manager and thus bridges the gap.

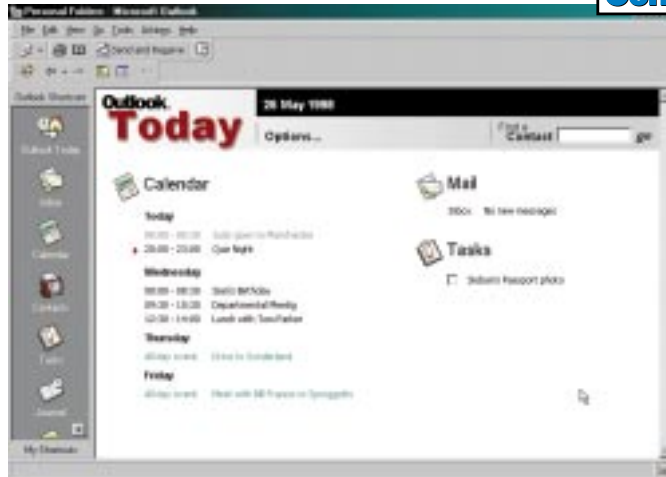
Outlook 97 had obvious potential, but it was buggy, hard to use, poorly featured, had bits that just didn't work and was best described as a piece of tat that should never have been released. It also had a ridiculously high price-tag.

Except perhaps for the price-tag, all that has now changed. Outlook 98's improvements are obvious from the moment it loads. The new Outlook Today folder, for example, provides a clear snapshot of what the day has in store: a list of appointments, unread email and unfinished tasks, complete with the deadline date. There is also a streamlined user interface, the menu choices have been reduced and dialog boxes look cleaner.

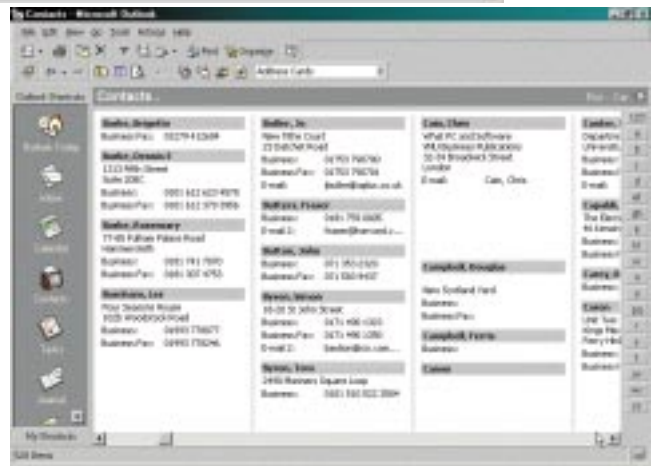
Unfortunately, almost all the improvements have been made to Outlook's capabilities as an email program. This needs some explaining. Outlook is a singular combination of personal information manager and email client. It is therefore ideal (and possibly even unrivalled) as a contact manager for anyone who does most of their contact work from the desktop. It is excellent for sending and receiving email. You can format your messages (which can be sent in HTML format), choose from multiple signatures, have mail delivered to specific folders and filter out junk mail. If you have been using another email client such as Netscape or the Microsoft Exchange Inbox, it is a painless business to migrate messages, address books and mail settings into Outlook.

However, as a contact manager Outlook hasn't received much attention from Microsoft. There are a few improvements, such as the ability to flag contact records; otherwise it is still frustratingly limited in what it can do. It lacks customisability. You can't add new fields, and sorting contact data is extremely limited.

There are several ways of viewing your contact details, but only the Contact Card view is alphabetically tabbed, enabling you to go straight to the first letter of the contact's business or personal name. In any other view you have to scroll through the list until you find the contact you want. Clicking on the contact brings up a tabbed file card containing fields for general business information, including a full range



Left Outlook Today, the day in store at-a-glance



Below The address cards are the only contact list with alphabetical tabs

Case Study

Simon Murdoch, Bookpages

Outlook is essentially an email client with reasonable contact management abilities. As such, it is ideal for anyone who does most of their business by email or over the internet. Bookpages, an internet bookshop which has recently been bought out by Amazon, is one such business. All you have to do is log on to the Bookpages site, specify the title, author or type of book in which you are interested, and place your order.

The site is built on Microsoft Windows NT Server. An SQL Server database, combined with Microsoft Internet Information Server and using Active Server Pages, enables customers to access the 1.2 million books listed in the database. Also in use (a recent addition to managing the Bookpages site) is Microsoft Exchange Server and Microsoft Outlook mail client which is being used by Bookpages as a mail and messaging server. Using the Outlook client within Office 97, Bookpages can control the flow of email from customers by segregating different mails that arrive and automating the responses as much as possible without making them impersonal.

Simon Murdoch, managing director of Bookpages, explained: "When a customer emails us with a query about the progress of their order, it gets filtered into a certain mail box which segregates it from other enquiries." The automated response pulls data from the database. "The Outlook forms will enable us to respond to customer queries in less than 30 seconds on average."

of phone and fax numbers (19 all told, including pager), up to three email addresses and an internet URL. Other cards contain fields for information such as the names of the contact's boss, assistant and spouse, the contact's birthday, wedding anniversary and so on. A nice feature enables you to type in an address as you would on an envelope and then have Outlook enter the details into their respective fields.

Outlook integrates very well with other Microsoft products as you'd expect, so it's a snap to import address details from Outlook when in Word. There's also integration with WinFax, so you can create a fax and send it from within Outlook.

There are weaknesses, though. For instance, you can't list multiple contacts for the same company on a single card. Outlook will copy shared details from an existing card to a new one, which saves time and reduces mistakes when entering address details, but you can't blanket-change the details for every contact within a company if, for instance, the firm changes its address.

Apart from contact management, there's a Journal which keeps a record of selected activities like email received. There's a calendar, a notes section and a reasonably sophisticated Tasks module for to-do lists.

● See *Hands On*, page 220, for an *Outlook Workshop*.

PCW Details

Price Free web download until 30th June. Free upgrade to registered users of Office 97, Outlook 97 and Exchange. Otherwise £116.33 (£99 ex VAT).

Contact Microsoft 01734 270001
www.microsoft.com/outlook

Good Points Excellent email handling.

Bad Points Contact management is extremely lightweight.

Conclusion Contact management still needs real attention, but Outlook is worth watching.

★★★★★

PIM/PDA integration

Almost all personal digital assistants (PDAs) and handhelds share information with PC-based personal information managers (PIMs). At one end of the spectrum such information is likely to be restricted to contacts, diary and to-do lists, while at the other it could be spreadsheets, data sets, entire documents or web pages.

The benefits of having information like this at your fingertips are significant. Contacts can be identified and called, meetings arranged or rearranged, from any location without checking into the office. New information can be noted in the field and transferred to your desktop PIM without the need to re-key. Such facilities save considerable time when you are out and about working and, just as important, make you look professional and "in control" to colleagues and clients.

A perfect match

Keeping a handheld computer or PDA and desktop computer up to date, and ensuring that the information they contain matches perfectly, is imperative. Going through a complex process of data conversion and exchange every day will soon become tedious and time-consuming, so clearly you need to be certain that the software in your PDA will share data with the software on your desktop and that it will do so seamlessly. What is needed is a handheld computer that simply requires you to make a physical connection between it and the PC, accomplishing the rest of the data-sharing job entirely unaided.

There are a number of ways to link PDA and PC together to share information. The serial link is the most common. Sometimes requiring a separate docking station supplied with your PDA, serial links occupy a COM port on the PC and can be left configured constantly if you are able to tie the port up.

Wire-less infra-red data transfer is becoming increasingly popular thanks to the IrDA standard. As well as comprehensive data sharing, IrDA systems often allow single elements such as "vcards" (standard-format virtual business cards) to be exchanged between units, allowing colleagues to swap information while away from the office.

It is often also possible to exchange data between handheld and PC via the internet or dial-in services using a modem or GSM link. PC Card modems can be used in many handheld computers and a growing number can also handle GSM.

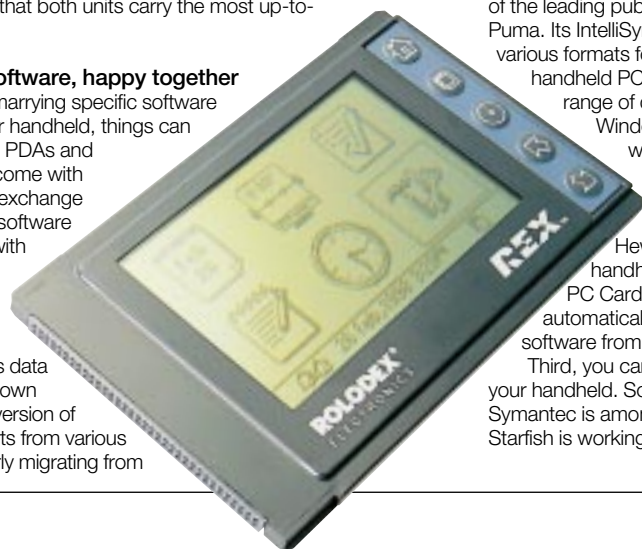
REX, a relative newcomer to the PDA scene, offers a fourth, very innovative method of gathering its information. It may look like a credit card but REX is a Type II PC Card. Slot it into your notebook and it will obtain its data dynamically from your PIM. There is an optional docking station for PC users.

Not all handhelds offer two-way data synchronisation. REX, for instance, is simply a data store. You cannot enter information directly to it, and its PC connection is download only. Synchronisation between PCs and Windows CE machines (both handheld and palm sized) is more dynamic, with the most recent additions and changes being swapped so that both units carry the most up-to-date information.

Hardware and software, happy together

When it comes to marrying specific software on the PC with your handheld, things can get a little complex. PDAs and handhelds usually come with some form of data exchange or synchronisation software but it may not link with your current application.

The REX card, for example, by default only accepts data transferred from its own proprietary PIM. A version of Sidekick, this imports from various formats; but regularly migrating from



one PIM to Sidekick and then to REX could become a nuisance. Sharp's new SE-300 palm-sized organiser includes software to synchronise with Outlook97, ACT! 3 and Lotus Organiser 97. PsiWin 2.1, the software which Series 5 users have to synchronise their data, can handle Schedule+ 7 and 7a, Lotus Organizer 2.1 and 97, and Outlook 97. Handheld PCs running Windows CE are equipped with a version of Outlook. The same is true of the new palm-sized PCs from Casio, Everex and Phillips. Not surprisingly, these are all optimised to share PIM data with Outlook or Schedule+.

A way around restrictions

Similar restrictions to a few PIMs exist

for all software supplied with handhelds and PDAs, but there are solutions available if the supplied software does not cover your own PIM. They fall into three camps.

First, desktop applications are including special synchronisation conduits for handhelds, though not all applications support all formats. New conduits come on stream over time, often as downloads from the publisher's web site. Sidekick 98, for instance, offers special software for REX, PalmPilot and CE machines as downloads.

Second, third-party software may be needed. One of the leading publishers is Puma. Its IntelliSync comes in various formats for different

handheld PCs and covers a wide range of desktop PIMs. Where

Windows CE is concerned, say, IntelliSync can synchronise with a range of desktop applications including Outlook, Schedule+, Lotus Organizer, GoldMine, NetManage ECCO, DayTimer Organizer, and Sidekick.

In an interesting twist on the third-party angle, Hewlett-Packard has an application that synchronises its handheld PCs with the REX card. Just pop the REX into the PC Card slot on your HP handheld and information is automatically downloaded from Pocket Outlook. Download the software from the HP web site at www.hp.com/handheld.

Third, you can purchase a special version of your desktop PIM for your handheld. So far, few publishers have taken this route, but Symantec is among the earliest to do so with a version of ACT! for CE. Starfish is working on a CE version of Sidekick.

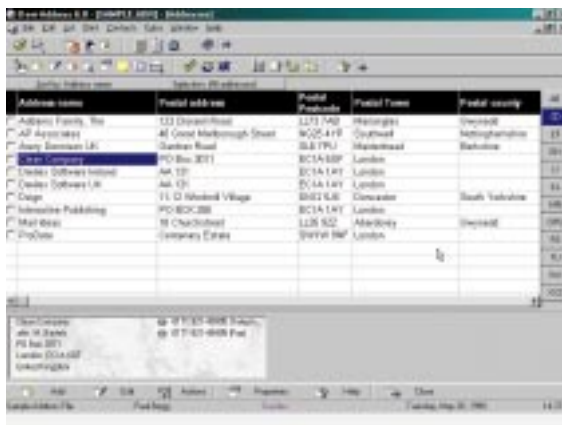
Sandra Vogel

Davilex Davi-Address 6.0

Although Davi-Address is in version 6.0, it is a newcomer to the UK, having been developed by a company based in the Netherlands. It takes a slightly different approach to address management than most other PIMs in that it is built around the postal address rather than the name. On the face of it, though, this doesn't seem to make a great deal of difference how the addresses are entered and stored.

Davi-Address has flexible sorting and you can create new fields for information such as a person's title (Lord, Sir, Dr etc) and for any suffix, like academic qualifications. Thus you can tailor Davi-Address to your needs. It also has some very appealing features. When you enter your post code the program automatically enters your city/town, county and telephone area code. However, there were some odd omissions from the database (Maidenhead, for instance).

There is a built-in word processor complete with a selection of templates for creating documents such as press releases, faxes and letters, calendar and calculator. You can send email and log on to web sites from



within the package and there's a comprehensive label database. It is also available in five different languages — English, German, Spanish, French and Dutch, and each has been localised.

On the downside, importing is poor. Davi-Address allows importing from database programs but not from other PIMs like Sidekick or Organizer. However, Davi-Address does have direct upload and download to Psions. Of course, the real downside of Davi-Address is that it is only an address book. As such it is fairly flexible, but it lacks a diary, to-do maker and appointments scheduler.

Davi-Address does what it does very well and has some nice features, but it doesn't do very much!

We also found that Davi-Address behaved peculiarly a couple of times. It hung twice, and one occasion the sample address file refused to load, and only loaded when the computer was rebooted.

When you consider that for the same money you could buy SideKick and have all the additional features, as well as considerable flexibility, Davi-Address doesn't look like it offers much competition. Pity.

PCW Details

Price £34.95 (£29.75 ex VAT)

Contact Davilex Software 0800 962002
www.davilex.com

Good Points Some nice features such as automatically entering town and phone code.

Bad Points Only handles addresses. Limited importing. Comparatively over-priced for what it does.

Conclusion Good address database, but in a highly competitive area it is badly let down by limited features.

★★★★★

Lotus Organizer 4.1 Premium Edition

Organizer was once the darling of the PIMs. Designed by a British company and launched in the UK in October 1991, its familiar Filofax look-and-feel, coupled with exceptional ease of use, made it a strong favourite. In recent years, since its acquisition its star has waned quite considerably and it is now thought of as little more than a PIM incorporated with Lotus SmartSuite. This actually does Organizer a disservice because although it has limitations, it also has quite considerable strengths.

Within the digital filofax are tabbed sections featuring an address book, a calendar offering day, week, two-week or month views, an appointment scheduler, a time scheduler, a to-do list maker which lets you sort tasks according to priority, status, date or category, and set alarms. There is a call manager that automatically logs incoming and outgoing calls, and a planner which schedules up to 15 different events, books overlapping events of varying duration, and displays quarterly or yearly views. A notepad stores freeform notes, graphics, and/or charts.

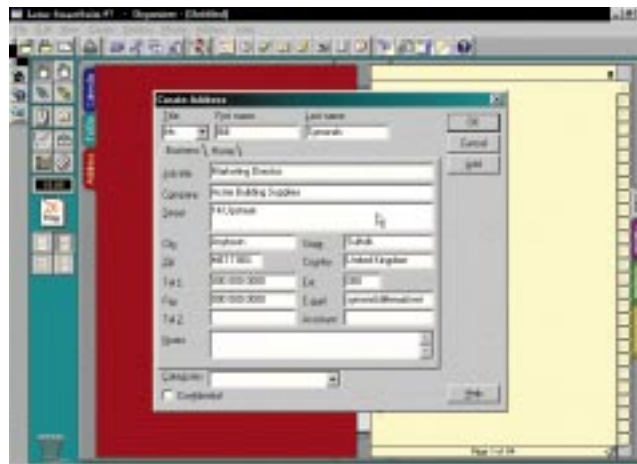
There are group-scheduling and shared-calendaring features and the Organizer Web Calendar lets users working remotely stay up to date via the web, using Navigator or Internet Explorer.

The familiar filofax feel but information is entered on contact cards

Version 4.1 includes several new features. SmartClip allows you to instantly create an Organizer entry by highlighting text in any Windows application such as email or word processing documents. Then, by clicking on the SmartClip icon, the information can be imported into Organizer to create address, to-do, notepad and appointment entries quickly, even when Organizer is not running.

Organizer includes CardScan business-card scanning software: scan a business card and then let the CardScan automatically organise the data into the correct fields. One click transfers the data into Organizer. It also contains IBM year 2000 date handling.

Altogether, Organizer is neat and relatively easy to use. The Filofax look-and-feel, once such a great strength, looks a trifle dated, but at least it is familiar.



PCW Details

Price £59 (£50.21 ex VAT)

Contact Lotus 01784 445808 www2.lotus.com

Good Points Comfortably familiar Filofax feel and some nice features.

Bad Points Lacks flexibility.

Conclusion An established PIM and a favourite of many.

★★★★★



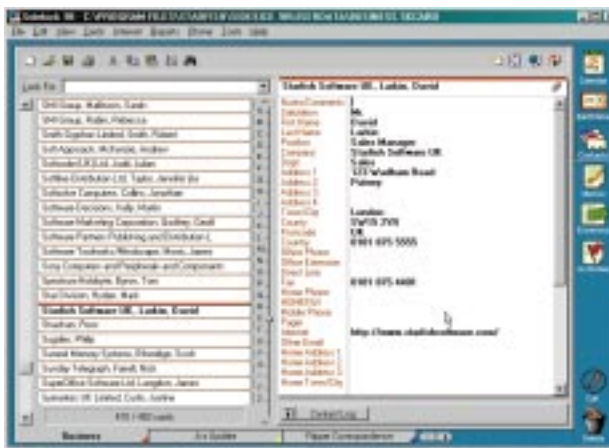
Starfish Sidekick 98

Sidekick has a long pedigree that stretches back into the antediluvian mists of DOS. In those days it virtually created the market for PIMs and it is probably still the best PIM you can buy, although it is threatened by Outlook.

What makes Sidekick so good is its customisability, and it will handle almost any information, from a price list to wine-tasting notes, including contact details of course.

In addition to contact data, Sidekick has a calendar which can be used to display your appointments, to-do lists and other tasks in daily, weekly, monthly and yearly views. You can see all your activities in a list. There is one module for keeping track of your expenses and another to show the time in various parts of the world.

Sidekick 98 has been smartened up a bit with new graphics and a new toolbar. The Earthtime module can now display analogue or digital formats, and the map has enhanced topography and is more colourful. Of the more



Sidekick's flexibility makes it our outright winner yet again

practical uses, importing and exporting has been improved.

Sidekick has quite an interesting range of internet-related features, notably support for vCard and vCalendar which will enable users to drag-and-drop vCard and vCalendar objects into Sidekick's contacts and daily calendar views. You can also drag-and-drop URLs from Sidekick into your web browser. Additionally, a web-publisher feature enables you to create fully-formatted and linked HTML files to do just that.

With the web publisher you can automatically publish professional-quality and consistent calendars and contacts to the web or to the company intranet.

The TrueSync feature enables you to automatically synchronise data between a PalmPilot 1000 or 5000 PDA (Personal Digital Assistant), along with the Rolodex REX card and the 3COM PalmPilot, and will support Microsoft Windows CE2.0.

Overall, Sidekick is a very good PIM although there are still a few rough edges. One such niggle is that it can be slow to load, even on a high-powered machine. If you are still using a 486 or a low-end Pentium, Sidekick's loading time can be a frustration.

PCW Details

Price £39.99 (£34.03 ex VAT)

Contact Starfish Software 0181 875 4455

www.mmg.co.uk

Good Points Sidekick's customisability is still its greatest strength.

Bad Points Occupies a fair chunk of hard-disk space and can be slow to load.

Conclusion Still the best PIM.

★★★★★

Time & Chaos 5.3

Unquestionably the most popular shareware PIM, Time & Chaos is simple to use and performs all the personal information management basics. The contact list, detailed contact information, tasks and the calendar are shown on a single screen. Each of these sections can be enlarged or reduced to suit how you work. For example, if you have more appointments than to-do items, you can increase the size of the appointments box and reduce the to-do box accordingly.

The contact database is the aptly named Telephone Book. Clicking on a name in the list brings up a tabbed cardfile where there are cards for primary and secondary addresses and a set of fields to store whatever information you like. Time & Chaos has some slight limitations such as only two fields for a business address (it wouldn't take the full business address of *Personal Computer World*, for instance) but if you are prepared to put up with these, then Time & Chaos is a reasonable choice for the standalone user.

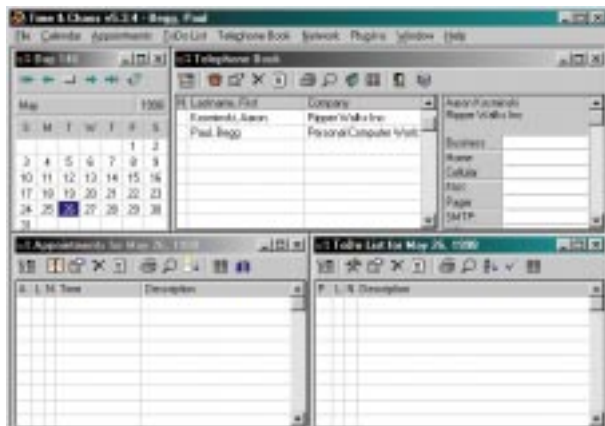
In addition to a primary and secondary address, there are fields for practically every type of phone number including home, business, cellular, fax, pager, SMTP and internet URL.

Time & Chaos has some excellent features. For example, making an appointment with someone is simply a matter of dragging the contact's name to the calendar, and you can add notes using the built-in word processor. And there are a few internet email features:

for example, clicking on a contact record automatically loads your MAPI email client and puts the address in the address field.

Time & Chaos is good to look at, easy to use and doesn't miss very many tricks: click on "About" on the Help drop-down menu and a dialog appears with a clock giving you the time. On the downside, however, Time & Chaos only imports ASCII files and you have to purchase additional add-ons if you want synchronisation capabilities. It is also a little on the expensive side when you compare it feature-for-feature against Sidekick.

For the small one-man business or for home use it is worth considering, especially as you can try before you buy.



Having everything on a single page makes Time and Chaos a good choice for the undemanding user

PCW Details

Price £37.76 (£32.14 ex VAT)

Contact Springsoft 01352 770049

www.springsoft.com

Good Points All your information on a single screen.

Bad Points Poor importing and exporting. Insufficient address fields.

Conclusion At-a-glance presentation of all your information makes this a PIM worth considering, but it's a bit expensive for what you get.

★★★★☆

Editor's Choice

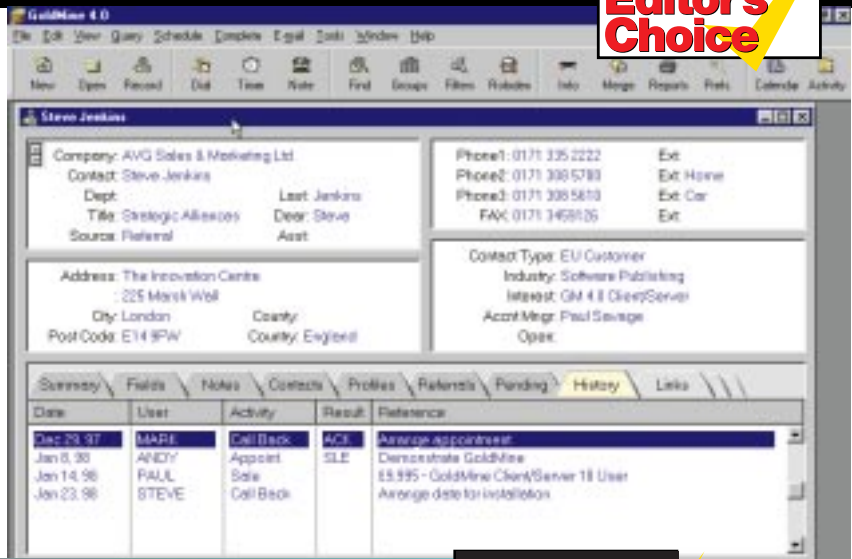
It is extremely difficult to single out a best-buy contact manager because they appeal to such a diverse range of users.

Currently, Act is looking good. It nicely bridges the gap between almost all users and as an all-round contact manager for a single user it is deserving of an award. However, it is not as good as GoldMine for very large companies and does not have the contact analysis strengths of Maximizer. So, balancing the price against features and taking into account the on-the-ball support and training supplied by AVG, **GoldMine** is our **Editor's Choice** of contact manager.

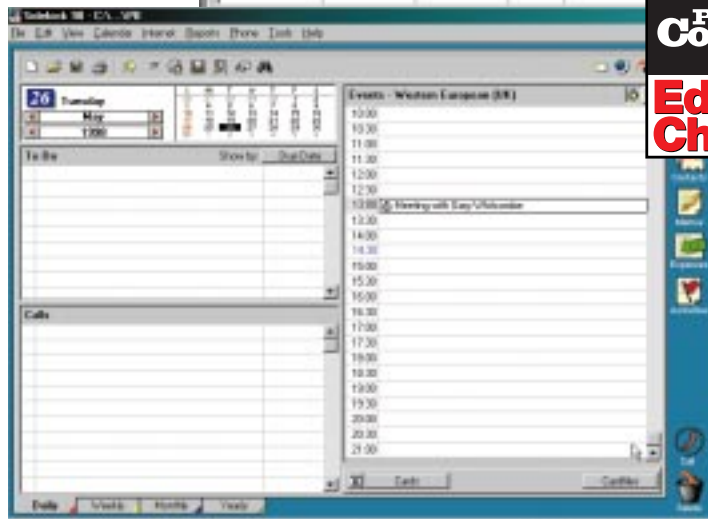
For the **Highly Commended** award for contact managers, the choice between Maximizer and Act is a close-run thing. Both have tremendous strengths (and some weaknesses) but are aimed at slightly different users. Act is excellent. It is easy to -use, powerful and with good multi-platform synchronisation. There can be little doubt that for the single user or small business it is the contact manager of choice.

Maximizer is a slightly different animal and perhaps nearer to GoldMine in both concept and purpose. It, too, can be used by the single and small business user but it has the power to grow with the business so it receives our **Highly Commended** award. It was a tough choice to make, but overall Maximizer just pipped Act to the post.

● As for the best PIM, curiously, Outlook looks like it will be a strong contender for an award in this category in the future. It is not yet the best buy and cannot be considered as more than a PIM because the contact management part needs to be thoroughly beefed up and we'd like to see more flexibility in the type of



Personal Computer World
Editor's Choice



Personal Computer World
Editor's Choice

Above You probably won't do better than Goldmine 4 as a contact manager

Left Starfish Sidekick 98 is a PIM with a long pedigree

over your schedule and to-do list. It was tough enough to choose the Highly Commended award for the contact managers, but the choice of PIM is tougher still. The problem is exacerbated by the fact that Outlook falls between two stools, neither contact manager nor PIM, but in the PIM category it really has a lot of potential. Being perverse, we are going to award **Outlook 98** the **Highly Commended** award as a PIM.

Contact Manager or Personal Information Manager : what's the difference?

The difference between a contact manager and a personal information manager is becoming less distinct. Both do pretty much the same thing in more or less the same way and can be used by a single-user or a workgroup. The difference essentially lies in how you use them.

Personal Information Manager
A personal information manager handles information that is personal to you — your business, your social contacts, your business and social appointments, your personal as well as your business to-do lists. In other words, although a PIM can be, and is, used

for business purposes, it is also designed to handle out-of-work activities or to be used in the home. Often, a PIM also has the ability to store other types of information, like price lists or the serial number and insurance details of your belongings.

Contact Manager
A contact manager is not just a heavyweight PIM, as sometimes described. It can be used to store contact information and schedule tasks and appointments: they can be, and are, used to perform such tasks across networks and intranets. They can also store a complete record of your every dealing with

a contact, right down to letters they have sent, providing you with a history of every bit of business you have ever done with the contact. But a top-end contact manager like GoldMine can be used for detailed customer analysis. The database can be sorted by almost any criteria. You can use it to identify potential sales or track the progress of a sale. ● In short, a PIM relates in the main to *you*. A contact manager relates to *us*. A PIM stores the sort of information you want to recall. A contact manager stores information about us. Another good way of telling the difference (although it is not 100 percent reliable) is the price tag!





Table of Features				
				
Product	Act! 4	GoldMine 4	Maximizer 5	Outlook 98
Contact	Symantec	AVG Sales and Marketing	Multiactive Software	Microsoft
Tel	01628 592222	0171 335 2222	01628 587777	01734 270001
Web URL	www.symantec.co.uk	www.goldmine.co.uk	biznet.Maximizer.com/multiactive.uk	www.microsoft.com
Price ex VAT	£199 (upgrade £79)	Single user £195 (5 users £595)	£149	£99
Address Book	●	●	●	●
Contact History	●	●	●	○
Diary/Calendar	●	●	●	●
Change Time Increments	●	●	●	●
Daily/Weekly/Monthly Views	●	●	●	●
Schedule Recurring Appointments	●	●	●	●
Task/To-Do	●	●	●	●
Assign Priority Levels to Tasks	●	●	●	○
Carries Unfinished Tasks Forward	●	●	●	●
Task History	●	●	●	●
Notebook	●	●	●	●
Expense Tracking	○	○	●	○
Time Logging	●	●	●	○
Calculator	○	○	●	○
Integrated WP	●	○	●	○
Links to WP	●	●	●	●
Spell Checking	●	●	●	●
Auto Dialler	●	●	●	●
Launch URL	●	●	●	●
Email	●	●	●	●
Fax	●	●	●	●
PDA's	●	○	●	●

Table of Features				
				
Product	Davi-Address	Organizer 4.1	Sidekick 98	Time & Chaos
Contact	Davilex Software	Lotus	Starfish Software	Springsoft
Tel	0800 962002	01784 445808	0181 875 4455	01352 770049
Web URL	www.davilex.com	www2.lotus.com	www.rmg.co.uk	www.springsoft.com
Price ex VAT	£29.75	£50.21	£34.03	£32.14
Address Book	●	●	●	●
Contact History	○	●	●	●
Diary/Calendar	●	●	●	●
Change Time Increments	○	●	●	●
Daily/Weekly/Monthly Views	○	●	●	○
Schedule Recurring Appointments	○	●	●	●
Task/To-Do	○	●	●	●
Assign Priority Levels to Tasks	○	●	●	●
Carries Unfinished Tasks Forward	○	●	●	●
Task History	○	●	○	●
Notebook	●	●	●	●
Expense Tracking	○	○	●	○
Time Logging	○	○	●	○
Calculator	●	○	●	○
Integrated WP	●	○	●	○
Links to WP	●	●	●	●
Spell Checking	●	○	●	○
Auto Dialler	●	○	●	●
Launch URL	●	●	●	●
Email	●	●	●	●
Fax	○	●	●	○
PDA's	● (Psion)	●	●	●

Key: ● Yes ○ No

Busy doing nothing

Toby Howard takes a quantum leap into the future, when computers might compute by doing nothing at all. Crazy idea? Not so — the ground rules are already laid.

The idea of using the fundamental particles of matter to build a quantum computer is a hot research topic. Quantum computers are strange: they exploit the counter-intuitive behaviour of the sub-atomic world to perform billions of computations simultaneously. Now they're set to get stranger still, with the prospect of a quantum computer which computes without doing any computing at all.

The new machine is the brainchild of Professor Richard Jozsa of the University of Plymouth, who has found a way to apply an idea called "interaction-free measurement" to computer design.

Doing the splits

With apologies to any professional physicists reading this, here's how it works. Fig 1 shows a simple experimental setup: there's a source of light (photons), two beam splitters (which split a beam of light into two new beams), two mirrors and two photon detectors. According to the laws of quantum mechanics, when a photon enters splitter 1, it splits into two ghost photons which simultaneously travel along both the red and blue paths. At splitter 2, the ghosts are re-combined into a real photon which hits the blue detector — it never hits the red detector. This "splitting" sounds bizarre, but experiments have shown that this is just what photons seem to do.

Imagine that an object is placed so as to block the red path (Fig 2). This changes everything. As there is now only one clear path from splitter 1 to a detector, quantum mechanics now states that the photon behaves like an indivisible particle. This time, when the photon hits splitter 1, it will randomly take the red path or the blue path.

If it takes the red path, it will be blocked by the object and so will never reach a detector. If it takes the blue path, however, when it reaches splitter 2 it again randomly chooses which way to go next. There's an equal chance of it going to the red or the blue detector.

Suppose we don't know whether an object is blocking one of the paths: what can we deduce by examining the behaviour of the detectors? If we ever see a photon at the blue detector, we cannot say for sure whether or not there was an object blocking one of the paths. On the other hand, if we ever see a photon at the red detector, we know there must be an object in the system.

Here comes the kooky bit

Now for the really kooky bit. If a photon ever gets to the red detector, it must have followed the blue route, therefore avoiding the object. But we know that finding a photon at the red detector means there must be an object present. So, although this photon has not

encountered the object, it is telling us that the object is there! This is "interaction-free measurement". Jozsa's breakthrough is to prove that this same situation can apply to the workings of a quantum computer.

A conventional computer manipulates binary digits, or bits, and at any instant a bit can either be a 0 or a 1 (no other value is possible). Quantum computers, however, use fundamental particles to create "qubits" (pronounced *kew-bits*). As well as taking the values 0 or 1, a qubit can also exist in a "superposition" when it is a 0 *and* a 1 simultaneously. This means, for instance, that a set of 16 qubits can simultaneously represent all the numbers between 0 and 32767 ($2^{15} - 1$). The incredible power of the quantum computer comes from its ability to perform calculations on all these numbers simultaneously.

Jozsa takes this further.

His idea is to place not just the qubits, but the entire computer, including its program, in a superposition of states. He has shown that just as a photon can detect the presence of an object without interfering with it, so a quantum computer could find the results of a program without actually having to *run* the program.

All you have to do is wait long enough for the results, as if the program had been run. Note that you can't get away with not actually writing the program. It must still exist in the quantum computer, and it must be a correct algorithm for solving the problem.

There are still formidable technical challenges in building quantum computers and no-one yet knows whether they'll ever be overcome. But the researchers are optimistic, with prototype quantum logic elements already working under lab conditions.

A few decades into the next millennium, we'll probably become blasé about the quantum computers on our desks. While the machines of the 20th century buzzed and got hot, the new machines will run quiet and cold. They'll be computing on a massive scale but at the same time, doing absolutely nothing. ■

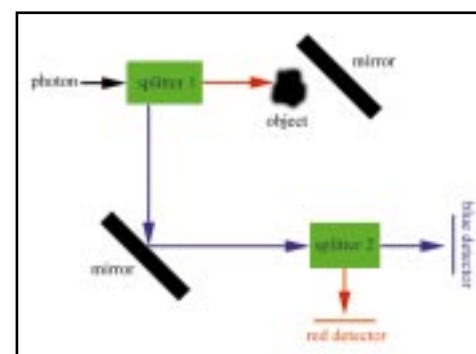
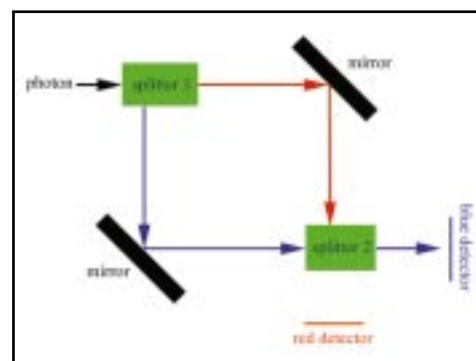


Fig 1 (top) and Fig 2 (above) illustrate the complexities of quantum computing

Cashing in

There are many ways to pay, all designed to encourage us to part with our money. Nick Huber looks at e-commerce, a method set to account for half of all transactions.

With so much marketing spin and hyperbole surrounding electronic commerce, or e-commerce, it is difficult to measure its products, the technology and the size of the market. IBM, which set up its own e-commerce thinktank last December, estimates that by 2015 e-commerce will account for over half of all retailing. Other estimates are just as radical, predicting a future market value well up in the trillions of dollars. But whether online banking, shopping or cyber-cash, e-commerce will stand or fall on the strength of its payment systems.

The criteria for success can be broken down into

three areas: ease of use, security and interoperability. Without this basic trinity, e-commerce will never gain mass-market popularity. Ice.com, an internet software and services provider, is one of the UK

companies hoping to cash in on the market. Last December, it launched an internet payment system, claiming that it is the only software on the market able to handle small and large payments.

Sterling service

The encrypted payment system, called VPS, requires neither hardware nor software and can handle sterling or dollars. Ice.com acts as an agent, ensuring the authenticity and confidentiality for all transactions. The merchant pays a two-part charge: a one-off payment of £400 to be hooked up to a standard system, plus an additional fee per transaction. Account details are given once, by fax or online. After the payment of a small float, say £10, the system works as with a normal credit card.

Money is deducted from the merchant's account when they make an online purchase, and the account's balance can be viewed using a standard password protection system. It will be as safe and easy to use as a traditional credit card, says Candida Slater, Ice.com's chief executive, who points to Microsoft which became a client early on. "Lots of companies who produce information for free are waiting for an effective way to charge users," she says. "We believe that the quality of information online will rise with VPS."

This faith in micropayment is well founded, according to Ken Fraser, principal consultant at Dataquest. "Micropayments have proved more problematic than any other," he says. "People will give a lot of information for free on the net, but they're keen to find an efficient way to charge users for accessing small amounts of information. There's a massive free lunch on the net at present."

But Fraser argues that smart cards, credit cards with an embedded microchip instead of a magnetic stripe, is where the serious money will be made in the short term. Trials are already under way in the UK with 14,000 Mondex e-cash cards in Swindon and 70,000 Visa cash cards being tested in Leeds.

Get smart: but when?

But with so many products fading after a lukewarm consumer reaction, when, if ever, will smart cards go mainstream? The answer will arrive later this year, according to a Visa spokesman: "We're now entering talks with all the banks involved and the next step will be a national rollout." With around 20 e-cash schemes circulating in Europe, he predicted that reloadable cards will replace disposable cards as the industry standard, and that eventually cards from all participating banks will be accepted on the same terminal.

However, the road to e-commerce ubiquity is not obstacle-free. US payment software and servers often have to be tailored to suit the network architecture of European companies, and Secure Electronic Transaction (SET) is not yet an industry-wide secure system for online transactions. What might be good for US corporations might not work in the European markets, said Bob Barker, e-commerce manager for Oracle in the UK. "Not all UK banks in the UK accept SET — some use secure FSL. When you have a company as powerful as Barclaycard which doesn't use SET, it means we're faced with the prospect of two-payment system," he said. Barclaycard, however, was quick to emphasise that it is keeping an open mind about payment systems during their trial periods.

People are still worried about safety when they give out credit card details, even though you could argue that companies have overdone encryption. With thousands of people demanding SET transactions, web servers will be brought to their knees. But still, most of the big guns in IT — Microsoft, IBM and Oracle among them — are staking their claim. It seems safe to say that teething problems apart, the e-commerce market is set for massive growth.

● PCW's publisher, VNU, has launched an online e-commerce information site at www.vnucommerce.com. It includes reports, case studies, advice and features. ■



The BBC's online shop is now generating a significant portion of the company's online earnings

Hands On Contents

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PCW/Hands On on CD-ROM

Remember, you saw it here first — that tip, trick, advice or review. And you can find it again: there's a whole year's worth of Hands On columns on our monthly CD-ROM. So if you've got a problem, or if that handy hint is on the tip of your tongue, don't sit and sweat: the answer is at your fingertips, on our cover CD.



The Outlook is fine

Microsoft's Outlook combines internet or corporate/workgroup mail with contact management, scheduling and personal information organisation. Here, Guy Swarbrick gives its installation a practical workout and shows you how to master its mail functions.

In theory at least, installing Microsoft's Outlook 98 couldn't be easier. The Active Setup install software (designed originally to make installation of Internet Explorer from the web a more realistic proposition, but equally suited to installation from CD) is more than an alternative to the "ACME" setup used for most other Microsoft applications; it's actually a significant improvement over it.

And given its heritage, one of the most obvious but important things to be aware of if you're installing Outlook 98 from the web, is that it keeps track of what you've downloaded. So if you lose the connection halfway through (or worse, 99 percent of the way through) you shouldn't have to start again.

Actually, if you're installing from CD you won't even have seen Active Setup yet. Unless you've disabled the option, the CD should autorun. Don't worry about Internet Explorer Add-On Components just yet, although both may prove useful later, particularly if you're going to use Outlook 98 with a back-end mail system other than Microsoft Exchange or SMTP/POP3 (internet mail), or if you have an HPC (Handheld PC) running Microsoft's Windows CE operating system and you'd like to synchronise your data with Outlook 98.

Running Outlook and Office

A word of warning before you start. If you are running Microsoft Office 97 on the same PC on which you intend to install Outlook 98, it must be the Service Release 1 version. Check the "About" option on the Help menu in any of the Office applications: Service Release 1 will have a tell-tale SR-1 ending to the main version number.

If it doesn't, you need to either install the

SR-1 patch, available from www.microsoft.com/office or from the CD you're using to install Outlook 98; or remove Office 97 and replace it with a full version of the Service Release, available from Microsoft.

Installation

So, for now, just select Install Outlook 98. Active Setup warns you first that this will replace previous versions of Outlook, but it will also upgrade other mail products if it finds them on your PC, and it will import any settings you have for existing Outlook 97, Schedule+ or Outlook Express installations.

If you're upgrading from a standalone copy of Outlook 97, or from Office 97, you'll be asked for a CD key which will be the seven-digit number on the back of your Outlook 97 or Office 97 CD. If you're upgrading from a non-Microsoft mail application or from Outlook Express, you won't be asked for the CD key.

Next you get to choose how much or how little of Outlook 98 you install. The

default is the "standard" installation which installs Outlook 98, Internet Explorer 4.01 (roughly equivalent to the minimal install if you were installing Internet Explorer separately) and Outlook Help. The Minimum install merely omits the help files.

The Full Install adds a number of additional options. Some, like NetMeeting, are components of Internet Explorer 4.01 which add functionality to Outlook 98. Others — the PIM converters, for example — allow you to make the move from another package to Outlook 98.

All or nothing

While I'd recommend the Full Install if you have the disk space, it would have been nice if Microsoft had given more control over the options installed here: it really is all or nothing. If you do need that level of control, for example to control the delivery of Outlook 98 to desktops across an organisation, you should look at the Microsoft Outlook 98 Deployment Kit

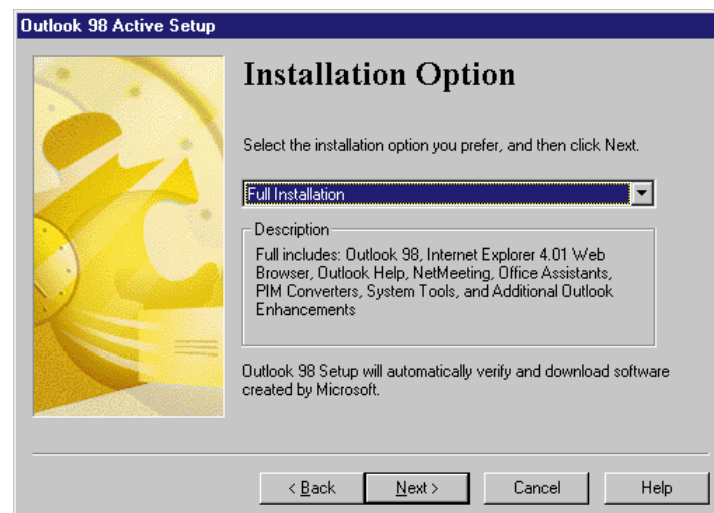


Fig 1 A Full Install adds a number of useful components, like NetMeeting, as well as tools for importing data from your existing PIM software



Fig 2 The hidden benefit of the Internet Only configuration of Outlook 98 is that Symantec's WinFax won't work in any other configuration

www.microsoft.com/outlook which allows you to build customised setup scripts that control installation at a much finer level of detail.

Next, Outlook will present a list of software that it has located on your PC which can be upgraded, bringing in email messages, address books, setup information and so on. Eudora, Netscape Messenger, Outlook Express, Outlook 97 and Microsoft's older Schedule+ will all be located and listed.

If, for example, you use Outlook 97 to connect to your company's Exchange server, but use Outlook Express for SMTP/POP3 mail, Active Setup will locate both, but you can only select one as the upgrade route during the installation process. Don't worry, though, you can bring in the data (and the service information) after you have finished the installation.

If you use other software, either mail clients like Lotus' ccMail or PIMs and contact managers like Packrat or ACT!, Outlook can import most of your current data, but you need to set this off manually once the install is complete.

Client or corporate?

The next choice you have to make is whether you want to set Outlook 98 purely as an internet mail client, or to use corporate or workgroup mail — essentially Microsoft's Exchange, or Mail, or other MAPI-based back-ends. In practice, this is more a confirmation of how you want to use Outlook than a "choice" in the strict sense of the word; if you have a non-internet back-end mail system, you have to choose Corporate or Workgroup. Don't worry, though. You can add internet mail access as a second service easily enough once the installation is complete.

You can even set up Outlook to run with no email, as a "conventional" PIM, at which it's pretty good. To be honest though, Outlook really scores as a PIM because of the way it integrates contact, calendar and task information with email and email services.

All that's left for you to do now is choose which directory you want to install to and then the process is almost ready to start in earnest. You get the choice either to upgrade only newer components (if, say, you already have Internet Explorer 4.01 installed) or to reinstall everything. My advice is that if you're installing for the first time, and from CD, you choose to reinstall everything. If you're installing from the web, or reinstalling Outlook 98 for any reason, then upgrading will be fine.

And that's it. No fanfare, just the addition of an Outlook 98 icon to your desktop. If that's all there was to it, though, there would be no real need for an article like this.

Adding mail accounts

Until now, I've assumed that you already had an internet mail or Exchange account set up on your PC and that Outlook picked up the details automatically. But what if you didn't? The answer to that one depends on whether you've installed the Internet Only or



Fig 3 The internet accounts you set up are editable from here

the Corporate or Workgroup option.

In the case of an Internet Only setup, you fire up Outlook, go to the Tools menu and select Accounts. Outlook will give you a list of all your internet accounts which, if you selected Full Install, will include WinFax. To add another account, select Add, then Mail, or to edit an existing account, select Properties. Either way, you'll end up with the dialog shown in Fig 4.

The first, General, tab contains easy-to-remember information like your name and your full email address (plus a reply address if you want that to be different). The second tab, Servers, contains information you're unlikely to know off the top of your head, but should be documented in the information your internet provider gave you when you signed up. The most critical fields are the SMTP and POP3 server names which, as you can see from the example, are often different.

The connection tab specifies whether you want to connect via a dial-up account or your company's network, and the



Fig 4 The most important of the four account properties tabs is the one which contains your account and server details.

Advanced tab has a mix of obscure information you're unlikely to know, like the port your SMTP and POP3 servers are on, plus more useful information like whether Outlook should leave your messages on the server after you've downloaded them, and for how long. What if you have more than one account? Well, that's easy: you go in and add another. The complication comes when you want to send mail, but it's not that complex.

The account list shows which account is set up as the default, and that's the account from which mail will be sent unless you choose otherwise. You can do this as you compose a mail, by selecting the account using the From option on the File menu, or the View Options dialog if you're running Internet Only, or by adding a "From" field to the message header with Corporate/workgroup setups. Things are rather different if you took the Corporate/workgroup option. The most notable difference is that you won't have an "Accounts" option on your Tools menu; you'll have services instead.

To add an internet mail account, you choose "Add" then "Internet mail". This is true for recent installations of MSN, too, but if you have a version prior to 2.5 you should select the Microsoft Network service. After

via the "autorun" setup menu mentioned earlier) and Outlook components (Add/remove software in the Control Panel) are added in the same way using Active Setup.

First, the browser pops up with a list of all the components available to you, then asks if you mind it ferreting through your registry to determine which components are already installed. You

can then browse through the list and see that a component is already installed, not installed, or if an older version is installed that Active Setup can upgrade for you. You select what you want, then Active Setup builds a list and tells you how much space each component will require and tots the lot up for you. Click "Install now" and the components are added. Easy.

And it is. Things start to go a awry if there's something you've already installed that you no longer require, or didn't mean to add. The bad news is that while you can add any component you want, individually, you have to remove Outlook 98 to remove individual components. That Outlook keeps your mail and settings and uses them when you reinstall, is small consolation.

And that's about all there is to it. There are things you can do with Exchange which internet mail doesn't support, with ccMail that Exchange doesn't support, and so on. Outlook copes pretty well, but exactly what will happen in which combination of circumstances is beyond our scope, here.

Handling handhelds

One final note for those of you synchronising with handheld devices. Synchronisation updates for most of the major PDAs — in particular, the PalmPilot and the Psion Series 5 — should be here by the time you read this. Synchronisation with the Timex DataLink watch is built in, and the software for Microsoft's own Pocket Outlook and Windows CE is included in the ValuPack folder of the Outlook 98 CD.

Designed to synchronise with Outlook 97, both Windows CE 1.0 and Windows CE 2.0 will happily sync with Outlook 98 provided the patches for the HPC Explorer



Fig 6 Adding new components is easy. Outlook tells you what they are and which you have already. Removing them is less straightforward

software in the value pack are applied. You can even synchronise from Outlook 98 on your PC to your (initially, Hewlett-Packard only) HPC, and from your HPC to your REX pocket organiser using a version of TrueSynch available from HP's web site.

Thanks. But it still doesn't work...

Most people will find that Outlook installs first time and picks up their settings properly. Problems usually start to arise if you have multiple accounts on different types of mail transports. The issue is not that they cannot be made to work together, but simply that there are so many variables, it can be difficult to determine where the problems are arising.

The best solution is to start with a clean Internet Only installation. Add one service at a time and ensure that all are working properly before moving on to the next, leaving MAPI services like Exchange or ccMail until last, with the addition of the Workgroup/corporate services.

Finally, with your mail service up and running it's time to add the data from your existing PIM or organiser software. There should be an import option, but provision of standard file formats like Comma Separated Variables should mean it's possible to get data in from the most obscure applications. Then you can start thinking about setting up stationery, forms and your Outlook Today page. But that's for another time.

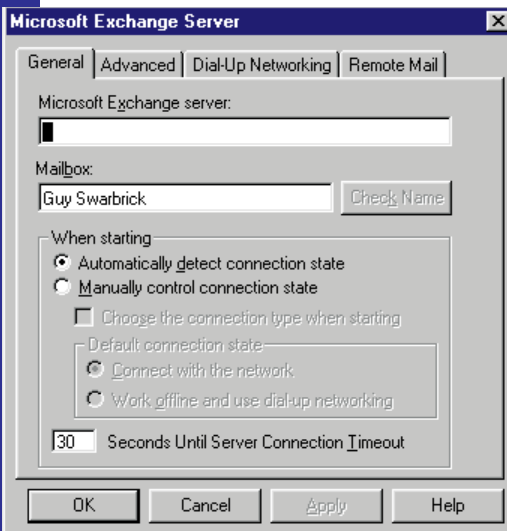


Fig 5 If you don't know what your Exchange server is called, ask your administrator

that, things are the same as for internet-only accounts. (If you have an MSN account which is delivering mail to your browser, go to the Communicate home page and MSN will do the Outlook 98 setup for you.)

The process is the same for other email services, you just need to plug in different information. To add an Exchange Server, say, you just need to ask your administrator to fill in the relevant blanks and you're away. It's worth noting that if you have both Internet mail and Exchange, Outlook 98 will assume that Exchange should be the default server from which to send mail.

The only complication now comes if you want to add components to Outlook 98. Both Internet Explorer components (added

PCW Contact

Guy Swarbrick is a consultant specialising in knowledge management and mobile computing. He can be contacted at gswarbrick.com.



Leaving the city limits

In the fifth and final part of “Adventures in upgrading from Access to SQL Server”, Mark Whitehorn tackles the CITIES combo box/table conundrum and ties up some loose ends.



The first four parts of this workshop have covered installing SQL Server, making ODBC connections, different upsizing routes and using the upsizing wizard, the seven layers of a database application, and why the upsizing wizard cannot do everything for you.

In this last part of the series, we will look at the work still to be done after running the upsizing wizard, some tweaking and tuning, and as many “gotchas” as we can fit in.

In fact, at the end of last month’s workshop I left you with a conundrum which illustrates exactly why the upsizing wizard

cannot be expected to do everything for us. Suppose you have a form in your front-end which includes a combo box. That combo box provides your users with a list of cities. The list is stored in a local table called CITIES and its contents are essentially static but change occasionally.

By default, the upsizing wizard will make a copy of CITIES on the server, make an “attachment” to that table and rename the local version as CITIES_LOCAL. (The upsizing wizard is conservative and does not delete your original tables; it just renames them.) The fact that your combo box draws data from a table on the server

is bad news for network traffic (and hence database speed) because the entire table will have to be moved across the network to the workstations when the combo box is opened up. What is the best solution?

A little local difficulty

The answer, like all good answers, is that it depends. The very act of upgrading will have left you with an MDB file sitting on the client machine which contains all the forms and so on. If, within that MDB file, you delete the attachment to the CITIES table on the server and rename CITIES_LOCAL as CITIES, the combo box will return to its

p224 >

usual speed of operation.

"Ah, but" you cry, "now the information about cities isn't held centrally and I'll have to manually update all the local copies whenever we want to add a name to the list. I thought one of the points of upsizing was to avoid this sort of thing?" Well spotted, which brings us to the "it depends" bit.

It is common practice to keep a copy of the client MDB file on the server. This copy isn't directly used by any of the clients; indeed, most of the time it sits idle. However, whenever you need to change the client MDB files, you change the master and then copy the master to all the clients.

Do you copy?

Essentially there are three ways of performing this copy operation. You can

1. Copy the entire MDB file to the workstations.
2. Copy just the altered table to the MDB file in the workstations.
3. Copy just the altered records to the MDB file in the workstations.

Number 1 is a good option if the MDB file is small. You might even set up a login script in NetWare to copy the MDB file across to the client each time the user logs in, just in case it has been updated.

Numbers 2 and 3 are more subtle (and more complicated) but will suit large installations where the client MDB file is large. This is not the place to go into details, but here are some guidelines. (If enough

people demonstrate their interest with an email, I'll cover it as a project in the Hands On Databases column).

You now have essentially three "databases" to think about: the SQL Server one that stores the shared data, the client MDB and the master MDB.

Your client MDB will be maintaining attachments to the SQL Server database. Suppose the client MDB also maintains attachments to the master MDB: you could keep a table in the master called, say, CHANGES which might consist of three fields; primary key, date and object name.

This table is used to store the date on which different objects within the master have been updated. The client MDB also keeps a copy of the CHANGES table. Whenever the client MDB is opened on a particular client, a query is autorun which compares the max. date in the two tables. If the max. date in master.CHANGES is greater than that in client.CHANGES, then code runs to copy across the new objects.

Master plan

You might already be able to see some areas which need more careful consideration. What happens if the master has been updated more than once since the client was last used? Can the code cope with more than one change per day? What happens if lots of clients try to copy objects simultaneously from the same master? And so on. The resolution of these

types of problem (sorry, *challenges*) will to some extent depend on what is happening on your site, which is another reason why the upsizing wizard can't be expected to do it all.

Sea changes

I leave this particular problem with one more thought you might like to consider. If we go back for a moment to the CITIES table, it is very unlikely that you will want to remove entries from this table. Even if another slips quietly into the sea, you will probably have historical references to it in other tables and it will have to stay in the CITIES table.

So, the only changes made to the table will be an update or an insert. Thus, if your CHANGES table indicates an alteration to the CITIES table, you might also store the actual changes (in yet another table) and simply move those across to the client CITIES table. If the CITIES table is huge, this may well be faster than deleting CITIES in the client and moving the entire table.

The take-home message from this sort of example is simple. The upsizing wizard will do the grunt work for you but it does not, and logically cannot, produce a ready-to-run client/server application. If your managers expect you to convert to client/server over a single weekend, disabuse them of the notion that this is possible. Given the variety of Access databases possible and the variety of potential client/server configurations, the only certainty is that it is very difficult to predict how long upsizing will take.

Tips, tricks and gotchas

The following have mainly been gleaned from the brain of Keith Burns, architectural systems engineer at Microsoft.

● Size is important

SQL Server databases (at least until 7.0 arrives) have to be pre-sized: that is, you have to specify how large the database is going to be when you first create it.

When upsizing an Access database, a good rule of thumb is to specify an SQL Server database about 50 percent larger than the current size of the Access data tables. Remembering that an MDB file contains not only data but also all the forms and queries, you might want to import the data files from your current MDB file into a test MDB to get a reasonable estimate of their size. If you get an answer of, say, 10Mb, specify at least 15Mb for the SQL

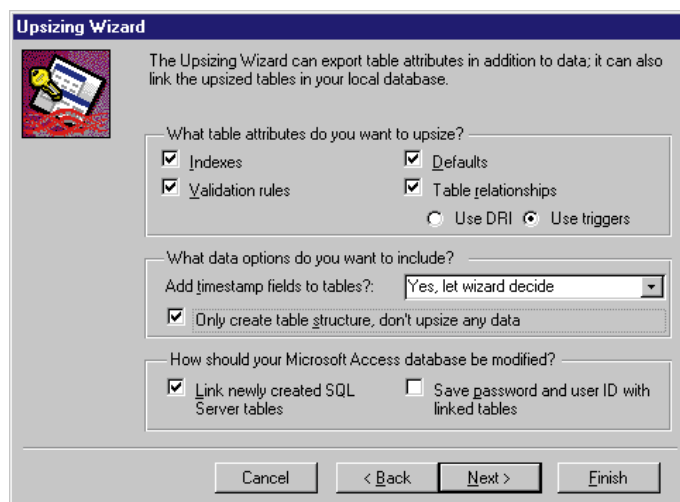


Fig 1 The upsizing wizard allows you to just create the tables without moving the data

Server one. If you have an Access database which is large, then by all means use the Upsizing wizard but tell it just to create the tables for you without moving

the data. This is an option that you can set in the wizard (Fig 1). Then, once the wizard has finished, import the data into SQL Server using a bulk load. ➤

Tips, tricks and gotchas (cont'd)

Two questions will now have popped into your head: why? and how big is big?

The Upsizing wizard moves each record across, one at a time, and keeps a transaction log of each, which makes the process rather slow. OK, so you could run the process overnight, but the transaction logs may become too large and that might halt the process. Bulk loads (that is, importing the data directly into SQL Server) don't keep transaction logs. They are therefore faster and won't stall.

As to what constitutes "big", the biggest Access database you can have is about 1Gb and in these terms, that's big. Probably anything over a couple of hundred megabytes is big, too, although there are no hard and fast rules here so you can just suck it and see. Make sure you are always working with copies of the data!

Install the client end

Don't forget — as many people apparently do — that you have to install the client side of SQL Server onto every client that needs to attach to the database.

Referential Integrity, triggers and DRI

Triggers are often a novelty item to people who are upsizing. A trigger is a piece of code (typically SQL) which is run by SQL Server whenever a particular event occurs: for example, when a record is added to a table or whenever a record is modified.

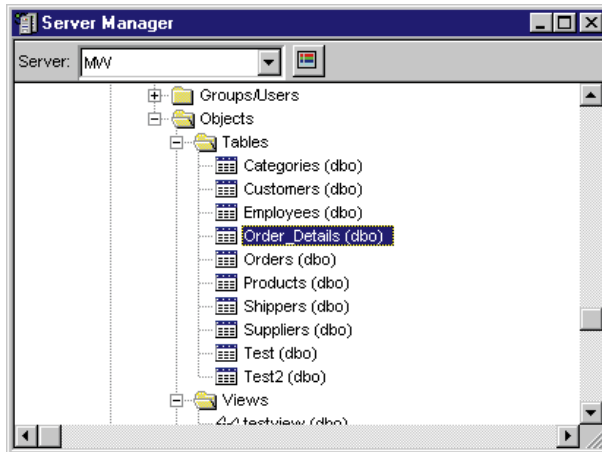


Fig 3 The SQL table created by the upsizing wizard has an underscore rather than a space, thus **Order Details** becomes **Order_Details...**

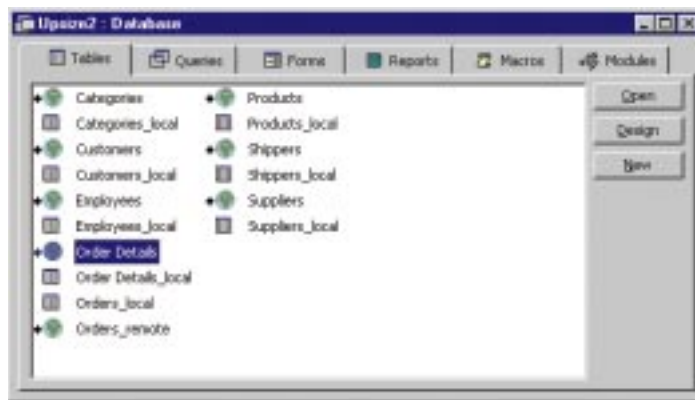


Fig 4 ...However, the name used in Access to link to that table is **OrderDetails**

A good way to learn about triggers is to study the upsizing report that Access generates for you, since this contains details of all the triggers that the wizard has created. These triggers can be used to provide integrity constraints (for instance, "this field can never be null"), including referential integrity.

SQL Server 6.5 offers a feature called

DRI (Declarative Referential Integrity). This can also enforce referential integrity so the wizard offers you a choice: do you want to use DRI or Triggers (Fig 2)? In many ways, DRI is a more elegant way to enforce

referential integrity so it is tempting to go for that option.

There is a gotcha though, which is that DRI doesn't support cascade updates/deletes. So, only elect to use DRI if you are sure that none exist in your current Access application.

● Don't you just love those wide open spaces?

Access tolerates spaces in all sorts of places, such as inside table names and field names. Sadly, back-end RDBMSs like SQL Server don't, so spaces in these places are suddenly an embarrassment.

The wizard copes with spaces in table names very simply: it creates an SQL table where the space is replaced by an underscore, thus **Order Details** becomes **Order_Details** (Fig 3). However, the name used to link to that table from Access is defined as **Order Details** (Fig 4), thus any forms, queries and such like that you have already constructed which reference **Order Details** will work fine.

Spaces in field names are handled rather differently. For example, the **Orders** table in **UPSIZE.MDB** which we used for

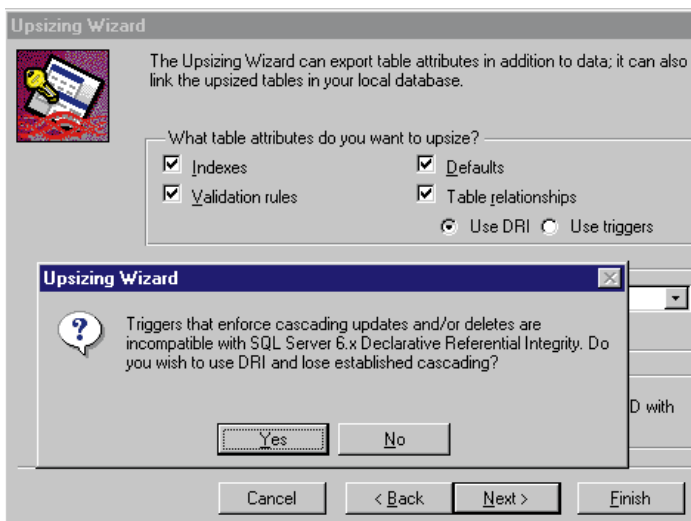


Fig 2 The upsizing wizard offers you a choice of using DRI or Triggers

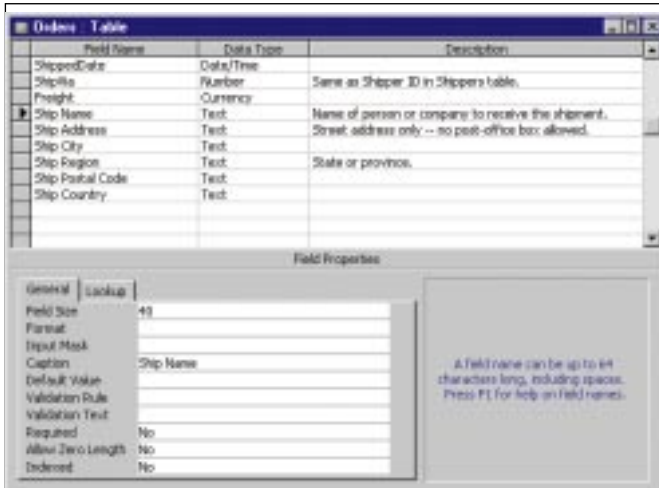


Fig 5 The Orders table in UPSIZE.MDB, used to demonstrate the upsize wizard, has several field names that contain spaces

demonstrating the upsize wizard has several field names which contain spaces (Fig 5). An SQL Server table called Orders is generated where the spaces in the field names have been replaced by underscores (Fig 6).

The problem now is that, if we link directly to that table from Access, any forms which reference, say, Orders.[Ship Name] will fail to find their target. The trick is to link to the SQL table from Access, not with a table called Orders but with one called Orders_local. Then use a query called Orders which references that table and also substitutes the original names for the

Key	Identity	Column Name	Datatype	Size	Nulls	Default
		OrderDate	datetime	8	✓	
		RequiredDate	datetime	8	✓	
		ShippedDate	datetime	8	✓	
		ShipVia	int	4	✓	
		Freight	money	8	✓	
		Ship_Name	varchar	40	✓	
		Ship_Address	varchar	60	✓	
		Ship_City	varchar	15	✓	
		Ship_Region	varchar	15	✓	
		Ship_Postal_Code	varchar	10	✓	
		Ship_Country	varchar	15	✓	

Fig 6 The SQL Server table called Orders, generated by the upsizing wizard, has underscores rather than spaces in the field names

this in the “gotcha” section? Well, as long as you are using nothing but Access there should not be too many problems. But if you have used anything else (Visual Basic, table defs) which can be more specific in the way they refer to objects, then things could turn nasty when you attempt to run

names with underscores (Fig 7).

The net result is that any form which references Orders.[Ship Name], for instance, will point to the query, which points to the local table, which points to the SQL table and thus finds the data. It’s clever, isn’t it?

So why is all of

● **Are you a star user?**

The use of SELECT * doesn’t produce a big speed hit in Access, so people tend to use it and simply ignore the extra fields that appear. Running SELECT * against an SQL Server table can be slow.

One solution, if you still want to use SELECT *, is to create an SQL Server view which has only the fields (or columns in SQL Server-speak) that you actually want, and then run SELECT * against that view rather than the original table.

● **Are you unique?**

Access enables you to update SQL Server tables via a query as long as the normal conditions for updating are met

and the “table” being queried has a unique identifier.

Assuming that all of your tables have a primary key, this does not look like a problem. But suppose you follow the advice given above, create a view and then run a SELECT * against it.

If you have not included the primary

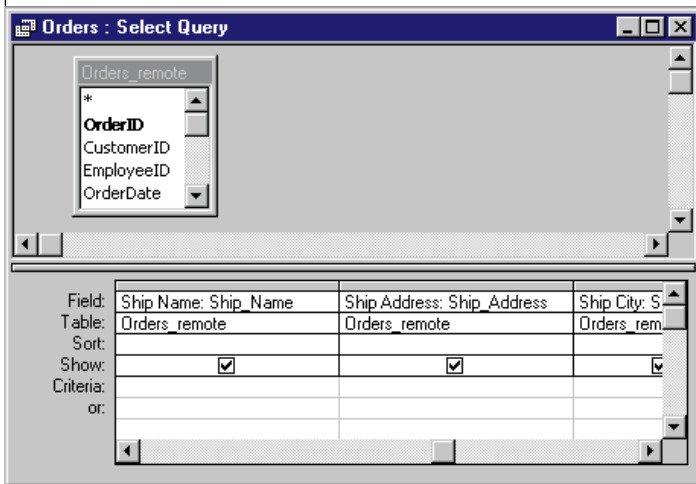
key in the view and told Access during the establishment of the connection that it can regard the contents of that field as being unique, then you will not be allowed to update via the query.

Actually, that last point sounds far too negative to end on, so I will put it positively: always include primary keys in your SQL Server views, and always tell Access — and it will ask you for the information — which field(s) make up the primary key. If you do, Access will allow you to edit through the query, all other things being equal.

Happy upsizing!

your applications. Be careful out there.

Fig 7 A query called Orders which references the SQL table in Fig 6, then substitutes the original names for the names with underscores



PCW Contact

Mark Whitehorn welcomes readers’ comments and feedback on this database workshop. Write to him via the PCW editorial office (address, p10) or email database@pcw.co.uk.



Following orders

Why are the banks making it so hard for small businesses to benefit from online ordering and credit card sales? Nigel Whitfield expresses concern over commerce on the internet.

If you run a small company, the internet can be a great way to market your products to a wider audience. The technology is there, and with good web-site design, yours can look as attractive as the biggest outfits on the net.

There are already examples of people bringing lots more business to a small family firm, being able to sell their wares around the world. In some cases the extra trade from selling over the internet has not just made a difference to cash flow, recouping the initial investment in a web site, but has even made the difference between a business going under and staying afloat.

When you run your own firm, sometimes it is the little things that can make a difference. And one of the things that can make a tremendous difference when you

want to sell things over the internet, is to make it easy for people to send you orders.

In practical terms, this means allowing online ordering, via a secure server or some other means, like calling people back to take their credit card details. The credit or debit card is another important part of that: if someone has to send a cheque, then very often they simply will not bother. But if all they have to do is fill in a form when they decide that they want to buy something, you are more likely to end up with a sale.

Such a shame, then, that the banks don't make it very easy for people. While a small business operating from a shop or via a conventional mail order setup may well manage without credit card facilities, for internet shopping it is almost essential. You might think, given the way people

have talked for years about "microbilling" (charging small amounts for information sold electronically) that all the technology and systems would be in place to help those entrepreneurs sell their wares over the internet.

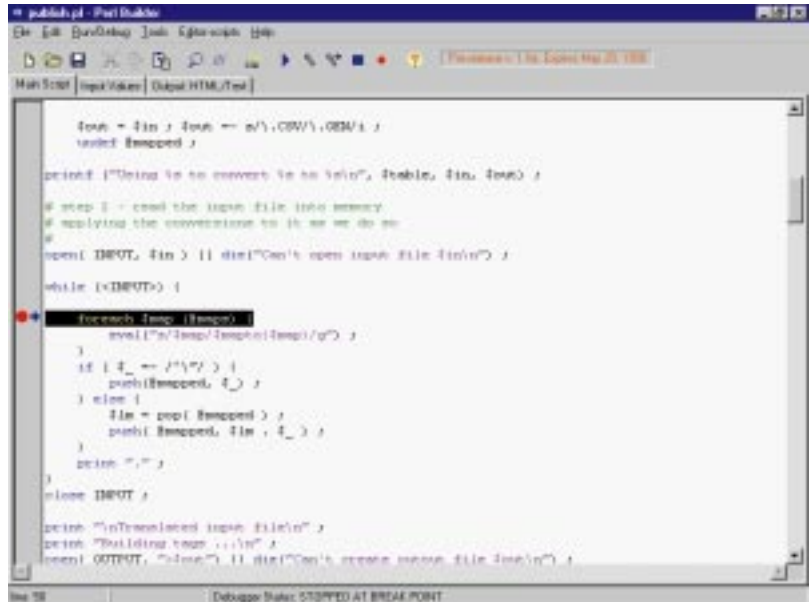
The banks take their cut

You would be wrong, in a way. Yes, you can set up as a merchant, allowing yourself to process card transactions, which help to increase your business. But you have to pay for the privilege: 5-10 percent on each transaction for credit cards, or a flat fee of about 65p for debit cards.

If you had a business and wanted to take orders over the web, would you be happy to hand over that much of your money to the bank? That is what they will

p228 >

Free and easy: getting started with Perl



PerlBuilder is a handy tool for anyone developing web applications in Perl

I've mentioned Perl a number of times in this column; it's my language of choice for programming, especially for anything to do with the web and server scripts. Perl was originally designed to process log files and other similar material into a useful form.

Although there are other solutions, Perl has the advantage that it's free. It can be easy and quick to learn, and is available for a wide range of different platforms. Another advantage is the breadth of functions to process text, whether it comes from a file on a hard disk or from input from the web.

Many people have asked about the best way to start learning Perl. There are two books which should be considered bibles for anyone wanting to use the language (both are published by O'Reilly): *Learning Perl* is more suited to beginners, while those who can already program in other languages would do well to invest in a copy of *Programming Perl*.

The language itself is freely available and you can find many links to download sites and other useful information on the www.perl.org web site. For the Windows 95/NT version, go straight to www.activestate.com.

At your command

One of the things that puts some readers off using Perl is that even though it's a Win32 application, it still runs from the command line, requiring you to use a text editor to create your scripts and then fire up an

MSDOS window to run them. And if you are trying to develop CGI scripts that process form input or create web pages on-the-fly, it can be a long and tedious process uploading them, testing them, changing and then uploading everything.

For the serious Perl developer that looks to be a thing of the past, thanks to PerlBuilder, which is almost certainly the first Integrated Development Environment for Perl. It's a fully graphical program that you can use to edit your scripts, with all the usual things you'd expect from a modern development system, like coloured highlighting and the ability to step through your script one line at a time, or run it up until a particular point.

Making a point

PerlBuilder also lets you see the value of a variable by pointing at it with the mouse. Best of all, is the support for web developers. The CGI wizard will automatically create the code to process a web form and you can simulate the input from the form within PerlBuilder, so you don't need the hassle of installing a web server on your PC. Output from your script can be viewed as text or in a web browser.

At first glance, PerlBuilder looks like a tremendous tool for developing web applications in Perl. The release version should be available soon. Evaluation copies can be downloaded from www.solutionsoft.com. The anticipated price is US\$149.

expect if you are a small business wanting to jump on the credit or debit card bandwagon. And I suspect that for many people with a good idea and something they could sell over the internet, those figures make it pretty uneconomical.

Yes, you can sign up with an internet bank and hope that the punters who visit

your site use the same one so they can pay you easily. But if commerce on the internet really is going to be an opportunity for everyone, instead of just a way for the big boys to take more market share, shouldn't someone be making it easier for you to take online orders, not charging you so much for the privilege?

Questions & Answers

Q I have a mail server connected to the internet via a leased line, and recently discovered that it was running very slowly. It transpired that the reason for this was hundreds of emails being sent through my server as part of a mass mailshot that someone was sending out. Is there a way to prevent this happening?

A This use of your mail server, to relay messages, is abuse. It's becoming quite common, as spammers try to cover their tracks by hijacking other mail servers to distribute emails. There are ways to prevent it happening but it depends on what sort of email system you're running, including the platform and the version of your mail software.

Some systems can be made very secure, while others are simply a gaping hole and an open invitation to people to abuse your resources. While you may not think that's too much of a problem (especially if you have a fast machine and a good net connection) you'll quickly learn the down side, because many sites have automated tools which will warn you when they receive messages that have been relayed by your site. You might even find mail from your system blacklisted.

There is an initiative on the net, the Transport Security Initiative <maps.vix.com/tsi> where there's a list of internet mail transport systems and how they can be protected from this type of abuse. It should be required reading for anyone who is running a mail server that accepts connections from the rest of the world. There's even a page you can use to check the vulnerability of your own server.



Fig 1 This site makes use of frames to provide a menu on the left — but always make sure there's an option for people without framed browsers

Q I hold a database of user information for all the winners of my web award <www.mikesworld.net/bawards/> (about 400 or so records). Of their personal details, I hold their name and their email address. Winners come from all around the world and I'm not sure which laws are applicable to me. Do I need to register under the Data Protection Act or something like that?

A The simple solution with regard to the Data Protection Act is that if you are in doubt, you should contact the office of the registrar and ask for their assistance. You will find that they are very easy to deal with, and depending on the use to which you put your database, you may qualify for an exemption — for instance, if the sole purpose is to send people information which they have agreed to receive.

If you do register, the cost is currently £75 for three years. An annual registration is due to be introduced later this year. You can contact the office of the registrar by telephoning 01625 545700, and there is a web site at www.open.gov.uk/dpr/.

Q I am looking for the HTML code that divides the screen into two sections: one on the right of the screen that does not scroll, and another, on the left, that does. I have seen this on many web pages and have looked it up in help files, but with no success. Can you help me with the code?

A What you are looking for is the code for using frames. There are lots of tutorials on the internet that will explain how to do this and also point out the problems; frames can make a site more awkward to view and take longer to download. It is also extremely poor practice to create a frame-based site that has no alternative and cannot be navigated without using the frames (Fig 1, left).

Having got the warning out of the way, the code for the front page of one of my web sites, which has a fixed panel on the left and scrolling text on the right, is shown in Fig 2 (p233). The FRAMESET command defines two columns. In this case, the first one is 130 pixels wide and the next takes up 77 percent of the screen. The other parts of the

Fig 2: My web site front page code

```
<HTML>
<HEAD><TITLE>Digital Diversity</TITLE></HEAD>
<FRAMESET COLS="130,77%" BORDER="0" FRAMEBORDER="0" FRAMESPACING="0">
  <FRAME SRC="main-menu.html" NAME="menu" SCROLLING="NO">
  <FRAME SRC="intro.html" NAME="info">
<NOFRAMES>
  <BODY>Put code for the non-framed version here</BODY>
</NOFRAMES>
</FRAMESET>
</HTML>
```

command make sure there's no border to the frame. Both are needed to ensure compatibility with NetScape and Internet Explorer.

Each FRAME command specifies which file will be loaded into the frame: main-menu.html will be loaded into the left-hand frame, and intro.html into the right-hand one. We've specified no scroll bar for the left frame. Other alternatives are YES, or AUTO to let the browser decide if there should be one.

The name option is used to allow you to say where a page should be loaded, by including the code

```
TARGET="info"
```

in a link. The file specified by the link will be loaded into the right-hand frame. The NOFRAMES section of the code can contain as much information as you like. It is essentially whatever you want displayed by people who don't have a web browser that can view frames — yes, there are still some out there.

That's the basic code. It should be easy enough to modify it for what you want, but remember to think carefully. What happens, say, if someone goes to a page within your site, bypassing the document that sets up the frames? Will there still be a way for them to get to other pages?

Q I want to be able to send email using different addresses depending on which project I'm working on. I've been using Microsoft Exchange and have added a second Internet Mail service to my configuration, with the new mailbox and other details.

Although I can receive messages from both mailboxes, when I send internet mail, it is bounced back with headers that seem to be made up of both the different addresses. What am I doing wrong?

A To be frank, you're lucky that it's working at all. The Microsoft Exchange inbox (also called Windows Messaging if you have a later version of Windows 95) is not designed to have two identical services installed at the same time. When you try to send a message, there is no way for Exchange to know which address you want to use and it's likely the settings were corrupted when you installed the second Internet Mail service.

If you want to continue using Exchange, you should create multiple profiles with one Internet Mail service configured in each. To switch between the two, you will have to close down the mail program and restart it, choosing a different profile.

To make sure this works, you will also need to change the settings in the control panels so that you are prompted for a profile each time you start up a mail program like Exchange. If that sounds like a lot of hassle, especially on a slow machine, then it is time to junk Exchange for a smaller mail program, and there are a number that will let you set up more than one internet mail account.

Eudora Pro www.eudora.com is a very good mail program, though you will have to pay for it (the Lite version only works with one account). A free alternative is Microsoft's own Internet Mail and News, which has support for more than one user, and all you have to do is select "Switch user" from one of the menus to access your other email account.

● *Please note: The previously published (PCW, June) URL for Forte Free Agent was wrong. It is www.forteinc.com.*

PCW Contact

Write to Nigel Whitfield via the PCW editorial office (address, p10) or email him at internet@pcw.co.uk.



Not-so-hot **date**

'Quantum leap' takes on a new meaning for Tim Nott as his PC jumps a century and refuses to run Windows. It urges him to find a fix which will alert users to potential date disasters.

Reader Ted Wlodarczyk had a rather entertaining problem with his system date, which suddenly developed a Dr Who-like propensity for leaping uncertainly into the future.

The usual cause for date loss is a problem with the CMOS battery that keeps things such as the date and drive details in a kind of slumbering memory while your PC is switched off. But in Ted's case this didn't seem to be the case, as the date wasn't just lost, but seemingly leapt about at random. It ceased to be amusing when his accounts software found itself in the year 2002 and obligingly (and irrevocably) entered all his standing orders up to that date.

An operating system gone AWOL

While pondering this problem, I took a weekend break and returned to find that my OS (Windows 98 beta 3) had also been on holiday. It had, according to an eyewitness, gone straight from the start-up screen to the close-down screen without the intermediate ceremony of running Windows.

The next morning, the PC just sat with its brain hanging out after the BIOS check. I didn't get an error message that read "All those with operating systems take one pace forward... *WHERE DO YOU THINK YOU'RE GOING, NOTT?*" but it felt like it.

I then managed to make several bad mistakes in quick succession. First, I didn't read the readme file that I had previously printed out. Secondly, I tried to boot from the emergency boot disk without checking that the write-protect tab had been set. That produced a message saying that this version of Windows had expired. Fourth, I still didn't twig what was going on. Fifth, I managed to boot with a Windows 95 boot floppy, then wasted a fair amount of time

waving the dead chicken of DOS virus checkers at the problem. Sixth, I wasted a lot of energy cursing Microsoft for supplying me with a beta version that expired before the stated date.

Seventh heaven

I was just about to make the seventh mistake, when a tiny bell rang from way back. Or was it way forward? I checked my PC's clock. It said 2098 — a world record for late copy posted to the editor. I reset the date, restarted the machine, read the readme, and realised what a total balls-up I'd made. What had happened was that the beta, realising that 2098 was long past its sell-by date, had obligingly removed its presence from first the boot sector of my hard disk, then from that of the floppy.

Having got everything reinstalled and finally working (*don't ask!*) I got to thinking what could be done about this jumping date problem. I'd had it happen before (although it isn't very common) and it can cause problems such as applications refusing to start, invalid page faults and invalid file dates, as well as disasters such as expiring software or screwing-up accounts.

Old friends, new batch file

What seemed to be needed was something that checks the date before Windows loads and any applications can run. Having blown the dust off my ancient copy of *"Ye DOF 5 Manual for the Enlightenment of Fcientifik Gentlemen and Ladief"* (Microsoft Press 1792) and together with a little help from my friends, I came up with the following little batch file:

```
echo. | date > c:\today.txt
find "1998" c:\today.txt > nul:
if errorlevel 1 date
```

This curious incantation works as follows. Since the date command needs the return key pressed after (or a new date entered) it would bring the batch file to a halt. The "echo." followed by the pipe symbol obligingly sends the necessary carriage return to the date command.

The output from this is, in turn, sent to the file c:\today.txt (which is replaced each time). The next line checks that the contents of that file includes "1998" — in other words, that the date command has, in fact, returned the current year.

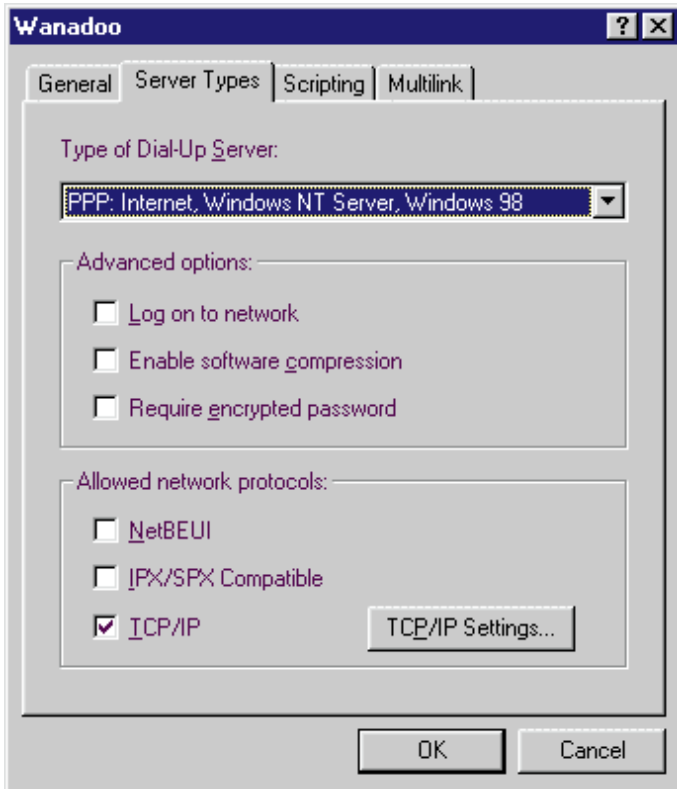
An apparently undocumented feature of the find command is that it returns an "errorlevel" code (zero if the find is successful, or one if it fails). The output of the find is sent to oblivion with > nul: as we don't need it on screen and can't do anything else with it.

Finally, the "if" command tests the errorlevel; if the find failed, the bare date command is repeated. At this stage the batch file halts for the user to correct the date, with the "wrong" date shown on-screen. If the errorlevel is zero, then the batch file ends or continues to subsequent commands.

Disaster alert

I've now got this in my AUTOEXEC.BAT. Unfortunately, it won't solve the Windows beta expiry problem, as the alert cuts in as soon as the PC reads the boot sector, but then, that won't be an issue for long. It will alert the user to potential disasters such as Ted Wlodarczyk's standing order fiasco, however. It's not sophisticated, it doesn't check month or day, but for three lines of code it's not bad.

There's a "known issue" with the pipe symbol, by the way. If you're editing the



Auto log-on:
it's not quite what
you may think

Logging lore

Following on from last month's tip about removing unnecessary protocols from your Dial-Up Networking properties to get faster logons to an ISP, reader Martin Paul goes a step further. In the same properties sheet, there's an option that says Log on to network (see screenshot, above). Now, I'd always assumed

batch file in DOS, you need to use ALTGR + the ` key (top left on main pad). If you're using Notepad (or another text editor) in Windows, you need to use Shift + \.

Floppy file safety net

As mentioned at several points in Hands On, files deleted from a floppy disk don't go to the Recycle Bin, they go straight to oblivion. There is a way to undelete them (see the November 97 column) but reader Iain Watt wins himself a book token for this rather ingenious safety net.

"I created a new folder on the hard drive called Floppy Disk Recycle Bin. I then created a shortcut to this on the desktop, to allow easy viewing of the files in the folder. I placed another shortcut to it in the Windows\Send To folder.

"If I want to delete files from a floppy disk I right-click them and use the Send to... submenu to send a copy to the Floppy Disk Recycle Bin. I can then delete the original file knowing that I can always retrieve it if necessary. Periodically, I empty the Floppy Recycle Bin by the normal method, which sends the files to the standard Recycle Bin. So, in effect, I have two chances to retrieve the files before final deletion."

You could do the copy and delete in one step by holding down Shift before you select Floppy Recycle Bin from the Send to... menu, or by right-dragging the files onto the desktop icon and choosing Move.

that this meant what it said, and that it saved you having to type your user name and password before connecting to the ISP.

Not so, according to Martin: *"When the Logon to network option is selected, the Dial-Up Networking service tries to find a Microsoft Windows network. If it doesn't find one, it times out."*

I tried this, and found I still logged in automatically, but much faster. And sure enough, clicking on the question-mark button and then the box, pops up the information that this will "attempt to logon to the network using the user name and password you gave when you logged on to Windows". Now, before you rush to tell me it doesn't work for you, let me mention that I've only tried this in the Windows 98 beta, with IE4, so your mileage may vary. Worth a try though, I would have thought.

Quick tip of the month

A frequently asked question is how to start Explorer with all the branches collapsed. And, as I've frequently answered, the solution is to have a shortcut with the command line

```
C:\WINDOWS\EXPLORER.EXE
/e,/select,C:\
```

What I never realised until recently is that if you have a Windows key on your keyboard, then this + E has the same effect.

- Thank you, Jonathon Quirk.

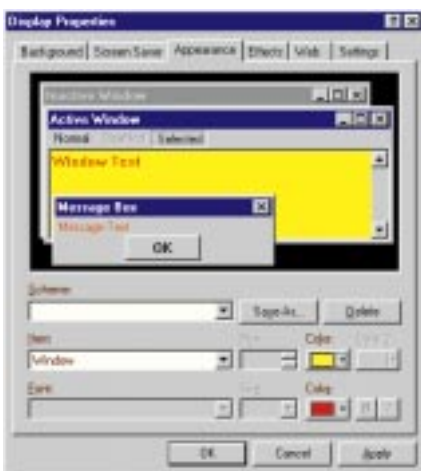
Questions & Answers

Q Whenever I exit from DOS mode, my computer restarts from scratch. It's a small point, but I've got an old, slow computer and am losing two minutes each time.

Alex Pounds

A This is because you're in MSDOS mode, rather than running a DOS session from within Windows.

In the latter, typing Exit closes the session, even if it's running full-screen, and returns to the Windows desktop. In the former, typing Exit restarts Windows. If you just want to close down, you can switch off the PC from the command prompt (usually C:\path>) in MSDOS mode. Don't do this from a DOS session running under Windows, though. Exit back to Windows and close down as normal.



Changing the default text and window background colours

Q How can I change the default font colour used in folder listings? I can change the font itself, but the colour control is greyed-out in the Display/Appearance property sheet.

Gill Kerridge

A You are almost there. Scroll through the Item list to Window. You'll find you can change the colour of the background and the font (see screenshot, above). This will affect all text-based Windows and controls such as drop lists.

Q As part of a recovery process following a system crash, I made an exact copy of my Windows folder and sub-folders on my D: drive. To my astonishment, I discovered that Windows actually revises entries in the

History, Temporary Internet and folders on the D: drive. However, these entries are not cleared if you use Internet Explorer's commands to clear the History and delete temporary files.

Storm Dunlop

A This is all to do with those mysterious DESKTOP.INI files that appear in these folders. We've had a similar problem before with copying the fonts folder to another drive. One reader found that deleting a font in the backup also deleted the original, so be very careful.

The best bet is to rename the DESKTOP.INI files in the backups. This will stop the behaviour. In general, if you want to back up the contents of a special folder such as Fonts, or Favourites, copy the individual files and links to a new folder (but not the DESKTOP.INI) rather than copying the entire original folder.

Q A new icon has appeared in the middle of my desktop. It doesn't appear to do anything, it has no title and I can't move it.

Geoff Hewlett

A Right-click on the icon, choose Properties, and you will almost certainly find that the Display Properties dialog appears (see screenshot, below). On the background tab, look at the Wallpaper settings. What you have here is one of the small wallpaper bitmaps centred on the screen. I'm not laughing, honestly...



The answer to that mysteriously inert icon

Q What are those little icons on the bottom right of the taskbar called, and is there any way to exert control over them? I have two programs I run on startup: one creates a button on the taskbar, the other a little icon on the

right. I'd prefer just the little icons.

Ashley Wakeman

A I don't know of a name for these other than System Tray icons and it's up to the program itself whether they are created. Sometimes there is an option to turn the icon on or off from within the program, but not always.

Q For some reason the Programs sub-menu, off the Start menu, is no longer sorted into alphabetical order. I assume IE4 has messed something up?

Kenwyn Davies

A You assume right, but you'll find that you can drag the items about and access the shortcut properties from a right mouse-click. One of the few worthwhile improvements of IE4, in my opinion.

Q I'm writing in the hope that you'll be able to tell me which font is used by Windows 95 for such things as the maximise/minimise icons. Having tried to housekeep my system, I've somehow moved or maybe deleted the relevant font and I'm now getting just numeric characters on the buttons.

"Superfan"

A Is that a compliment or your regular email address? Anyway, the font you have mislaid is called MARLETT.TTF.

Q I'm setting up a PC designed to be used by junior-school children. Is it possible to get rid of the task bar?

Pete Murphy

A One way would be to drag the top end down so that it's just a line, then adjust the monitor so it disappears from the screen. A better way would be to use a different shell to Explorer. Edit the shell= line in SYSTEM.INI. If you point this at PROGMAN.EXE you won't have a task bar and will be able to configure (and restrict) Program Manager in Windows 3.1 style [see page 239]. You mentioned in your mail that you are using the Applica software interface. I'm not familiar with this, but you could try making it the shell.

PCW Contact

Email Tim Nott at win95@pcw.co.uk or write to him c/o the PCW editorial office (address, p10).



Restrictive practices

Adding a restrictions section to progman.ini, getting those Windows windows in order... tasks tackled by Panicos Georghiadis and Gabriel Jacobs. Plus, the 64,000-byte question.

I know there is a way of disabling file menu options etc, from Program Manager using .ini file entries, but I cannot remember how to do it. Please help me.

David Lovelock

101566.2753@compuserve.com

You need to edit the progman.ini initialisation file found in the Windows directory and add a [restrictions] section.

Use Notepad to open it. The [restrictions] section can have the following entries:

[restrictions]

- NoRun=
- NoClose=
- NoSaveSettings=
- NoFileMenu=
- EditLevel=

NoRun= 1 disables "Run" on the File menu.

NoClose= 1 disables "Exit Windows" and "Close" on the File menu.

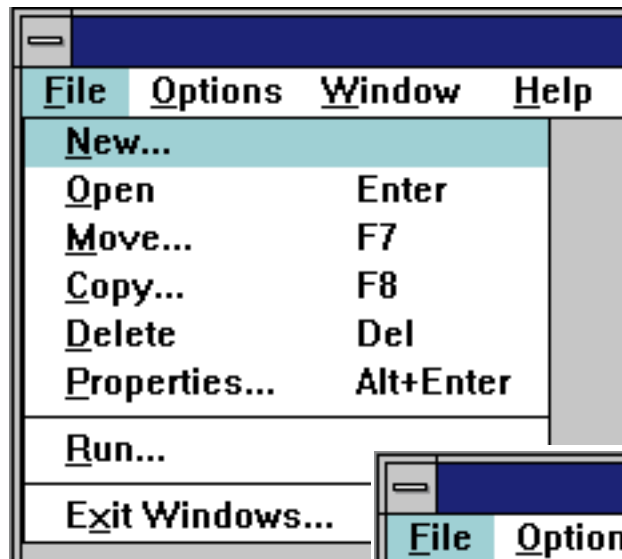
NoSaveSettings= 1 disables "Save Settings on Exit" on the Options menu. This setting overrides the SaveSettings= entry in the [settings] section of progman.ini.

NoFileMenu= 1 removes the File menu from Program Manager and makes all of the commands on that menu unavailable.

EditLevel= n restricts what users can modify in Program Manager. Values of "n" can be:

0 allows the user to make any change (default value).

1 prevents the user from creating, deleting, or renaming groups. It makes the New, Move, Copy and Delete commands on the File menu unavailable when a group is selected.



Above & right With EditLevel=4 in the [Restrictions] section of Progman.ini you can disable New, Open< Move, Copy and Delete from the File menu of Program Manager

2 In addition to all restrictions in the previous section, this prevents users from creating or deleting program items. The New, Move, Copy and Delete commands on the File menu become unavailable.

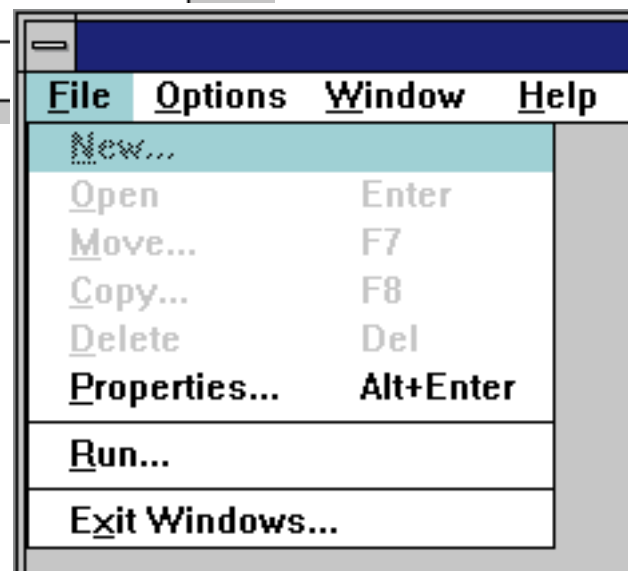
3 In addition to all restrictions in the previous section, this prevents users from changing command lines for program items. If you specify this value, the text in the Command Line box in the Properties dialog box cannot be changed.

4 In addition to all restrictions in the previous section, this prevents users from

changing any program item information. None of the areas in the Properties dialog box can be modified.

● Order!

When I launch Windows 3.1, to get to the correct window which contains the icon for my required application, I click Window and select from the dropdown box of all available windows. I have more than



nine windows and I have to click More Windows to display the one I want.

Is it possible to extend the size of the dropdown to include all windows, and to change the order of displayed windows so that the most used (rather than the least used) is at the top of the list?

Ken Barker

kbarker@winsford.u-net.com

p240 >

The 64-thousand byte resources

If you go to Help About in Program Manager, you will see a percentage figure of resources used. This figure is based on four so-called memory heaps, each with 64,000 bytes (64Kb) available. (More about the percentage figure in a moment.)

The first heap is called the GDI heap and is controlled by the program gdi.exe. This heap contains information about Windows graphics: things like cursors of different shapes, fonts, icons, buttons and scroll bars. Resource problems are very likely to lie in this heap, so closing applications which use a lot of graphics will often immediately solve an apparent memory problem. The second is the User heap controlled by the program user.exe. This heap is mostly concerned with the windows, together with dialog boxes and their contents.

Heap big space

The third and fourth heaps are Menu and Menu Strings and their purpose is to free up as much space as possible in the User heap. In fact, it's the User heap that creates them on the fly.

When you see that percentage figure of available resources, what is actually shown is the percentage of resources available in the heap with the fewest resources.

Now, certain applications such as MS Office and Internet Explorer require quite large amounts of free space, especially in both the GDI and User heaps because they are graphics-intensive. If applications such as these do not have enough space in the heaps, they generate an out-of-memory error.

What to do

Keep an eye on the percentage of resources available, and if you find that the figure is often low, the best way of dealing with the problem is to run fewer applications simultaneously.

However, there are other things you can do. For example, minimising groups which you don't often use will increase resources, and not opening groups with lots of icons in them will also help. Certain applications use up extra system resources each time they are loaded: experiment to find out which ones, then keep them open instead of constantly opening and closing them.

Fonts take up significant resources, so don't load any you don't use. In Word, for instance, get rid of those you don't often use but keep them on the disk so you can re-install them if necessary. Do not use a wallpaper and also check to see if your screensaver is using too many resources. Finally, note that some applications may not release all the system resources they have been using when they are closed.

You will see a line like this:

```
Order= 2 6 1 3 4 5
```

and a section like this:

```
[Groups]
Group1= C:\WINDOWS\ACCESSOR.GRP
Group6= C:\WINDOWS\GAMES.GRP
Group2= C:\WINDOWS\WORDFORW.GRP
Group5= C:\WINDOWS\MAIN.GRP
Group3= C:\WINDOWS\STARTUP.GRP
Group4= C:\WINDOWS\APPLICAT.GRP
```

...and so on. The groups do not need to be in any particular order, but the order of the numbers (separated with spaces) in the "Order =" line is what decides the order in which the groups are listed in the Windows list and also drawn in the window.

● Sitting on the desktop

When using Windows 3.1, how do you get an application icon to sit on the desktop rather than inside a program group in Program Manager? Some applications, like Dr. Solomon's WinGuard, produce such icons, but I can find no way of doing this in general.

Douglas Gregory

doug@fs2.ma.man.ac.uk

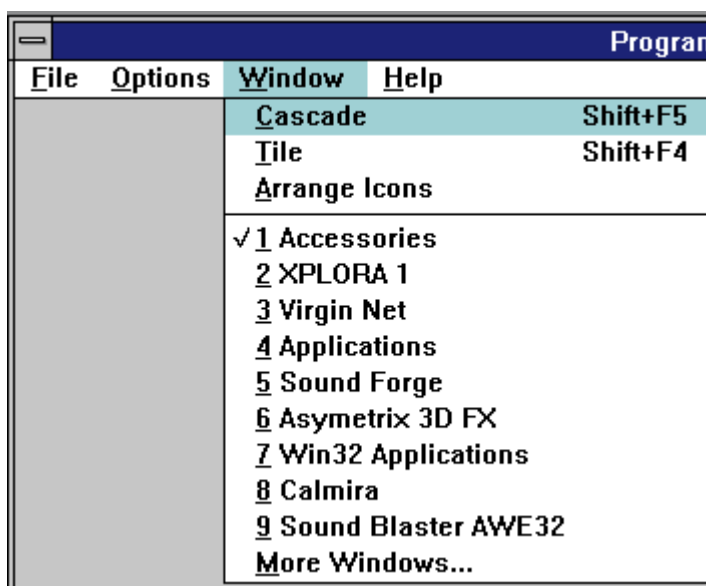
There is no way of doing this within Windows itself. The products you mention manage to do it because they are in fact running in the background — they are active. You can achieve the effect by using a free program we wrote about in the July issue. It's called Calmira and it enables Windows 3.x to emulate Windows 95 looks and functions, including the creation of shortcuts (icons representing documents or programs, which can reside on the desktop).

Calmira offers many other goodies too. There was a copy of it on July's PCW CD-ROM but check whether there's a later version at www.tribbles.demon.co.uk/calmira/.

● Virtual memories

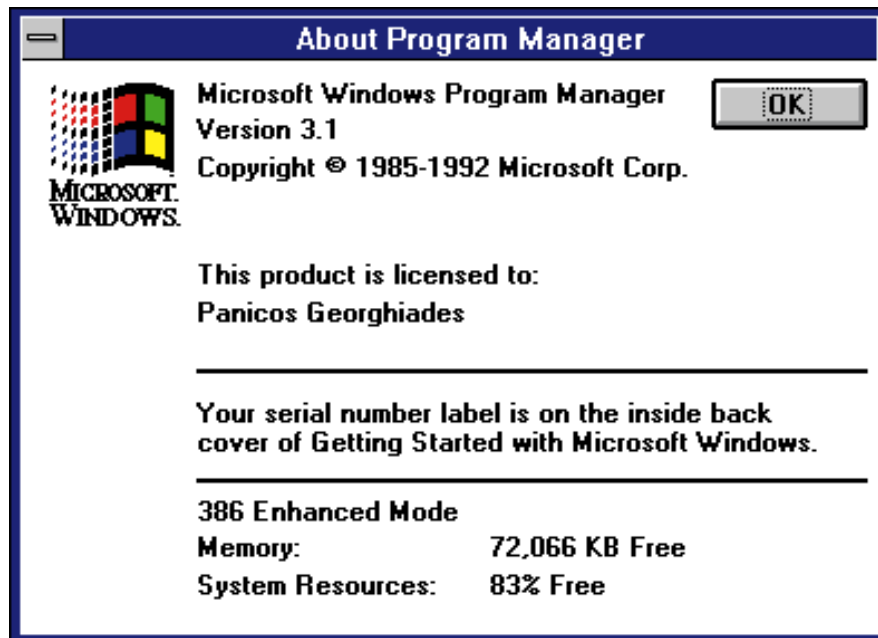
I have recently upgraded my 486SX from 8Mb to 20Mb of RAM. When I was trying to load Windows File Manager I was told: "THER WAS INSUFFICIENT MEMORY TO START THE APPLICATION" (the spelling mistake is really there!). At that time I was running Control Panel, Paint Shop Pro, Microsoft Internet Explorer and AOL Press. I was surprised at the apparent memory shortage, so I looked in the 'About' section of the Program Manager Help menu. I was informed that I had 11,335Kb of memory free.

Right The Program Group names in the Window menu of Program Manager can be rearranged so that those you use most often are always listed first



Yes, it's a pain, isn't it? You cannot extend the dropdown menu but you can jump to a window if you type its first letter. Of course, this does not always work to your satisfaction if there are two windows starting with the same letter (and you first may need to press M for More).

However, you can change the order in which they appear. You need to edit progman.ini. As in the solution to David Lovelock (p239), use Notepad to open it. There you will see a list of the program groups installed on your machine. All you do is re-order the list in the relevant line.



Top When Windows says it is running out of memory, it may be running out of resources instead

Above Four lots of 64Kb of memory that Windows uses for specific tasks

Why would a program as small as File Manager not load? If it's any help, before I upgraded the RAM, the same menu told me I had 16,000Kb free when I had only 8Mb of RAM!

Stephen Kenworthy
steveyken@aol.com

We must admit we have never seen that error message mis-spelled. Which version of Windows are you using?

Anyway, when you get out-of-memory errors and your machine has 16Mb or more of RAM, the problem usually lies not with the amount of physical RAM but with insufficient Windows resources, which you get if you are running lots of applications simultaneously, or just a few if they are very resource hungry. See the panel, "The 64-thousand byte resources", on page 240.

Coming to your other point, your machine was telling you that you had 16,000Kb free when you only had 8Mb of RAM because that number refers to your Virtual Memory.

When you don't have sufficient physical RAM (what you have in SIMM chips inside your machine) Windows uses part of your

hard disk to make up what it needs to carry out its temporary work. This may be a temporary or a permanent swap file (settings for Virtual Memory can be found in the 386 Enhanced icon of the Control Panel).

When you go to Help/About in Program Manager, and Windows displays how much memory is free, this number is the Virtual Memory — a combination of physical RAM remaining and swapfile memory remaining. Thus, it is possible for this number to be larger than your physical RAM.

If you want to see how much physical RAM is left, you need to start Windows in standard mode — this only works in Windows 3.1 — by typing Win /s. Then Windows does not use the hard disk but works in RAM alone. Note that this way, you will not be able to run many programs simultaneously.

PCW Contacts

If you have any Windows 3.1-related queries or suggestions, contact Panicos Georghiades and Gabriel Jacobs at win3@pcw.co.uk.

Windows 98 has arrived. And it promises to be faster and more reliable than previous versions of Windows, with support for the latest PC hardware technology, and a firm focus on entertainment and multimedia. In these next few pages we'll take you through the process of upgrading from Windows 95, and give you some hints and tips to help you get more out of Windows 98's new features.

Stepping up to Windows 98

- 242 Easy upgrade steps
- 243 Improve your filing
- 244 Maintenance Wizard
- 244 Shortcuts to the web
- 245 Quick Launch
- 245 Smoothing your fonts
- 245 Windows Update

Upgrading can be a painless and even pleasant experience, as you'll discover by reading our easy step-by-step guide

Okay, you've got your copy of Windows 98 and you're eager to get upgrading as soon as possible. Before you start, though, take some time to read about the new features Windows 98 offers. We'll guide you step-by-step through the upgrading process, then give you some hints and tips to make Windows 98 even more productive for you.

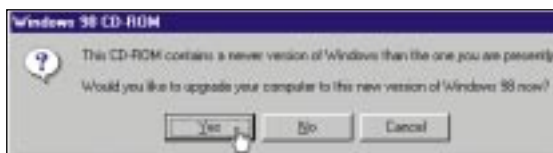
Take some simple precautions before you start. The most important of these is to back up all of your important documents: letters,

spreadsheets, accounts, and so on. Ideally, copy your documents to a removable "mass-storage" disk, such as a Zip or Jaz disk.

If you don't have one of these, you can still fit quite a lot onto a humble floppy disk. Failing this, copy anything important to another part of your hard disk.

Secondly, choose an appropriate time to upgrade. Don't do it an hour before you have to deliver an important report. And leave yourself enough time to troubleshoot if you need to.

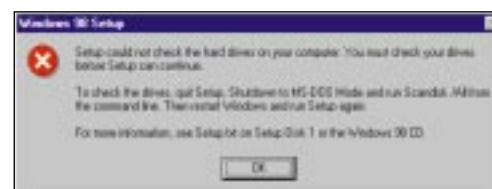
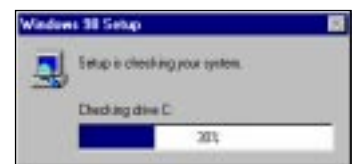
STEP 1 Put the CD-ROM in your drive... the installer should load automatically. If not, double-click the My Computer icon on your desktop, then double-click the CD drive icon. The installer will detect that you are running an older version of Windows. Click Yes if you're ready to start.



STEP 2 You should see the Windows 98 Set-up screen. From here, it's really just a matter of following the straightforward instructions as they appear. The setup program will keep you informed as to its progress while it tells you about the new features you'll get in Windows 98.



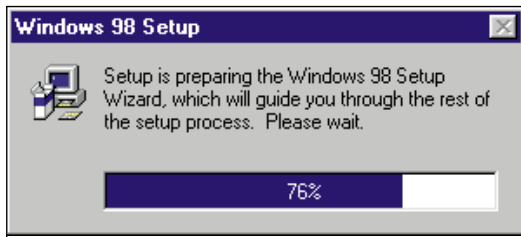
STEP 3 The program checks what type of PC you have and what options are installed.



Oh dear, we've run into a slight problem. The installer would like us to check the PC's hard disk for any potential problems before proceeding. So, before going any further, we must quit Set-up and

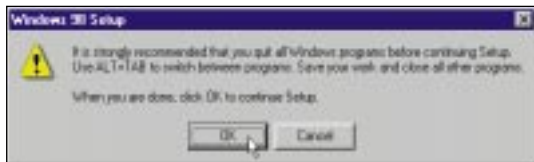
run Scandisk (that's the disk-checking software that comes with Windows 95). This won't always happen. If it does, though, don't worry, just restart your PC in MS-DOS mode, type SCANDISK and press Return.

STEP 4 Back again, having checked the hard disk. Start the installer, as before. This time there's no problem, and the Set-up Wizard loads (this is the software that guides you through the whole upgrade process).



STEP 5 If you've got any other programs running, you'd be strongly advised to shut them down now. You can switch between running programs by holding down the Alt key and pressing Tab, then close them as you would normally.

You can get back to the Windows 98 Set-up program by pressing Alt and Tab.



STEP 6 From here on in, it's plain sailing. The Set-up program will prompt you to accept the licence terms, and input your Windows 98 product key (keep this number handy).



STEP 7 Once all the installation files are copied from the CD-ROM to your PC, Set-up will restart your

computer in Win98, update your system files, check that all your settings (location, and so on) are correct, then display a "Welcome" message.

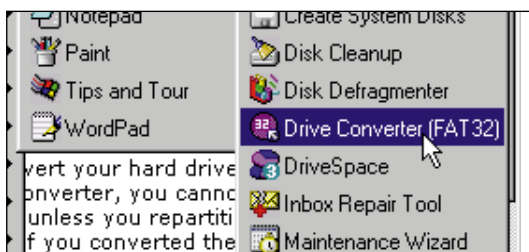


Faster, leaner FAT32

Windows 98 comes with a 32-bit filing system (compared to the 16-bit filing system in Windows 95). This can, in many cases, free up more of your hard disk, as it uses available storage space more efficiently and allows you to access drives greater than 2Gb in one chunk (you don't have to split a large disk drive into smaller "partitions").

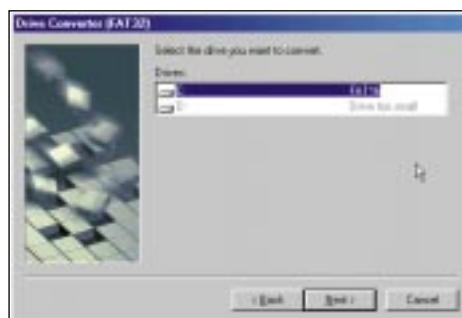
Your hard disk won't be converted automatically to 32-bit filing when you upgrade to Windows 98. A utility called File Converter is provided to upgrade your hard-disk filing system to what's known as FAT32 (FAT stands for File Allocation Table, a kind of index of what files go where). Note: once you've converted, it's not possible to convert back to 16-bit filing.

STEP 1 From the Start menu, select Programs, Accessories, System Tools. Then click on Drive Converter (FAT32).

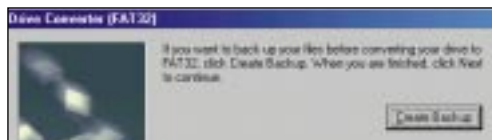


STEP 2 The Drive Converter Wizard appears. Click Next to see which drives you have available and their filing systems.

Click Next again. Windows checks to see if you are running any incompatible programs.



Windows asks whether you want to make a backup of your files. We'd strongly advise you to do so if you have important data on your PC.



When you're ready, click Next... Windows will restart in DOS mode and the conversion will begin. This could take up to a couple of hours, so go and put the kettle on. Once the whole process is finished, you should find that your PC loads programs and document files faster than before.

TEN REASONS TO UPGRADE TO WINDOWS 98

1 WebView uses a web-based user interface to manage the files on your hard disk. Browsing the web and managing your files become equally easy.

2 Complete internet integration. Provides a fast and convenient platform to surf the internet. New HTML-based help makes problem-solving easier.

3 Better performance. Your most frequently used applications launch on average 36 percent faster, system shutdown is twice as fast, and web pages are rendered 25 percent faster [Microsoft figures, compared with Windows 95, Internet Explorer 3/Navigator 4]. OnNow-enabled PCs will switch on and off instantly.

4 More available hard-disk space. Windows 98 introduces a more efficient file system (FAT32).

5 Supports the new wave of USB hardware that is coming out now: cameras, scanners, joysticks, etc. Plugging in devices becomes simpler than ever before.

6 Keeps your PC tuned by automatically defragging your hard disk and deleting any unneeded files.

7 Windows Update provides support and automated software upgrades via Microsoft's web site.

8 More than 3,000 fixes make Windows 98 more dependable and reliable. Troubleshooting wizards make it easier and faster to solve technical problems should they ever arise.

9 Run multiple monitors from a single PC. Double your available desktop area.

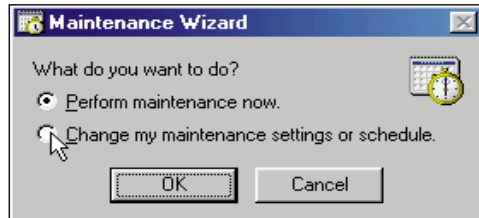
10 Better and faster 3D graphics for games and multimedia. High-quality video and audio using Web TV and DVD.

Shifting unwanted files

Maintenance Wizard can check your hard disk for errors, speed up access to your documents and clear out dead files — while you sleep

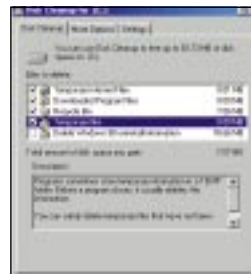
Clearing out unwanted clutter — getting rid of temporary or redundant files that litter your hard disk (Disk Cleanup), defragging (reorganising fragmented bits of files so they load more quickly), checking your hard disk for problems, and generally improving the performance of your PC... Windows 98 automates many of these chores with a new utility called Maintenance Wizard.

By scheduling this to run on a regular basis, you can make sure your computer is performing at its best. Defragging can take some time, so accept the default settings and let Maintenance Wizard optimise your hard disk in the middle of the night (you'll have to leave your PC switched on overnight).



More often than not you'll just want to free up hard-disk space so, for now, we'll just use Disk Cleanup on its own.

STEP 1 Choose Disk Cleanup from the Start / Programs / Accessories / System Tools menu.



STEP 2

Tick which groups to clean up, then click OK. It's as simple as that. If you want to free up even more space (by removing unwanted programs) click the More Options tab.

Jargon Buster

Zip and Jaz Removable disk drives made by Iomega, ideal for storing large amounts of data or backing up files.

Wizard A helpful online "assistant" designed to guide you, step by step, through a potentially complex process.

Internet Explorer Microsoft's internet browser. A program that allows you to browse web pages, manage your favourite web sites, etc.

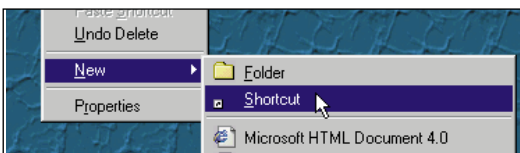
Dialog box A window used to display a message and request input, option settings or a decision from the user.

Driver A file required by hardware add-ons — printers, graphics cards, monitors, and so on — so they can "interface" correctly with windows.

Shorter cuts to the web

You won't have to install a browser because Internet Explorer is now built in to Windows 98. In fact, every desktop folder, and Windows Explorer, are fully browser enabled. Shortcuts to web sites are treated in the same way as shortcuts to programs and documents.

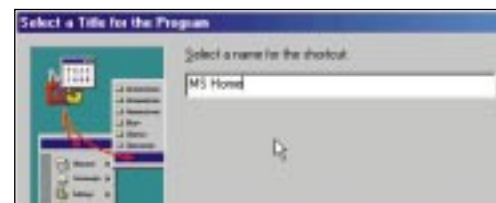
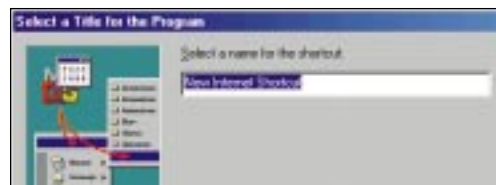
STEP 1 To create a new shortcut on your Windows desktop, right-click outside any windows. Choose New / Create Shortcut, from the pop-up menu.



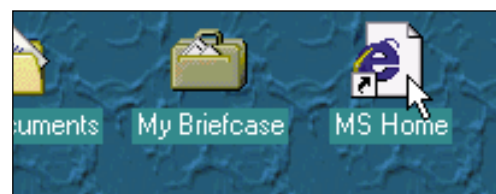
STEP 2 The Create Shortcut dialog box appears. Type in the web address, or you can copy it when surfing the web, and paste it into the dialog.



STEP 3 Click Next, and you can type in the name that will appear on the shortcut icon on your desktop (for example, "Microsoft Home").



STEP 4 Once the shortcut is created, you can jump straight to the web site by double-clicking on the icon.



TWO HANDY TOOLS

Tired of minimising all those windows just to get to your desktop? This innocent-looking icon — by default it's towards the right of your Windows 98 Taskbar — will get you straight there at the click of a mouse. Another click, and your applications are back where they were.



A feature that will be particularly helpful for visually impaired users, or anyone who occasionally needs to take a close look at part of their screen image, is Microsoft Magnifier. It opens a window in the top part of your screen and displays an enlarged image of your desktop and documents as the cursor moves over them.



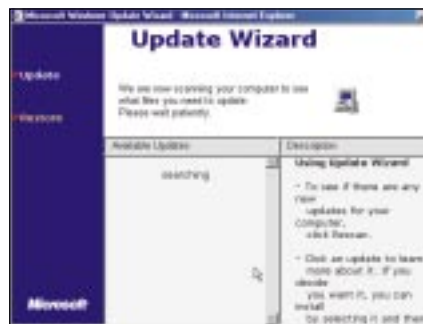
Easy software updates



How to keep up with the latest drivers

You'll find a new shortcut on the Start menu: Windows Update.

What this utility does is help you to ensure your software — drivers and so on — are the latest ones available. It does this by downloading updates from the web and installing them on your computer, either manually or automatically. Select this item, and Internet Explorer will take you straight to the Windows Update web site where you will find online support for Windows 98 as well as the Update Wizard. (You'll need an internet connection, of course.) Then simply follow the instructions as the Wizard checks your PC's configuration and software versions. If it finds any out-of-date drivers, for example, you'll get the option to download new ones and install them automatically.



Keyboard shortcuts

Handy shortcut keys for Win98

Alt+Left arrow (within folders and file or web browsers) moves back to the previous view.

Alt+Right arrow (in folders and browsers) moves forward one view.

Backspace (the left-pointing arrow above the Return key) changes the folder view to one level higher (i.e. parent folder).

Holding the **Shift key** while clicking the Close button closes the selected folder and all of its associated "parent" folders.

Holding the **Shift key** while inserting a **CD-ROM** temporarily disables the AutoPlay feature.

F1 key calls up Windows Help (or the application's Help if you're running a program).

F2 key (after highlighting a file in Explorer or on the Desktop) allows you to rename that file.

F3 key calls the "Find files" dialog.

Smooth fonts

Smoothing out rough edges

Windows 98 has a feature which smoothes out jagged edges on the curved parts of your screen typefaces (look closely at the example).

Many people find this makes it easier to read on-screen text. You can switch this feature on or off as follows.

Click with the right mouse button, anywhere on your Windows desktop (i.e. not inside a window). From the pop-up menu, choose Properties (above, right). When the Properties dialog box appears (below), click the tab marked Effects.



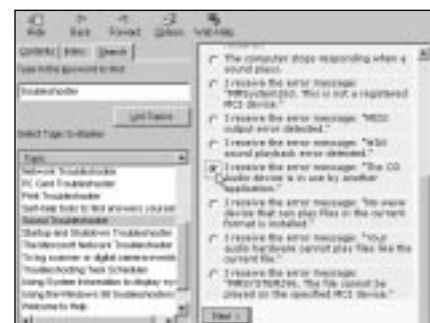
Among the visual effects you can set on this page are the size and appearance of desktop icons, whether or not windows and menus appear suddenly or gradually when selected, and whether font smoothing is used. Just tick the options you want to select.

Troubleshooting

To the rescue

Windows 98's Help function includes a number of useful Troubleshooters, designed to solve problems you might have getting your sound card working properly, printing, or connecting to the internet. In fact, most areas where external devices are involved.

Troubleshooting takes the form of multiple-choice question & answer sessions. Start Windows Help (by right-clicking on the desktop area of your screen, i.e. not in a window, then pressing F1). Click the Search tab at the top of the Help screen. Type in "troubleshooter" and click List Topics. On the right-hand side of the window, click Start Troubleshooter. If your problem is listed, indicate by clicking in one of the small circles (called "radio buttons"), then click the Next button at the bottom.



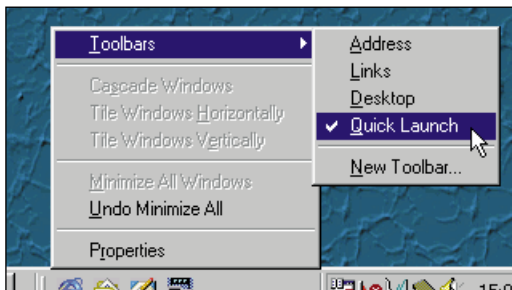
Customising the Windows 98 Taskbar

Launch me quick

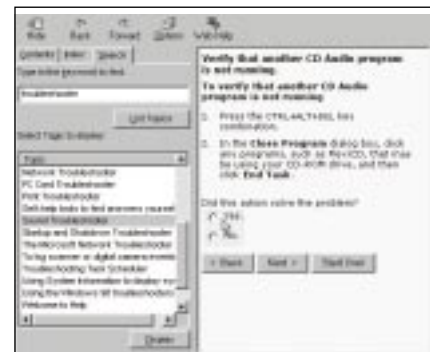
In Windows 98 you can add even more things to the Taskbar than in Windows 95: applications you use frequently, favourite web sites, documents and so on.

It's useful to have shortcuts for your most-often-used programs and utilities loaded onto the Quick Launch section of the Windows Taskbar. Right-click on a blank part of the Taskbar. Position the pointer over the Toolbars menu, then click on Quick Launch. A tick appears beside any toolbars to be displayed. Here we've got five shortcuts loaded in the Quick Launch toolbar. You can add new shortcuts by "dragging" them from your Windows desktop or Explorer, then "dropping" them onto the toolbar.

Toolbars don't have to stay on the Taskbar. You can grab a toolbar and drag it onto the Windows desktop, then resize it to suit your needs.



Hopefully Windows will provide the solution to your problem.





The **big** fix

Service Pack 4 for Windows NT holds the biggest number of fixes so far, and Year 2000 problems have been solved, too. Andrew Ward provides an overview of this bug-blaster.

Whereas Service Pack 3 (SP3) for Windows NT 4.0 introduced quite a few new features, Service Pack 4 (SP4) is much more of a round-up of bugfixes. New features were introduced separately, as the Option Pack and Internet Explorer 4.01.

Unfortunately, we now have the situation where Windows NT 4.0 can mean many different things depending on exactly what bits and pieces you have installed. Many feel that incrementing the version number would make it much easier to keep track.

Some of the most important bugfixes since SP3 have already been released by Microsoft as hotfixes (discussed in previous editions of this column). And doubtless there will be more hotfixes to come once Service Pack 4 comes under careful scrutiny.

Audience participation

Of the service packs so far released for Windows NT 4.0, SP4 contains the biggest number of new fixes; perhaps due partly to the long time since SP3 saw the light of day, and partly to the much larger audience that Windows NT 4 is now reaching.

Fixes include the various TCP/IP security and denial of service fixes, plus a group of hotfixes to sort out problems with Exchange 5.5 and Internet Information Server 4.0.

There are quite a few fixes and enhancements to products that were included in the option pack, as well as performance improvements to IIS 4.0. Many memory leaks have been plugged, and the set of Year 2000 hotfixes have also been incorporated. The Year 2000 problems that have been solved are as follows:

- The User Manager and User Manager for Domains now recognise the year 2000 as a leap year.



Fig 1 On-line updates are possible with Service Pack 4, cutting download time

(such as IE4), but the benefit is a substantially reduced download time (Fig 1). Only the bits that are needed get downloaded, instead of the entire pack. Of course, you will miss out on all the extras that come on the Service Pack CD from Microsoft, such as Internet Explorer 4.01,

- The Date/Time Control Panel applet can update the systems clock.
- Find Files supports only numeric character recognition in the decades field.
- Word Document properties recognise both 1900 and 2000 as valid centuries and support years of four digits.
- The Dynamic Host Configuration Protocol (DHCP) administrators program supports displaying the years between 2000-2009 with a minimum of two digits.

Just in time, we now have a symbol for the euro. To save you many happy hours of fiddling with the keyboard, I'll give the game away and tell you that Ctrl-Alt-4 is how you generate it (when running Windows 98 or NT and SP4).

Pleasantly Active

Particularly pleasant is the Active Setup. You need a browser that supports ActiveX

and if you make any changes to your system, such as installing RAS, you'll have to re-run the service pack active setup. In the long-run, many users may find the long download time worth suffering. By the way, I hope the make the current Service Pack a permanent feature on the PCW cover CD, as long as there is room for it.

That old devil called the registry

My own particular favourite fix (although I can't find it in the list) solves various registry problems that have bedevilled my system since Windows NT 4.0 was first installed on it. They all relate to Microsoft applications and pathnames containing spaces.

For example, after installing Outlook 98, I found that clicking on vCard files worked a treat, apart from the fact that Outlook 98 has no duplicate checking so you end up with the same person in your contact



Fig 2 Covering your tracks [see page 250]

The value was:

```
D:\Program Files\Microsoft Office
\Office\outlook.exe /v "%1"
```

But to work, it needed to be:

```
"D:\Program Files\Microsoft Office
\Office\outlook.exe" /v "%1"
```

So, if I manually changed it, clicking on a .vcf file correctly brought up Outlook. Yet whenever Outlook ran, it changed the registry setting back, just as PowerPoint did with the .ppt files.

A similar problem stopped me from accessing forms, and it also prevented me from being able to download and install the Development Tools for Outlook 98. Not surprisingly, I was relieved when Service Pack 4 took all these problems away.

database dozens of times. However, the next time I ran Outlook, vCards no longer worked but instead produced the error message "Access is Denied".

Being used to this problem (I also suffered it when clicking on .ppt files) I quickly tracked it down to the following registry key:

```
HKEY_CLASSES_ROOT\vcffile\shell\
open\command
```

Taking precautions with SAM

And once again, just as with SP3, there's been a change to the SAM database. According to Microsoft, if you plan to install a previous Service Pack after uninstalling Service Pack 4, you should take note of the

Book/CD Review: MCSE Core Requirements

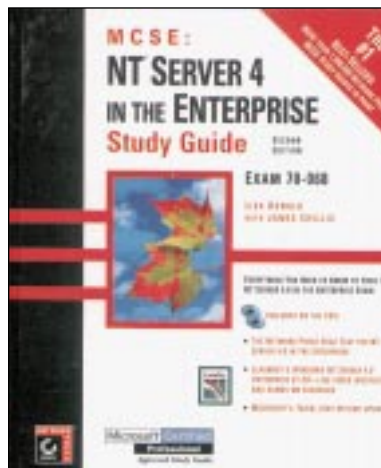
If you're serious about working with NT, you probably can't avoid forever having to consider whether you need the MCSE (Microsoft Certified Systems Engineer) qualification. There are a number of ways to acquire this qualification. If you have a benevolent employer, you may be fortunate enough to be sent on a fast-track course. For most of us, it's going to be hard graft with a pile of books.

A recent product from Sybex/Network Press is a package of books and CDs entitled *MCSE Core Requirements*. Each volume in the set comprises some 700 or so pages and features plenty of tough review questions to ensure you've taken it all in. Together, the four volumes address the core requirements you'll need for the four compulsory exams. Remember, you'll need to take two electives as well, to gain the qualification.

Now, there is nothing like actually doing something in order to learn it properly, and the same applies to Windows NT. Reading the books is all very well, but you're unlikely to learn everything thoroughly enough to pass the exams unless you also try the hands-on examples in the books. Unfortunately, you'll need a fair bundle of hardware in order to do this.

Interestingly, the books also serve as quite a useful reference for Windows NT, even though we all know that learning to pass the MCSE exams and learning to use Windows NT in the real world are two entirely different things: the correct answer to one exam question, for example, is to install Windows NT 4.0, rather than Windows 95, on a machine with just 16Mb of RAM.

■ **MCSE Core Requirements Book/CD Package 2nd Edition**
 Price £139.99 (four study guides and eight CD-ROMs); order code 313082
 Publisher Sybex/Network Press
 Contact Computer Manuals 0121 706 6000



One of the four study guides included with MCSE Core Requirements

Folder ephemera: which ones are safe to delete?

Anthony Brown is irritated by the presence of some 480 files totalling 7Mb in his temporary directory and asks which ones are safe to delete.

I am happy to say that the answer is, all of them. Applications create these files while they are running. Once the application is closed, the files are no longer required. Indeed, you can even attempt to delete them all while programs are still running. If any are needed, they'll be kept open and you can't delete them.

The only possible exception would be if you had specified the TEMP directory (usually C:\TEMP) to be the directory an application should use for some other purpose when you installed it. Unless you did that, you'll be safe.

Some applications will optionally automatically clean up the TEMP directory when they exit, and FTP Explorer is one such example. In fact, any application should (and usually does) clean up files that it creates — unless it crashes, of course.

You might also like to change the default directory in which your Dr Watson logs and memory dumps appear. The place to change this is **Control Panel / System / Startup/Shutdown / Recovery / Write debugging information to:**. All you have to do is put %temp% in the box.

Very occasionally you might encounter an older application that expects the environment variable to be TMP rather than TEMP. I always put in entries for both (**Control Panel / System / Environment / User Variables**) to be on the safe side (both pointing at the same directory, of course).



Left Point Dr Watson towards the temporary directory



Right FTP Explorer will clean up your temporary directory for you

following important precaution: *Service Pack 4 modifies the Security Account Manager (SAM) database such that older versions of the SAMSRV.DLL and WINLOGON.EXE files no longer recognise the database structure.* Therefore, the uninstall process does not restore these files when uninstalling SP4. If it did, you wouldn't be able to access the SAM database.

If you install a prior Service Pack (for example, SP3) after uninstalling SP4, click No on the Confirm File Replace dialog boxes that ask if you wish to overwrite SAMSRV.DLL and WINLOGON.EXE. Otherwise, if you overwrite the newer files with their older versions that cannot read the new SAM format, you will be unable to log on to the system.

How to open windows

Simon Gidney throws some more light on the continuing saga of folders that started back in the May issue with Matthew Willard's poser. He says that by holding down the Ctrl key when double-clicking on a folder (not in an explorer view but in a separate folder window) you temporarily reverse the Open Folder In Existing Window

/ Launch New Window When Opening Folder switch. So, even if you haven't set the Open Folder In Existing Window option, you can use the Ctrl key to drill into successive folders within the same window. And apparently, when you open a folder with the Ctrl key held down, the current view is inherited by all new windows that haven't previously been opened.

Well, I think Simon is right when he says you need to experiment a bit to get the hang of it!

History list? What history list?

Mark Barnes would like to clear the drop-down list of previously-run programs that you see when you click on Start and then Run. There are two ways of doing it. You can clear the list while logged on so that anyone else using the machine will see an empty list, or you can set it to be cleared at every logon so that the list is always empty when any user logs on.

The way to clear this list, and various other history files, is to use the TweakUI utility — part of the Windows 95 PowerToys set. (Incidentally, TweakUI is a good way of putting your Recycle Bin back on the

desktop should it ever disappear, as mine did recently.) TweakUI may be obtained from www.microsoft.com/windows/download/tweakui.exe. To clear the run list, select Control Panel / TweakUI / Paranoia, and in the Covering Your Tracks section check Clear Run history at logon (Fig 2, p249).

There you go, Mark. Now no-one will know what you've been up to.

RegZap: things you need to know

It was my fault that when I mentioned RegZap, I failed to point out that it was on the cover-mounted disk of that issue. I also neglected to tell you that you'd need MFC42.DLL in order to run it. Fortunately, after some persistence, Oliver Fuller tracked down a public location for this file. It's at www.anarksof.demon.co.uk/. Oliver says you need to download MFC42REDIST.DLL, which is 600Kb zipped. Thanks very much for finding this, Oliver.

PCW Details

Andrew Ward can be contacted at NT@pcw.co.uk or write to him at the usual PCW address (p10).



How the other half lives

An email from central Asia on connecting the Psion to the rest of the world is a sobering tale of what it's like to be truly technologically challenged. Mark Whitehorn offers the best advice.

In the first edition of this column (PCW, June) I wrote that I would welcome readers' feedback and suggestions for topics to cover. Three weeks later I received a surprising email.

It may not seem extraordinary to you, but it rattled me because, given the lead time for articles, I knew that the first column had not yet been published. Shaken, but not stirred, I read on and discovered that the email had been sent in response to an article on palmtops that I had written three years before! I reproduce the email more or less in full, because... well, you'll see.

"I've had a ripped-out page from a magazine that has been in my file since June '96, it's the one with your article called 'Build your own Psion applications'. For the past three years we have lived and worked in the City of Shymkent in Kazakhstan. For



Flaming June: What put the willies up Mark Whitehorn? Was it a touch of déjà vu, or something more prosaic? See this page

two of those years we have been on email. We get access through a server in the City of Tashkent, in the country of Uzbekistan, some 100 miles to the south of us. I have had a Psion 3a for two years now and have produced many letters and documents and a few business plans on it.

"Here in South Kazakhstan we have electricity about 20 percent of the time. Our region is in a deep economic depression and the countries with hydroelectric power and natural gas refuse to supply us without advance payment in cold, hard cash.

"Now comes the crunch. I do not have, nor have I been able to locate, either a flash-card program or shareware that is easy enough to use to let me use my Psion to receive emails — also to send them, for that matter. I should have said up-front that I'm communications impaired. I have no problems with Word or Excel or Project or installing a CD-ROM or any of the many other challenges we face in getting the new applications to work.

"Out here we have to load both Russian (Cyrillic) and Latin fonts. The email applications, however, are all basically in English and they just squeeze their Russian messages into the English shell.

"Do you have any suggestions for a good approach to using my Psion for email? I have the faxmodem from Psion and using it have sent a number of faxes from places around the world. I also have PsiWin, but it's for MSDOS, not Windows.

"Our desktop is an expanded 486 from the Moscow clone supplier, VIST. We will need another com port to get PsiWin going — once again, a communications kind of question. We have not even tried to install PsiWin as yet, and even if it was working, it would not solve the power question. What I

want is to be able to use the Psion during the long power outages. Any help will be most appreciated.

"By the way, I'm aware that Psion now has a 5 and that they have moved on with the development of their product."

Shel Hulac, Law professor at Miras International University <shel@irs.com.uz>

Next time I am moved to complain loudly because the network is down for half an hour, or because the mail server is slow, perhaps I'll just shut up instead.

There are several ways of connecting a Psion to the rest of the world. One of the easiest is to use the Psion product, PsiMail Internet. PsiMail itself comes as four components:

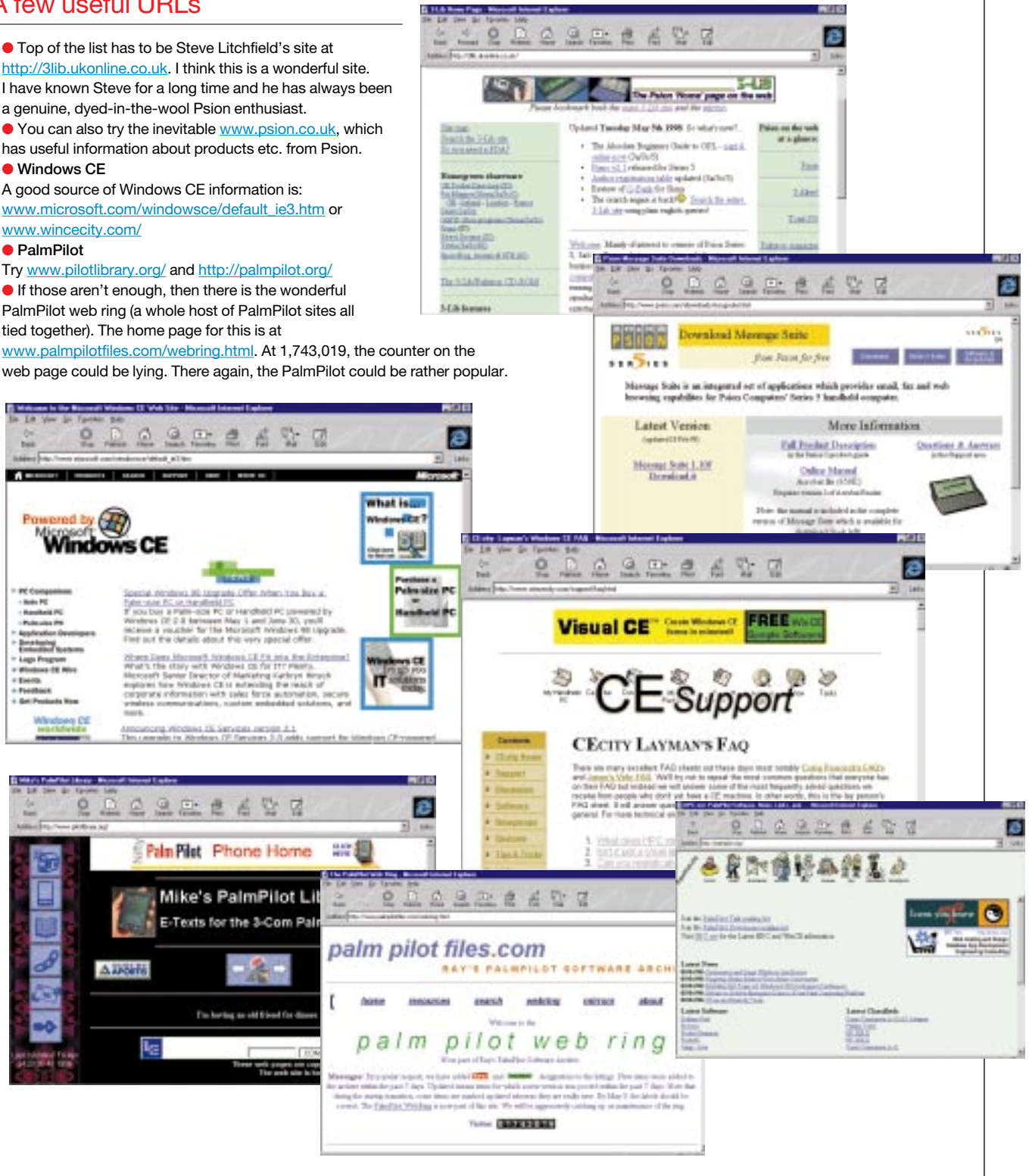
- **The Internet Setup application** — helps you to make that first, often traumatic connection to the Internet Service Provider (ISP) of your choice. It then stores all the connect details for future reference.
- **The Mail application** — enables you to send and receive email.
- **The Web Browser** — lets you view worldwide web (WWW) pages.
- **The Internet Tools application** — is a set of utilities.

PsiMail requires a minimum of a Series 3a with 512Kb RAM and takes up just over half a megabyte of disk space on the Psion. So, if you are running it on a 512Kb 3a, you will have to store it on a Solid State Disk.

You also need a modem. When I reviewed PsiMail Internet (on its first release) I used one of the Psion Travel Modems. However, the manuals for PsiMail Internet say that a standard ("Hayes-compatible") modem will do fine, as well. In addition, I am led to believe (this is code for "I haven't actually tried it myself, but Psion tells me that it's so") that it will work fine with a 3FAX.

A few useful URLs

- Top of the list has to be Steve Litchfield's site at <http://3lib.ukonline.co.uk>. I think this is a wonderful site. I have known Steve for a long time and he has always been a genuine, dyed-in-the-wool Psion enthusiast.
- You can also try the inevitable www.pSION.co.uk, which has useful information about products etc. from Psion.
- **Windows CE**
A good source of Windows CE information is: www.microsoft.com/windowsce/default_ie3.htm or www.wincecity.com/
- **PalmPilot**
Try www.pilotlibrary.org/ and <http://palm-pilot.org/>
- If those aren't enough, then there is the wonderful PalmPilot web ring (a whole host of PalmPilot sites all tied together). The home page for this is at www.palm-pilotfiles.com/webring.html. At 1,743,019, the counter on the web page could be lying. There again, the PalmPilot could be rather popular.



You will also need an ISP, and before you try to connect to it with PsiMail Internet, you would be well advised to read the PsiMail Internet manual. It will tell you what questions the setup software will ask you about your current ISP so you can make sure you have the answers to hand before you start. An important point to note is that your current ISP must be a dial-in TCP/IP account. Some ISPs provide terminal or

shell accounts which are unsuitable for PsiMail Internet. I strongly advise that you contact your ISP for the information you need before trying to connect.

Users of the Psion Series 5 can acquire, free from www.pSION.com/downloads/mssgsuite.html, a suite of programs called Message Suite. This provides the same functionality as PsiMail Internet, and more. (As an aside, Message Suite is not

compatible with the earlier product from Psion called EasyFax which is now only recommended for users with limited disk space. In fact, you have to remove EasyFax from your Series 5 before installing Message Suite.)

OK, that's the Psion answer. Why haven't I provided such a detailed answer for Windows CE machines? Because they seem to come with this sort of software

built-in. I haven't yet tried making the connection but I will do shortly.

In the meantime, any tips or tricks from readers on the subject of email/web browsing from CE or Palms will be gratefully received and passed on.

Psion postscript

To celebrate the first letter to this column (and definitely not as a regular occurrence), I forwarded Shel's letter to Psion. Psion then offered to send Shel (this is not going to happen again, so please don't send begging letters) a free copy of PsiMail Internet. I thought that was quite a nice gesture. Round of applause for Psion. :-)

Psi-Mapper

Steve Litchfield's web page is top of my list of Psion sites (see p252). Steve writes and distributes shareware for the Psion (notably Mapper and Golf). If you can't work out what Golf is, then you're in real trouble! Mapper displays maps of the UK and the set has expanded recently to include some European countries.

Steve was also one of the first people to include moving map support for GPS (Global Positioning System) units. Last year, my wife and I toured France using a Psion 3c, Mapper France and a GPS unit as our main navigation system.

Current Mapper fans will be delighted to know that Steve is planning some serious updates this summer. In his own words:

"Top of the list of planned enhancements are:

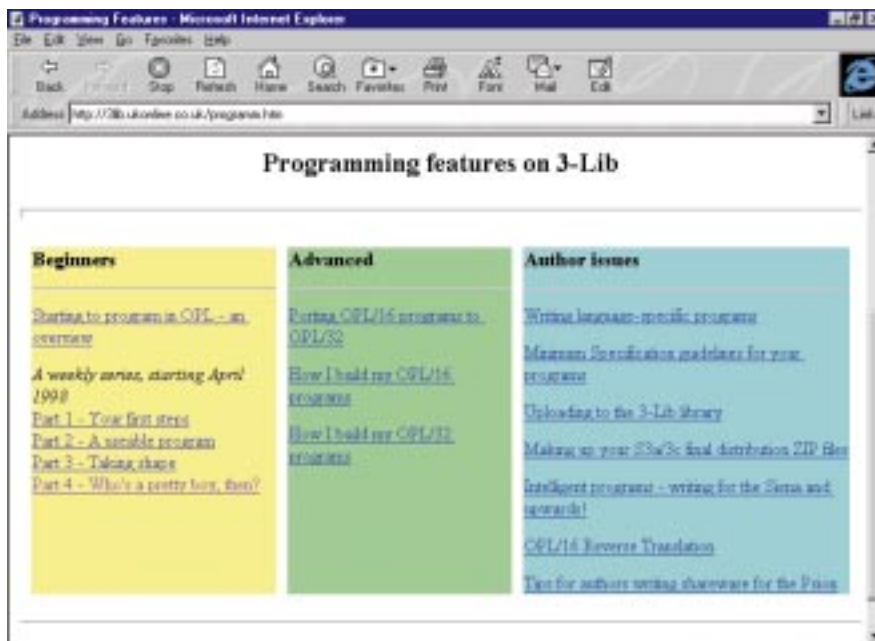
1. A generic main program, able to cope with data sets from different countries, saving disk space and making mapping your country finally possible.
2. A faster and more disk-efficient way of handling overlays and town plans.
3. Higher map resolution.
4. A full 32-bit town plan drawing tool .
5. Full printing facilities.
6. Updated GB and France road databases.

"If there's enough interest, I may even port the changes onto the 3a/3c, though naturally the Series 5/GeoFox version will be first out the door. One important thing I'm going to remove on the Series 5 version is GPS support. My experiences with OPL/32 and the serial port have been rather frustrating and after many small glitches with Series 5 owners finding the moving map functions locking up, I've decided it's just not worth it."

Steve's comments regarding the reliability of OPL/32 and the serial port are enlightening. OPL is the programming language for the Psion and the signals from the GPS unit come in via the serial port. I have seen other (less than complimentary) comments from other Psion programmers about this area — perhaps Psion would like to comment?

Heavy power consumption

Palmtops eat batteries. It is an immutable law of nature. Some do it more rapidly than



A page from Steve Litchfield's web site at <http://3lib.ukonline.co.uk>. He writes and distributes shareware for the Psion

Tips & Tricks

● Speeding-up Windows CE machines

Soft-resetting HP 620s every now and then seems to speed them up, so it may be worth doing on a regular basis. I shouldn't have to say "make sure you have adequate backups before doing this" but I will, anyway.

● Moving data into CEs

Data can be moved into CE machines via Outlook/Schedule+. As long as the data can be written into a csv, tab or fixed-length file, then you can import it into Outlook/Schedule+. Once there, all you have to do is sync with your CE machine.

● Windows CE 2.1 for the HP

The service packs to upgrade 2.0 to 2.1 are out and can, at the time of writing, be downloaded from ftp://ftp.hp.com/pub/handheld_computers/software/wce20sp1.exe and ftp://ftp.hp.com/pub/handheld_computers/software/wince21.exe.

The first file is Microsoft Windows CE 2.0 Service Pack 1. This will install updates, drivers and additional components on your HP Handheld PC. The second file is Microsoft Windows CE and Windows CE Services. This file will upgrade the Windows CE services on the PC to version 2.1.

● Unicode to ASCII

This one comes from the Windows CE newsgroup:

Question:

I've got a Windows CE application that creates text files that are Unicode. I need to convert the text to ASCII. Can anyone show a good method to do that?

Answer:

Step 1: Cut the entire text document to the Clipboard.

Step 2: Open a new instance of Pocket Word.

Step 3: Paste the text document into Pocket Word.

Step 4: Save the document and transfer it to your Windows 95 machine.

Step 5: Use Word 97 to save it as ASCII.

others, but whatever their rate of consumption, all owners wish it was lower.

What can you do about it? Buy a Palm. Their rate of consumption seems to be minimal. If you find this an unacceptable answer (as all Psion and CE readers inevitably will), you can look at using rechargeables. This is obligatory in Windows CE machines like the HP 620 which comes with a rechargeable battery pack, but is worth investigating in Psions. I have used them in the Psion Series 3 machines for years and found them to be highly satisfactory. They have a shorter life than "normals" but still long enough.

I have a slightly jaded view of battery life in the Psion 5 and was rude about it last month. Just to make a liar out of me, the current batteries are happily refusing to die after 14 hours. Maybe I am using the backlight less now that summer is here? I might just try rechargeables in the 5.

- **Tip:** If your machine is fitted with rechargeable batteries, charge them fully before using them for the first time.

Rechargeables are typically shipped from the factory fully discharged.

- **Tip:** You can take sensible precautions to increase battery life, such as reducing speaker volume, disabling sounds altogether, and not using the backlight... and ruining your sight for later life.

Screen protectors for the Palm

The latest version of the Palm comes with a detachable, opaque screen-cover that makes it easy to mimic a Star Trek communicator. You just flip-up the cover, press the Palm to your ear and ask to be beamed up! If you are using an earlier version and feel the need for a screen protector, not just to impress your friends but actually to prevent the screen from becoming scratched, don't despair. You can get transparent protectors that cover the screen, yet still allow you to see it and write on it. Both those I have seen reported in the newsgroups refer to US suppliers: WriteRight protectors are from The Concept Kitchen. These are clear plastic film sheets with a slightly sticky surface to keep them in place (\$27.95 plus p&p for 12). PilotWare's DisplayGuard is a clear piece of vinyl that you apply to your PalmPilot screen.

- Widget Software at www.widget.co.uk offers similar commodities in the UK.

- Another solution is Scotch Tape. The best is reported to be number 811 in the blue box. *But if you do use it, please be aware that it is at your own risk. If it pulls the screen off your Palm, don't blame me.*

PCW Contacts

Mark Whitehorn welcomes readers' correspondence and ideas for the *Handhelds* column. Contact him at the usual PCW address (p10) or email him at pda@pcw.co.uk



Grass roots

Unix has been around for nearly 30 years and Chris Bidmead sees history repeating itself with Linux. Plus, there are more things to do with tar, and Wingz takes off in version 2.5.

Next year will mark the 30th anniversary of the first appearance of Unix as an unofficial project developed in Assembler for the DEC PDP-7 by a programmer called Ken Thompson at Bell Telephone Laboratories in New Jersey, USA.

Thompson's name for the maverick new arrival, at the time not much more than a file system and some development tools, was probably a deliberately ghastly sexual pun: it was the *emasculated* version of a vast operating system project called "Multics", on which Thompson had been working.

Unix ran well enough on the PDP-7 and later the PDP-11 to become a popular alternative operating system around Bell

Labs. Its fame as a flexible and friendly development environment spread beyond Bell Labs, and when the entire project was rewritten in C in 1973 it began to take hold in the universities and among the scientific community. AT&T, the proprietor of Bell Labs, claimed Unix as its own intellectual property, but outside the commercial sphere the licensing arrangements were loose. Unix was effectively still "skunkworks".

Dressing for the part

Twenty years ago, the first commercial version of Unix arrived. The maverick put on a suit and went around trying to impress corporate customers. Some commentators argue that this was a betrayal of the original

"spirit of Unix" (incorporating "small is beautiful", "why invent when you can borrow?" and "never mind 'Do it right' — just Do it!"). But the venture into commerce was highly successful in the sense that Unix-in-a-suit has become a \$12bn business. (By the way, if you have the impression that this is being rapidly eaten away by Microsoft, you haven't read the report from analysts Gartner that appeared earlier this year: see the box, "Unix and Windows NT", below.)

I see Linux, among other things, as a back-to-the-roots re-run of that early Unix history. And as you'll know if you've been following the widely-aired "open-source" debate, it's starting to put on a suit again.

Unix and Windows NT: when two tribes go to war — or do they?

This column doesn't indulge in operating-system wars, but we're not tardy in defending the old homestead when appropriate. Microsoft has been spending millions of marketing dollars promoting the idea that Windows NT is somehow "the next Unix", and the best of luck to them. In that context I thought it worth mentioning a recent survey of the supposed battle between Unix and Windows NT. The conclusions may be a surprise to some of you.

You'll find a summary at www.gartner.com/public/static/datapro/industry/indnews6.html.

Here's a brief extract: "...Contrary to popular belief, the NT force is not likely to take over Unix anytime soon. There remain many misconceptions about the two systems. Lots of people believe that NT is easier to use than it actually is, that it scales better than it does, and that it is powerful enough to do what Unix can do. But most of this perception is due to great marketing by Microsoft, and is not reality..."

"Meanwhile, Unix continues to be the industry "rock" — a strong, solid power ... Unix is very much a part of today's business makeup and tomorrow's growth plans. Corporations are still purchasing Unix and will continue to do so, as they take advantage of its scalability, flexibility, robustness and maturity. Microsoft simply cannot yet compete with Unix's advantages."

As I said, this column is not about operating-system wars and the report emphasises that, contrary to the marketing hype, there really is no war between Unix and Windows NT. "...The battle is not between Unix and NT as has been publicised; rather, the two are being purchased and used as complementary systems rather than competing ones. The biggest battle in the operating-systems world is between NT and all the operating systems other than Unix — the ageing systems that are targeted by IS to be replaced."

When I revisited Unix at the time this column began (1993), I had a faint feeling that I

was delving into the depths of a culture that might not be around much longer. The failure of the Open Group to unite Unix, the farce of Novell's brief ownership of the operating system and the virtual collapse of initiatives like the Common Desktop Environment and WABI, seemed to confirm this impression.

But it's extraordinary how Unix has bounced back since then. The groundswell of interest in Linux particularly demonstrates how the best software can be both old and new at the same time.

● Microsoft sees the light?

Continuing the theme, what's happening at www.microsoft.com/netshow/download/unix.htm has to be some kind of historic milestone. Microsoft is offering software that runs on Linux! Internet Explorer for Solaris has been available for some time, but as far as I know this implementation of the Netshow browser plug-in is the first time Microsoft has officially acknowledged the existence of Linux. Is this the thin end of the wedge?

Unix and Linux: how they are related

Reader Colin Murphy <colin.murphy@virgin.net> writes: "Does 'Unix' cover all the readers of your column? Wouldn't 'Unix/Linux' be better? As someone new to PCW (and Linux), it didn't occur to me to read your column for info on Linux until someone pointed out the closeness of the two."

Colin, as I've said a few times before in these pages: I think in everything other than the legal niceties of brand-name ownership, Linux is an implementation of Unix. Really, one of the most important things about Linux is that when you're using it and learning about it, you're using and learning about Unix.

This column really is about Unix. Linux tends to be the easiest version for most people to get hold of and run on their own machines, and it's certainly what I run here (alongside FreeBSD, NeXTStep and AIX). But Unix is the focus.

WingZ: more than just a spreadsheet

D. Grant Crawley has sent me WingZ, a configurable spreadsheet and graphical development environment that was originally developed by the relational database company Informix and first announced ten years ago. Outwardly very similar to the first-ever version of Excel (and Microsoft had by then introduced a more sculpted look to its own product), WingZ never managed to take hold of the general market and has remained a niche product ever since.

The real strength of WingZ, as its many long-standing proponents will testify, always lay in its HyperScript Tools, the applications development language beneath the user interface. It extended the concept of the spreadsheet macro to take in number-driven graphics optionally linked to an external database.

If you want to try it, you can download the older version 1.4.1 on a shareware basis from www.wingz.com. D. Grant Crawley's site offers the later 2.5 version for £125, but by the time you read this, version 3.0 should be out.

Tar as a moving force

Andy Holyer <andyh@pavilion.co.uk> writes that the references to tar I've been making over previous months have failed to mention his favourite use of the utility.

"Rather surprisingly," says Andy, "this has nothing whatsoever to do with tapes, and it's quite a nice example of the



WingZ on my Caldera OpenLinux 1.2 desktop. This standard WingZ interface is actually re-programmable and can be almost completely revamped for specific applications. The spreadsheet you see when you install the product is only the tip of the iceberg — it's just one particular HyperScript program. The WingZ CD supplied by D. Grant Crawley has binaries for AIX, SGI, HP-UX, SunOS, Solaris and Linux

underlying Unix philosophy of providing a large toolkit of versatile tools rather than a small number of monolithic applications."

He's talking about the way experienced Unix users tap into the power of tar to move entire file hierarchies around. If you're shifting a branch under the same physical file system, Andy says that

```
mv /var/spool /var/somewhere
```

will get the job done. "But this doesn't work across partitions," he reminds us. You can, of course, copy the whole tree recursively:

```
cp -r /var/spool /somepartition  
/somewhere
```

but this will wipe out the original file creation dates, which, as Andy points out, "is not

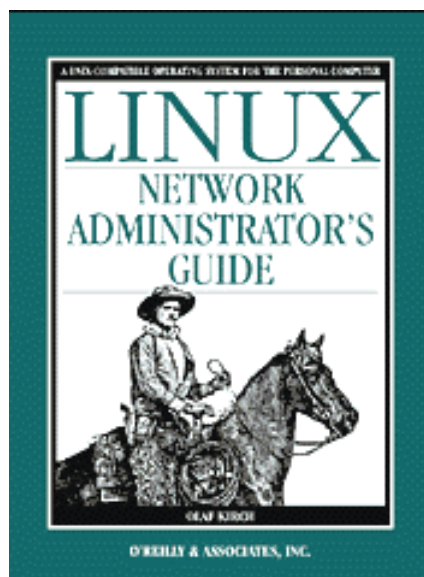
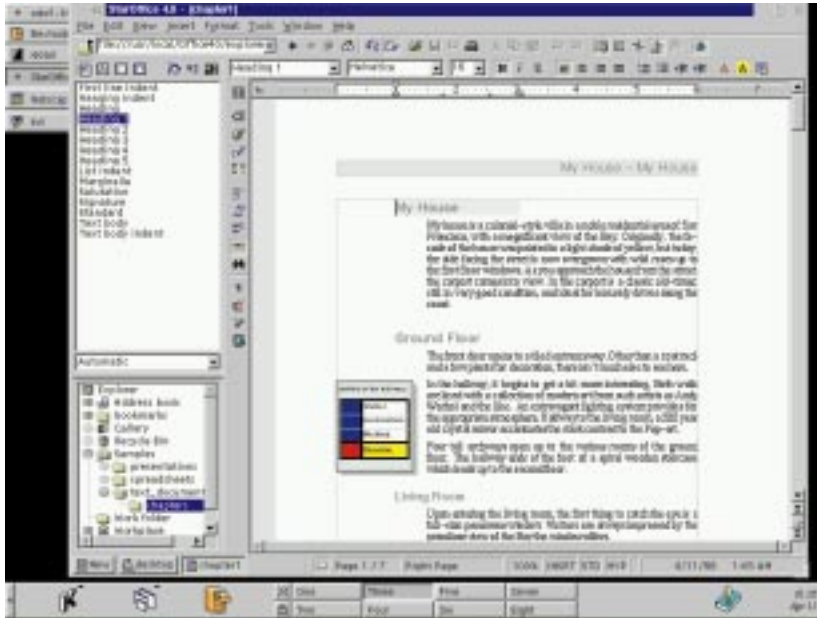


Fig 1 Tarred but not feathered: an indispensable guide for administrators

StarOffice 4.0 excels in Excel and Word



Many thanks to Owain Wragg <odw1@ukc.ac.uk> who sent this screenshot of the latest version 4.0 of StarOffice. The product can be freely downloaded for personal use from www.stardivision.com. Among other features, Owain tells me, it can read and write Microsoft Word files, and handle Excel files, too.

CDs worth knowing about

Here are some new sources for worthwhile CDs. When I was writing about the SuSE Linux distribution (PCW, June) I mentioned Martin Houston's web site at www.deluxe-tech.co.uk.

- Like Martin, D. Grant Crawley is also a Unix user turned vendor. The web site at www.dgc-nms.co.uk will take you to his excellently laid out on-line shop. Alongside the standard SuSE, Caldera OpenLinux and RedHat Linux distributions, Grant also sells commercial applications like the long-running spreadsheet WingZ (see p257), as well as the hardware on which to run it. It's definitely worth a visit.

- Another UK vendor is Cymbeline Software, which is currently offering the SuSE distribution of Linux as well as FreeBSD and some commercial extras like the SWIM Motif development kit. A particularly good deal is the Tri-Linux four-CD set, which comprises the GPL (Gnu Public Licence) versions of Debian, RedHat and Slackware.

Lyn Nurden, who runs Cymbeline, isn't likely to make a fortune selling this set at £5.40 including VAT and P&P, so grab this offer while it's going. The web site is www.cymbeline.com, but at the time of writing it seems to be off-line. You can phone Cymbeline on 044 (if you're dialling from outside the UK) 01329 823119.

what you'd want in a lot of cases, not least in somewhere like `/var/spool/news`."

Tar comes to the rescue here. "If you specify the 'f' flag to be '-', " says Andy, then tar will use the standard input or output as its 'tape drive'. This allows you to do a 'copy' like this:

```
cd /var ; tar cf - spool | (cd /somepartition ; tar xvf -)
```

"This will copy `/var/spool` to `/somepartition/spool` and, as a bonus, prints a log. Tar maintains creation and modification dates so you can 'move' a hierarchy without losing this information."

Last month, I talked about using tar to back up to a remote tape machine. Andy's

use of tar as a file-tree removal van works similarly over a network:

```
cd /somewhere; tar cf - | rsh othermachine (cd /somewhereelse ; tar xvf -)
```

"This certainly beats ftp!" says Andy.

For this to work, you need to have your `/etc/hosts.equiv` or `~/.rhosts` file set up properly. If you're on a network and don't know what this is about, there's a good introduction to this particular aspect of the black art (and everything else to do with TCP/IP, PPP, inetd and so forth) in the more-or-less indispensable *Linux: Network Administrator's Guide* (shown in Fig 1, p257) by Olaf Kirch (ISBN 1-56592-087-2);

£24.90 from O'Reilly Associates at www.ora.com. Incidentally, Telegraph Online <www.telegraph.com>, the discount web book vendor I mentioned a couple of months ago, is offering this at £19.92. But if you're the ultimate bargain hunter, investigate <http://sunsite.unc.edu/LDP/LDP/nag/nag.html> where you'll find the whole book online. It's part of the Linux Documentation Project.

Why buy when you can download it? Well, there's a discussion about this in the book itself. But you'll have to buy the hard copy to read this bit, because it isn't in the online edition. Everything else is, though.

Colour depth in X

Gareth Curtis <Gcurtis01@aol.com> is one of many readers who has been disappointed to discover that his XFree86 X server will only show 256 colours. He doesn't say what graphics card he's using, but he's probably one of the growing army of entry-level users with a whopping, state-of-the-art 4Mb or 8Mb of video RAM. The most I have here is 2Mb.

He writes: "In Linux, how does one change the number of colours displayed in X Windows? I know how to change the resolution for each of the colour modes using `xf86config`, but I don't know how to change from 8-bit colour to 16-bit colour. I have looked at various config files and the setup programs themselves, but this is one problem which really has me stuck."

Typically, X defaults to using 8-bit colour, irrespective of the capabilities of your graphics card. You can kick it into 16-bit colour by starting X with the `-bpp 16` flag, thus:

```
startx - -bpp 16
```

Startx is actually a script that typically runs a binary called `xinit`, which in turn evokes the X server. Note that the double dash is needed to pass the flag on to the X server rather than have it eaten by `startx` itself.

A better, long-term way is probably to add the line:

```
DefaultColorDepth 16
```

to the Screen section of the `XF86Config` file, and make sure that the Display sub-section below includes some Depth 16 modes.

PCW Contact

Email Chris Bidmead at unix@pcw.co.uk or write to him c/o the PCW editorial office (address, p10).



Skinny dipping

Running Warp 4 on a thin little notebook, and Intel's Lean PC and JavaOS for Business: Terence Green lays bare the facts. And, how Calmira can make Warp turn the other cheek to Windows.

Hopefully the Warp Fix Paks and Java JDKs (*PCW*, June) have been of use to readers. Now that we have IBM's permission to place Fix Paks on our cover-mounted CD, we'll continue to do so.

The process is not without its problems, though. If you heard that Warp 3 Fix Pak #35 had been withdrawn, be assured that the version which appeared on last month's CD-ROM is the official, re-released, "fixed" Fix Pak — but it was a close-run thing.

Raiders of the faulty driver

Days before the CD was to be mastered, IBM withdrew Fix Pak #35 to replace a faulty SCSI RAID driver. Since Warp 3 is still the base OS for Warp Server, the RAID fix needed to be made; and it was fortunate that the replacement appeared in time to go on the cover, because this column has to be written and completed some weeks before the CD is cut. Thanks are due to reader Colin Haynes who alerted me to the Fix Pak #35 withdrawal.

We had hoped to include IBM VisualAge for Java:Entry 1.0 on the cover disc, with the Warp 3 Fix Pak. But days before we were ready to go, IBM told us that it was about to release version 2.0 so we're hoping to include that on next month's CD-ROM.

IBM has also offered us the beta of JDK 1.1.6, but I'm not so sure this is a good idea. Should we include betas or wait for the real thing? Let me know what you think. Also, if there are other big multi-megabyte downloads you would like to see on the cover-mounted CD, drop me a line.

Strut your funky stuff

Following up the discussion of Warp performance on older hardware, a reader,

An OS/2 free-for-all

If you're looking for general OS/2 shareware, do take a look at the OS/2 Must-Have Utilities web site at www.musthave.com or the European FTP mirror site at ftp.ia.amu.edu.pl/pub/os2/musthave.

The OS/2 SuperSite (*pictured, below*) at www.os2ss.com is also worth a look, and you can find an up-to-date list of OS/2 fixes with links at the OS/2 Master Update list www.os2ss.com/masterupdate/masterupdate.html.



Super-doooper: the OS/2 SuperSite is a central repository for news, files, links and OS/2 software vendors

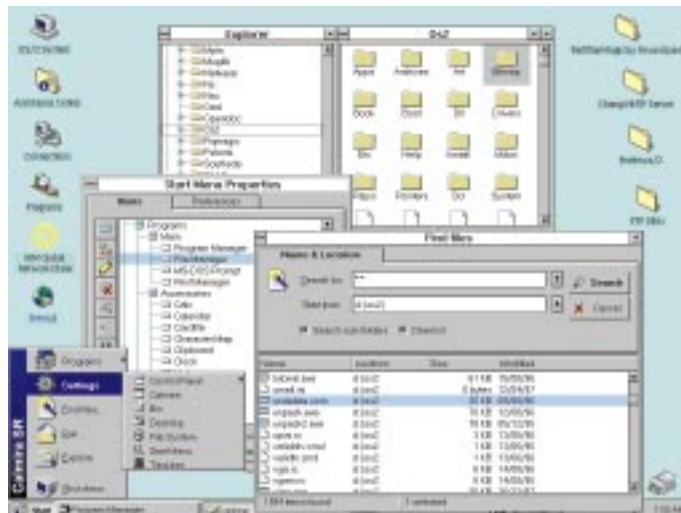
Erkki, wrote about buying a second-hand ThinkPad with a 500Mb hard disk and CD-ROM drive. As a 486/8Mb system it's a bit light for Warp 4 but it runs Warp Connect with Lotus, and Erkki, who plans to do some fresh-air writing, has "a funky machine to work with during the summer!"

The tale is a useful reminder that computing doesn't have to be about the latest processor and the greatest amount of

memory. I've noticed lots of really cheap 486 and even early Pentium notebooks being sold off lately, and I'm tempted to get myself a lean machine for writing, too.

Lean on me

Talking of "lean computing", there was an interesting announcement by IBM and Intel at the end of April. During 1998 they will co-operate on a version of the JavaOS for



Spice up your life with the Windows 95 look-and-feel, with the assistance of Calmira

available which replaces some files on Diskette 1 of the Install set, but I couldn't find the actual Update files anywhere. From

Business to run on Intel's Lean PC. IBM will also produce an Intel-based version of its Network Computer.

Like WorkSpace On Demand, the JavaOS for Business is aimed at managed PCs in company networks. But where WorkSpace On Demand supports an OS/2-based transition from client/server to network computing, the JavaOS for Business is pure Java.

When Intel first announced the Lean PC, in December 1997, IBM said then that it would support it with WorkSpace On Demand. So, this latest agreement can be seen as an extension of Intel's growing interest in network computing and Java.

It also implies a logical roadmap from OS/2 through WorkSpace to Java which, conversely, is good news for OS/2 because having a roadmap relieves doubts of heading towards a dead end. Having a roadmap endorsed by Intel looks even better.

Warpability compatibility

Yousri Shehata writes from Egypt with a query about Warp 3 compatibility with the IBM Aptiva. Yousri's copy of Warp 3 included a flyer warning of special procedures for the Aptiva. Finding information on specific hardware can be tricky, but there are a couple of places to look on IBM's web sites. I searched on www.ibm.com for "Aptiva" and found the hardware support page which led me to a search page at www3.pc.ibm.com/support?page=search where I could search for OS/2 Warp information.

Working at it from the other direction, I came to the Warp software pages and another search page at <http://service5.boulder.ibm.com/pspsdocs.nsf/>. Apparently there's an Aptiva update

the information I did manage to find, it seems the update not only updates Diskette 1, but also helps to set up the Aptiva-specific files that ship with the Windows 3.1 software pre-installed on Aptivas. In any event, Yousri had managed to install Warp 3 before writing so the updated Diskette 1 seemingly isn't vital.

The information also explained how to set up the Aptiva's Rapid Resume feature with OS/2, but Yousri also has a problem with the hard disk being accessed every few minutes so I'm not sure I found the full story on Warp 3 and the Aptiva. If any readers have firm information on the subject, please write to me here at PCW.

The two faces of Calmira

Paul Bunyan pointed me in the direction of an odd little application called Calmira, featured in last month's Hands On Windows 3.1 column, which gives the Windows 3.1 operating system a Windows 95 interface. Well, it also runs under Warp. Paul says he has used it under Warp 3 and Warp 4 in full-screen Windows. My screenshot (above) doesn't really do it justice, but it was sort of weird to see what appeared to be the Windows 95 Start bar where WarpCenter should have been.

The program is authored in the UK by Li-Hsin Huang. It is free software, published under the GNU General Public Licence. It isn't really my cup of tea, but if you are interested, look for it at www.tribbles.demon.co.uk/calmira/calmira.htm.

PCW Contact

Terence Green can be contacted by post via the PCW editorial office (address, p10) or by email at os2@pcw.co.uk.



Exclusion zone

We all commonly mistype words and make grammatical mistakes, capitalisation errors and the like. Tim Nott builds an exclusion dictionary to take away those troubling typos.

One little known feature of Word (and some other word processors) is the concept of an exclusion dictionary. This is the converse of a custom dictionary in that it contains a list of words that are always flagged as suspect by the spelling checker even though they exist in the main, non-editable dictionary.

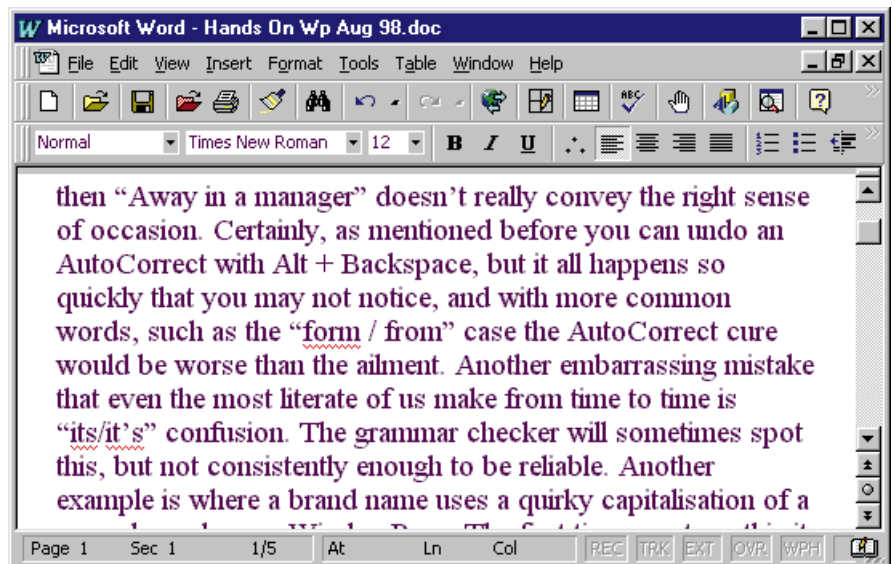
So why would anyone want to do this? There are several reasons. For instance, there may be words that you habitually mistype but which create another, valid word. Two of my own habitual typos are leaving out the second "a" in manage or manager, and typing "form" instead of "from". With the former, the obvious solution would be to create an AutoCorrect entry. This is fine until you want to use the "incorrect" word in earnest.

If you were typing out the school carol-service sheet, then "Away in a manager" doesn't really convey the right sense of occasion. Certainly, as mentioned before you can undo an AutoCorrect with Alt + Backspace, but it all happens so quickly that you may not notice. And with more common words, such as the "form/from" case, the AutoCorrect cure would be worse than the ailment.

Another embarrassing mistake that even the most literate of us make from time to time is "its/it's" confusion. The grammar checker will sometimes spot this, but not consistently enough to be reliable.

A pain in the capitals

Another example is where a brand name uses a quirky capitalisation of a normal word; say, WindowPane. The first time you type this it will be flagged as an error, so naturally, if you write a lot about this (mythical) brand you'll add it to the custom



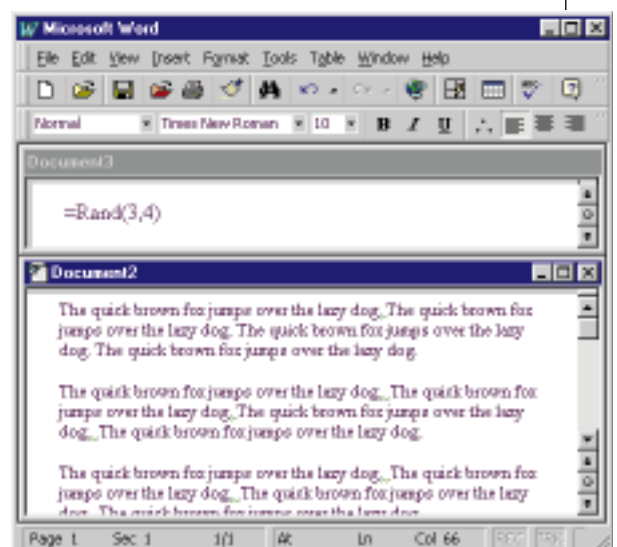
Create your own custom "mistakes"... This is where you need an exclusion dictionary

How to create dummy text

Here's an undocumented Word 97 feature of magnificent obscurity. What it does is generate paragraphs of dummy text, which might possibly be useful for testing the look of a layout or formatting. So powerful is this feature that I had considerable difficulty in describing it without it leaping into action.

On a new line, type an equals sign (=) followed immediately by "Rand(n,m)" (without the quotes) where n is the number of paragraphs required and m the sentences per paragraph. Hit return, and you'll get repetitions of "The quick brown fox..." accordingly.

➤ **Top window, before; bottom window, after pressing Return to generate dummy text**



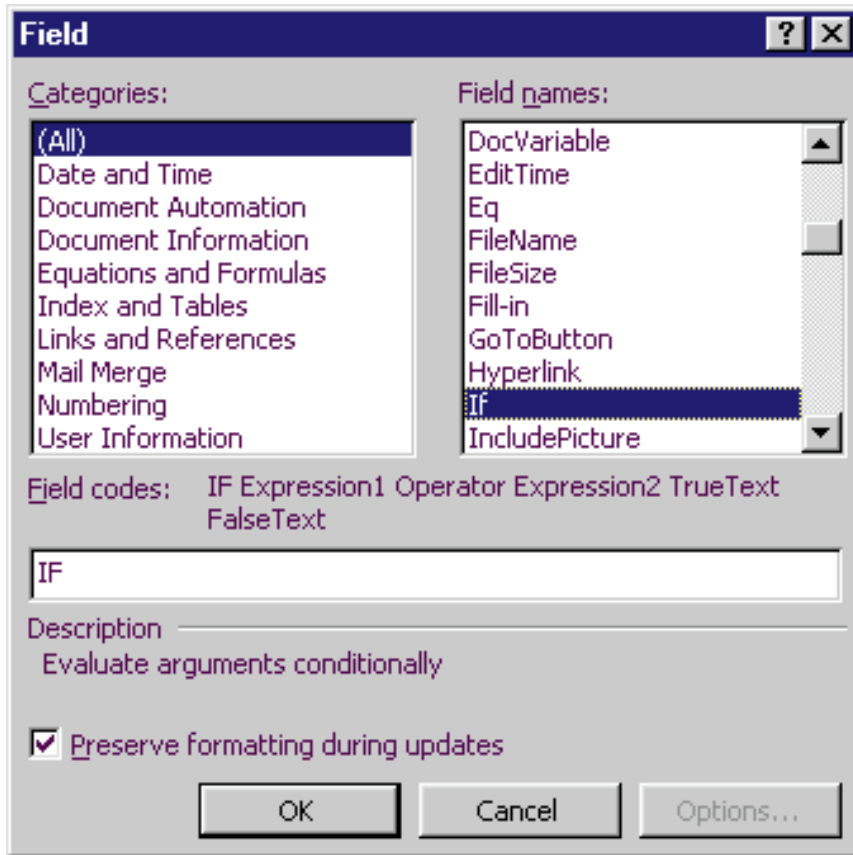


Fig 1 Using conditional fields in footers

dictionary. But that's only half the problem solved. To err is human, and only the superhuman will get through a document without forgetting the second capital at least once.

Yet another example would be the banning of certain words in an organisation: "There is no such word as 'bug' in this company — please use 'known issue'."

The big advantage of using an exclusion dictionary is that unlike AutoCorrect, the suspect word is first drawn to your attention and then you have the option of changing it or leaving it be, either in "check as you go" or through an explicit spelling check.

However, unlike user custom dictionaries you can't create an exclusion dictionary on-the-fly. You have to edit it from scratch. This isn't difficult, though:

1. Create a new document in Word, with each "suspect" on a different line.
2. Save this, in Text Only format, in the folder where the main language dictionaries are kept; typically C:\Program Files\Common Files\Microsoft Shared\Proof.
3. The file name should be the same as the main language dictionary (.LEX) file but with the extension .EXC. For UK or US English this will usually be MSSP2_EN.EXC.

Loud, confident... and wrong

David Hooper had a strange problem with Word 7's Equation Editor, in that it disappeared and would no longer let itself be Object/Inserted. The error message offered a variety of unproductive but time-consuming suggestions. Despite reinstalling the Equation Editor on its own, then as part of a complete Word reinstall, it was still not to be found, although Office Setup reported it installed.

At this point I was fairly certain that something in Windows OLE was broken and that David would need to reinstall Windows. Fortunately, I was wrong. "It hadn't actually copied Equation Editor across," wrote David, "although it said it was installed.

"I tried removing it again from the Setup program but no hard-disk space was freed. I then tried installing yet again, immediately without a reset as before, and succeeded. Surely the point of the 'Setup is now searching for installed components' message is to prevent this happening?"

Indeed. But then, I've always mistrusted these messages. My personal favourite is the one that is "Checking for available disk space" when you remove a program.

Continuing story...

Here's an interesting problem. You type a report or letter and, at the top of each page except the first, you want a header containing "continued..." or something similar. Correspondingly, at the bottom of each page except the last, you want the text "continues..." or something similar.

The first is easy enough, as you can set the header on the first page differently from those on the second page, and can suppress a blank second page using the trick described in my June column of creating the second page, editing the header, saving, deleting page two, then saving again. Getting the footer to appear on every page except the last is a little more tricky, but I'm grateful to Peter Lucas for the following highly ingenious solution.

Fiddling with IF

The trick is to insert an IF field in the footer. The logic runs: IF this page number isn't equal to the number of pages (i.e. the last page), insert "continues...", otherwise insert nothing.

- It's a rather fiddly business doing this and first you need to turn on View Field Codes from the Tools, Options menu.
- Next, select Headers and Footers from the View menu and go to the first footer.
- From the Insert menu, choose Field, and from the list choose an IF field (Fig 1, left). Insert this, closing the dialog.
- With the cursor within the field, to the right of the IF, insert another field — this time a PAGE field.
- Again, close the dialog, and type in "<>" (without quotes) then insert a NUMPAGES field.
- After that, type "continued..." (with quotes), followed by space and an empty pair of quotes. You can then edit out the excess *MERGEFORMATS if you want to be tidy; only the outer one is really useful.

The end result should look something like Fig 2 (opposite).

Turn view field codes back off, select the

Word Quicktip of the month

Hold down the Control key as you use the arrows and you'll find the left and right ones move a word at a time; the up and down ones move a paragraph at a time. The Backspace and Delete keys also remove whole words with Control pressed.

Questions & Answers

Q How can I check spelling in multiple languages in the same document, using Word?

Kelly Diss

A You don't say which version you're using but it's the same in Word 6, 7 and 97. Select the text you want proofed in the new language, then go to Tools, Language, Set Language (Word 2 users will find this under the Format menu) and you'll see a large choice.

Now all you need are the appropriate dictionary files. And there's the rub (Fig 3). The cheapest way is to junk Word and buy Lotus WordPro which comes with spelling checkers in 20 languages, grammar checking in eight and thesauri in 14.

If you just need English and French then WordPerfect 8 fits the bill. If you want to stick with Word, however, it's going to cost you. There are various packages of spelling, hyphenation, thesaurus and, if you're lucky, grammar checkers for sale by Microsoft; at the time of writing, these could be ordered from Alki Software's (great name, guys. Let's hope someone's sober enough to process the order) web site <www.alki.com/Win/Office97> at \$79.95 per language, which is a little cheaper than the recommended \$99.95.

Q I read Malcolm Klein's letter in the May issue of PCW about identical PCs taking differing lengths of time to close a document. You said the problem

was Outlook. I have the same problem, but with Outlook Express, and the journal option that you mentioned isn't there.

Jonathon Zev Lipczer

A Outlook Express is a completely different thing. It's an email program that comes with Internet Explorer 4 and, as you surmise, doesn't have the journaling stuff. Another culprit could be Find Fast, a utility installed by Microsoft Office which indexes files so that using the Advanced Open dialogs produces quicker results.

However, it has other, rather adverse effects such as causing periodic bursts of disk activity and generally slowing down performance. You can see if it's working by doing a Ctrl + Alt + Del or looking for its icon, a yellow zigzag, in the System Tray.

If you remove its icon from the StartUp group it will stop creating these indexes. Better still, do a thorough job: click on its icon in Control Panel and delete all the indexes it has already created, otherwise the Open dialogs will still use these obsolescent entries, which may cause problems.



Multi-lingual proofing — if you have the dictionaries

Q I am running MS Office 97. Despite reinstalling, add/install features etc, whenever I try to use the Wizards I get an error message, which reads "Word could not fire event".

Niall Ferguson

A According to the Microsoft Knowledgebase, this is a Visual Basic for Applications message that occurs when launching the VBA environment has been unsuccessful. Reasons for this include lack of disk space, lack of memory, or a damaged/incomplete Visual Basic set-up.

It would be worth clearing some disk space and closing other applications to see if that makes a difference. Failing that, reinstall, taking care that all the relevant VBA components are selected.

Fig 2: IF field end result

```
{IF {PAGE}<>{NUMPAGES} "/continued..." "" \*MERGEFORMAT}
```

field and press F9 to update. You should then see "/continued..." on every page except the last. If you don't get it right first time, persevere. It took me a while, too.

Phrase of the month

Thank you, everyone who replied to the Anorak Challenge (May's column). The general consensus was that this garment was favoured by trainspotters (the non-drugtaking kind) and, by extension, anyone "who takes an obsessive interest in things that most people find entirely pointless," as Simon Barker so neatly put it.

Special "attention to detail" awards go to Steve Dunning, who mentioned the Zenit E cameras carried by said anoraks, and Paul Edwards for "the version of yellow of the lamp on class A 47 diesel".

This month we turn to the industry. Readers might notice that when a large organisation finds itself unpopular, there can be a wave of support appearing in newspaper letters pages and in letters received by elected representatives from their constituents.

Cynical readers might surmise that these have, in fact, been written by

employees of the company concerned or its Public Relations consultants.

I'd like to think this practice was invented by the Monty Python crew, whose lampoon of the BBC "Points of View" programme had a broadcaster reading out letters such as "I think the BBC is wonderful and would gladly pay triple the license fee". However, I'm sure it is in fact far older.

What's interesting, though, is that this practice of falsifying grass-roots support is known as "Astroturf" lobbying.

PCW Contact

You can contact Tim Nott by post via the PCW editorial office (address, p10) or at wp@pcw.co.uk.



A problem shared

Beginners get a look-in as Stephen Wells helps out with some basic problem solving. Or if it's a business problem that's bugging you, there's a review of two tools to help sort things out.

Every now and then, I feel this column should be a little more sensitive to beginners' problems, so let's start with three from Ray Munro-Crump of Brentwood.

Linking worksheets

"I've encountered three problems with Excel 97 which I hope you will help me with. The first is that I am trying to link worksheets together. I want to enter a list of items on the first sheet and have selected items added automatically to the next sheet.

"I know that each cell can be individually linked (one by one) but can it be done by dragging down, as you do with a series of numbers?"

Yes, it can, Ray. Make a copy of an existing workbook and practise on that. Start with the worksheet which has your list. We'll call this the List sheet.

1. Right-click on its tab at the bottom of the screen and create a new worksheet. Double-click on the new tab and name it. Let's call it the Second sheet.

2. In cell A2 of the Second sheet, enter = (equals sign). Click on the List sheet tab. Click on cell A2. Press Enter.

3. On the Second sheet, select A2. Point at the little square in the bottom right-hand corner. Drag this block down the column. Click on, say, A13 and in the formula bar it should read

```
=List!A13
```

4. The data in column A of the Second sheet should be the same as in the List. Change the data in a cell on the List sheet and it will change on the Second.

If you want to change the order of the sheets, just click and hold on a tab and drag it to the new position.

Eliminating errors

"The second thing," Ray continues "is this. I want to enter data in one cell and further data in the next. I then want to divide the first by the second and enter this in a third cell. For example, a total bill of, say, £100 (in A2) is divided by the number of widgets (in B2) to equal the price per widget (in C2) entered as =A2/B2.

This works on the first row but when I copy down the columns I often get a DIV/0 error."

What I do is drag such a formula down the column. Then I hold the Ctrl key and click on all the cells with DIV/0 in them, then press the Delete key.

Some users, who don't worry about big spreadsheets, would replace your formula with

```
=IF(B2, (A2/B2), "")
```

This means if B2 (and its successors) has an entry, do the calculation, otherwise leave a blank.

Confusion about copying

Ray's final problem is: "I am also confused by copying by dragging. If I enter a number of street addresses and then try to drag/copy them, the address changes.

"For example: 1 High St, becomes 2 High St, and then 3 High St and so on. Yet sometimes, if I want the numbers to change, I only get the first cell copied without change. Why is this?"

If you enter 1 High St in A1 then select the cell and drag down, the following rows will increment the number. A2 will display 2 High St, and so on. If you hold the Ctrl key while you drag, Excel won't increment, so every cell will display 1 High St. If you add a comma and enter 1, High St in A1 and 2, High St in A2, and select both cells, then the

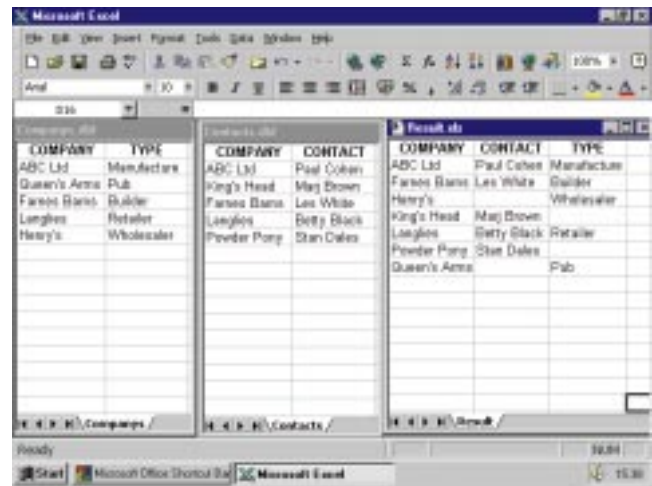


Fig 1 Using Microsoft Query you can join Excel lists, as to the left and centre, and produce the combined list on the right

AutoFill feature will repeat 1, High St and 2, High St over and over with no increments.

This AutoFill feature works up to a limit of 255 characters in the cell. If you should ever hit that limit, you will find that AutoFill doesn't increment but just repeats the exact contents of the cell. Another idiosyncrasy is that numbers formatted as text may change formatting after using AutoFill.

Joining lists

A question that comes up every now and then is how to join Excel lists. If you have the Office suite, you also have a useful accessory called Microsoft Query. It takes a

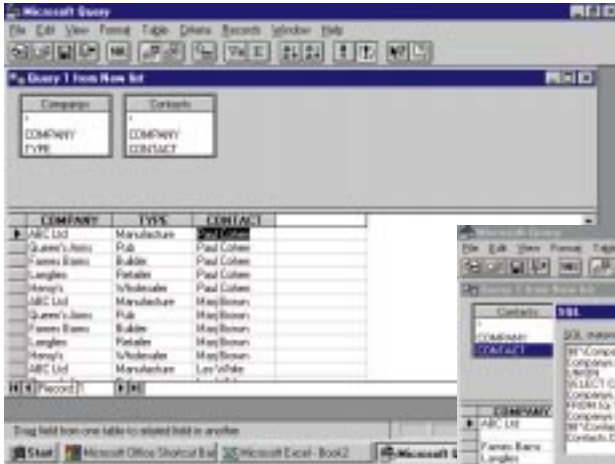


Fig 2 (left) The two lists, with their column labels, are represented by the boxes at the top. The unanalysed data is below

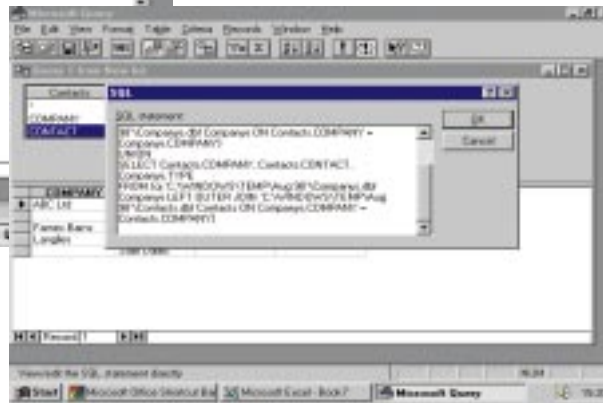


Fig 3 (above) Preparing the sorting instruction by joining two automatically-created statements with the UNION command

bit of practise getting used to it, but here's the first lesson.

Say you have a list of companies designated by type (see the left-hand side of Fig 1). You also have a list of contacts at client or supplier companies (see the centre of Fig 1) and you want to combine them, as per the right-hand window in Fig 1.

1. Open the companies list and save it as a DBF 4 (dBASE IV)-type file. Keep the name below eight characters. We'll call it *Companys.dbf* (make sure you spell *Companys* as shown).
2. Do the same with another file, which we'll call *Contacts.dbf*.
3. Close those files and open a fresh one. Choose Data, Get External Data, Create New Query.
4. Double-click on New Data Source. Type

any name, like *New list*, in the first box.

5. Choose the Microsoft dBase Driver towards the bottom of the second box. Click Connect.
6. In the Version list, choose dBase IV. Clear the Query Wizard box, as we don't need it.
7. In the Add Tables box, select your two new .dbf files and press Add, OK. Drag down the COMPANY and TYPE columns from the *Companys* file box at the top of the screen to the data area at the bottom.

8. Drag the CONTACT column from the *Contacts* file box (Fig 2). Choose Table, Joins.

9. At the top, choose (if it isn't already the default) *Companys.COMPANY* on the left

and *Contacts.COMPANY* on the right. Choose Option 2. Click Add and Close.

10. Click the SQL button in the MS QUERY toolbar. Select all the text in the SQL statement and copy to the clipboard. Click OK to close this dialog box.

11. Choose the COMPANY name in the data pane and press the DELETE key. (Remember, this COMPANY column came from the *Companys* box.)

12. Drag the COMPANY column from the *Contacts* box down and to the left so that it is the first column. Choose Table, Joins. Click Option 3, Add, Close.

13. Click SQL. Put the mouse pointer at the end of the existing statement. Press Enter. Type UNION. Press Enter.

14. Paste in the SQL statement you copied earlier (Fig 3). Click OK. And click OK on the message about no graphic representation.

15. Now choose File, Return Data to Microsoft Excel. ➤

The problem solvers: Excel goes linear, and What's Best for business

■ Solverex and Solvsamp

Staff scheduling can occur in any business and there is always a need for working capital management. Electrical engineers may need to calculate the value of a resistor. An investor might wish to weight a stock portfolio. Solutions to these quandaries, and more, can be found in the example problem solver file included with Excel. In Excel 4 the file is SOLVEREX.XLS. In Excel 97, it's SOLVSAMP.XLS.

To specify your problem you choose Tools, Add-Ins, Solver Add-In. Choose Tools, Solver and tell the Wizard what you want.

In a nutshell, Solver gives Excel the power of linear and non-linear optimisation. Give it a set of cells it can change, a set of constraints that must be met and a cell to be optimised, and it whirrs away until the best answer is found. It might be the greatest, the least, or an equal solution.

If you want to get technical about it, Solver uses the Generalised Reduced

Gradient optimisation code developed by Leon Lasdon of the University of Texas and Allan Waren of Cleveland State, for non-linear problems. Linear and integer problems use the simplex method, with bounds on the variables, implemented by John Watson and Dan Fylstra of Frontline Systems.

As supplied, Solver is a Microsoft product supported by Microsoft and you'll find articles about it in the online Excel KnowledgeBase. But FrontLine Systems has other products enhanced with the Solver technology. See its web site at www.frontsys.com or email the company at info@frontsys.com.

■ What's Best optimiser

If complex business, financial, engineering and scientific problems are central to your business, then you will be interested in Lindo Systems' What's Best optimiser. It works with Excel and Lotus 1-2-3 for Windows, and is available in four versions which use 4Mb to 32Mb of RAM and can handle 1,000 to 32,000

variables and 500 to 16,000 constraints.

I have mentioned an earlier version in this column before, but now What's Best has been rewritten specifically to take advantage of Excel 97's enhancements to Visual Basic. This version doesn't have to be saved in the Excel 5/Office 95 format before solving and the cell character limit has been raised from 255 characters to 32,000.

You can download, free, a fully-working version of What's Best from www.lindo.com. The only limitation is that this version is restricted to 50 constraints and 100 variables. The What's Best manual in a compressed, self-extracting 2.7Mb file can also be downloaded free. For more information, email info@lindo.com.

If you want to order What's Best, in the UK try Eastern Software in Colchester — telephone 01206 544456, or email eastern@cix.compulink.co.uk. The company's own web site is at www.easternsoftware.com. It also sells other spreadsheet add-ins.

Questions & Answers

Q What's the difference between the Currency format and the Accounting format?

A The Currency format right-aligns the numbers and tucks the £ sign up against the amounts. The Accounting format brings the numbers in a space from the right-hand side, to allow for parentheses, and lines up the decimal points. The £ signs are aligned down the left side of the column. Confusingly, if you hover the mouse over the Money tool it says Currency, but it produces the Accounting format.

Q How can I show negative amounts with parentheses instead of a minus sign?

A Excel looks at the operating system for this. In the case of Windows you go to Control Panel, Regional Settings. There are many variations of "English". Choice of these modifies the available options in the formatting dialog box. Personally, I set accounting figures with a custom format. It's easy to specify exactly what you want.

Q Is there any way I can cut down the size of my PivotTable files?

A You may have two lots of data in them. Excel creates a copy of the source and stores it as hidden data with the worksheet which contains the PivotTable. To avoid this duplication,

deselect the Save Data with the Table Layout checkbox in Step 4 of the PivotTable Wizard.

Q After creating links in my workbook, the file size becomes so large it won't save to a floppy.

A What is happening is that Excel is trying to be helpful by storing the last image of the database in the file. The idea is that you could open the workbook later, without having to link to the database. If the workbook that contains the database is already open, or if you always update the links when you open your new workbook, you don't need that image.

To turn off this image-saving feature, choose Tools, Options, Calculation and clear the Save External Link Values box.

Q When I'm going about opening a workbook, how can I display all my files in different directories in one list?

A Click the File Open tool. In the Open dialog box, hold the mouse over the last icon on the right and, if it changes to Commands and Settings, click it. This displays a list of options.

Click on Search Subfolders. This displays all the folders from where you are, back to C:\ (or A:\, if you're using a floppy). If you start in the root directory, it goes the other way and shows every Excel file on the disk.

To restore the default position, click Commands and Settings again and select Group files by folder.

Q Where is the Recent Files list stored?

A In Excel 97, run Regedit.exe and look under HKEY_CURRENT_USER \Software\Microsoft\Office\8.0\Excel \Recent File List. In earlier versions, look for the FILE.LST file which is probably in the C:\TEMP directory.

Q Can I drag a chart from one worksheet to another?

A No, neither charts nor drawn objects. But with regular entries, select the range, hold down the Alt key, point to the edge of the selection and drag it down onto a sheet tab. That worksheet opens and you can drop the selection where you wish. To copy the selection (leaving the original where it is), hold [Ctrl]+[Alt] as you drag. It's very fiddly though, and you will probably prefer Cut, or Copy and Paste.

Q How can I separate a list of names in the format "Surname, FirstName" into two columns?

A Select a column of the names. Choose Data, Text to Columns, Delimited, Next. Check the Comma, Space, and "Treat consecutive delimiters as one" boxes. Click Next, choose the destination for the results and click Finish.

You should get a result like the right-hand window in Fig 1. You should also have an understanding of how to create other combinations of your list data.

Printing PivotTable pages

Colin Harper, writing from the bank where he works, asks: "I have created a PivotTable and need to print a page for each customer. But when I manually place a Page Break at the appropriate point, it is ignored. Any ideas?"

To print all the pages it's best to separate them into worksheets. Then you can group the sheets by holding down Shift and clicking the first and last tab in the group, and print them all in one go. First make the PivotTable Toolbar visible via View, Toolbars.

Then click a cell in the PivotTable. Click

the Show Pages icon on the right of the PivotTable Toolbar. Then wait. If the PivotTable is viewing a large database, this may take some time, so keep waiting. Eventually, Excel inserts a new worksheet into the workbook for each Page, if this is the default, or for each item in the Page field.

Alternatively, click the large PivotTable button on the left of the Toolbar and choose First from a range of options.

It is important to realise that a PivotTable is an object, in the same way as a chart or toolbar. It's a viewing and organising tool for an Excel database or worksheet list, or with Microsoft Query, an external database. You cannot enter or change the data in a PivotTable: you have to change the data in its source, then click the Refresh Data button on the PivotTable Toolbar.

Negative feelings

Richard Sykes has a problem which is in fact fairly common:

"I download flat files (.txt' or '.csv') out of our mainframe General Ledger system. This format shows any negative signs behind the value, i.e. '100-'. Excel sees this as text and not numeric, therefore the cell is ignored for any calculations."

To change 100- in text in cell A1 to -100 in B1 as a number, you could use the following formula. You could also include this formula in a macro.

```
= -VALUE (SUBSTITUTE (A1, "- ", ""))
```

PCW Contact

Stephen Wells welcomes problems or solutions relating to spreadsheets. Write to him at PCW (p10) or email him at spreadsheets@pcw.co.uk



Access confirmed/denied

This month's column is devoted to database security. Mark Whitehorn looks at a little theoretical background and the practicalities of setting up your own security system.

I have been asked by several people (via email) to write about the way in which Access implements security. It seems more helpful to cover this in one issue than in two, so most of the subjects that are currently under discussion in the column, generally, will have to take a back seat until next time.

Security under Access 2.0

The different versions of Access implement security in subtly different ways. It seems far too much to cover them all so I'll deal with Access 2.0. Later versions use much the same system but it has been better implemented. To put that another way, if you can understand security in Access 2.0, you should find security in the later versions a doddle.

"Ah ha!" you think. "This means he's saying that security has been badly implemented in Access 2.0!" Yes, that's exactly what I'm saying. It works well enough but it is very cludgy to drive.

Another problem is that the documentation never seems to take the trouble to explain the background information you need about how security works in Access; it just tells you what to do to implement it. (Actually, this isn't totally true. The *Building Applications* manual has some useful stuff but many Access users didn't get a copy).

If you want to try out the process of setting up security on a database, I suggest you find a non-essential database, make a copy and work with that. So much is common sense. However, I also recommend that you read the whole of this article before starting to play, since there are further precautions I suggest you take.

Database security typically involves the

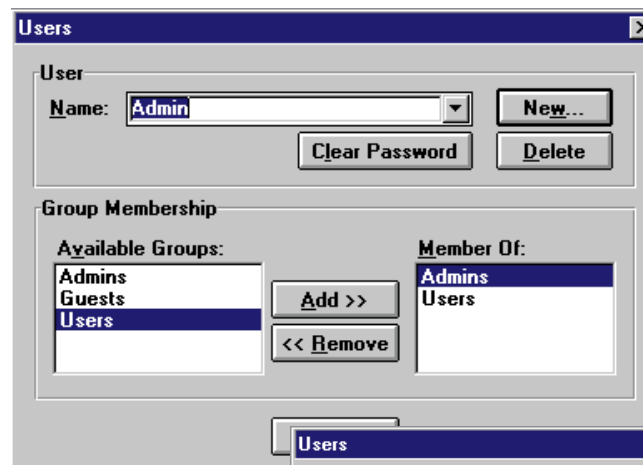


Fig 1 (left) The dialog box that lets you see which users are in which groups

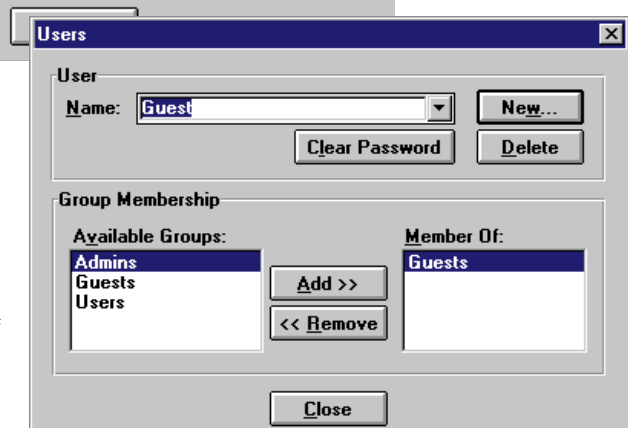


Fig 2 (below) Same dialog box, showing the groups for a different user

interaction between objects (such as tables, forms, reports etc) and users (you, me, Fred, Sally etc). Those interactions involve rights (or permissions). Fred has the right to see the contents of a table but doesn't have the right to alter it. Sally has permission to use a report, but I do not. And so on.

Clever-clogs

Dealing with four users is easy. Trying to deal with dozens can be difficult, so it is common practice in any security system to make use of devices called Groups (collections of people). Suppose I, as the database administrator, create a group called Clever and place you and Sally in there. If I then grant a right that allows the group Clever to use a table, both you and Sally can automatically acquire that right.

In other words, people can be assigned to groups, and so can rights. If someone is

a member of a group that has a particular right, then that person automatically acquires that right — in addition to any other rights they might have been granted as individuals. In practice, groups are so useful that it is relatively uncommon to grant rights individually to individuals (if you see what I mean). Rights are almost always granted via groups.

If you have any experience in administering a network, this will sound eerily familiar. The security of a computer system has to follow much the same pattern, no matter whether it is designed to protect a database or a network.

Moving on to specifics about Access

When you first started to play with Access, you probably didn't even think about security. After all, it was just you, a standalone PC and a copy of Access. What need had you for security? Well, you may not have been thinking about security, but Access was. Access *always* assumes that you are applying security. As soon as you start Access it knows who you are and what permissions you have.

Unless you tell Access differently, it will assume you are a user called Admin and that you have all possible permissions to everything. In fact, "Admin" is a very powerful person: he/she has ultimate power over any Access database.

Access, by default, is assuming that you are the most powerful person who will ever use it — wow! The bad news is that Access is less than perfectly discriminatory about this since it will assume that *anyone*, including your cat, is the person called "Admin". All he/she/it has to do is to start Access to be classified as an administrator.

This may all sound a little wacky but you can easily verify what I say is true, and at the same time, you can have a look at the default users and groups that Access creates.

Start Access, open a database and select Security/Users from the menu system (Fig 1, p268). This crowded dialog box tells you that you are a user called Admin, that

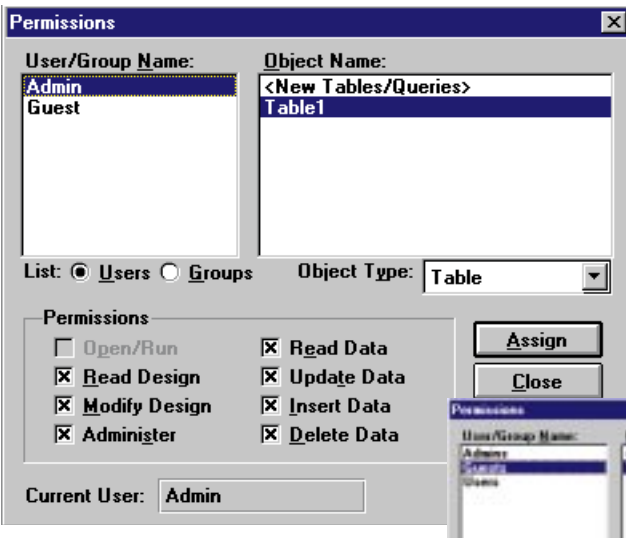


Fig 3 (left) Using the Permissions dialog box to view the rights assigned to different users

Fig 4 (below) Same dialog box, showing rights assigned to different groups

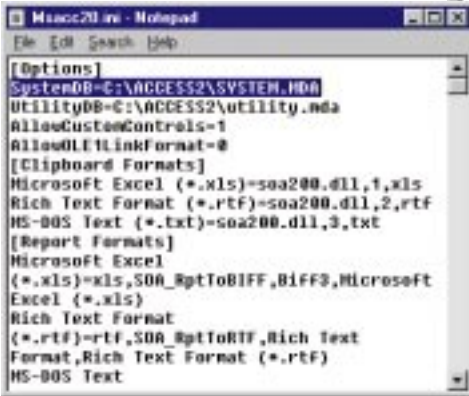
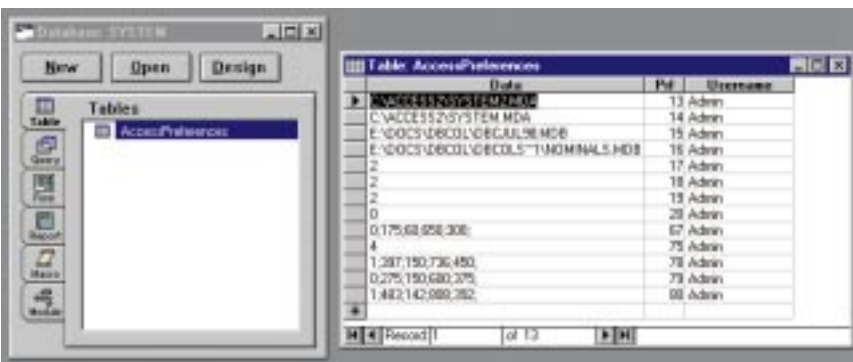


Fig 5 (left) Information stored in MSACC20.INI

Fig 6 (below) Inside SYATEM.MDA



Wacky start number for Access dates explained

In the May issue, I observed that Access assigns the number "2" to the date 1/1/1900, rather than the slightly more obvious "1", but was unable to explain why. Many people responded and grateful thanks are extended to all of them. John Gray jgray@lombard.co.uk was the first and he was kind enough to forward some information from Microsoft that explained the situation. The following is my interpretation of that material.

Once upon a time there was a spreadsheet called Lotus 1-2-3 which assigned the number "1" to the date 1/1/1900. Sadly, 1-2-3 assumed (incorrectly) that the year 1900 was a leap year. This didn't really do much damage since very few people used dates as far back as the first two months of 1900. When Microsoft Multiplan and Microsoft Excel were released, they also assumed that 1900 was a leap year. This enabled them to use the same serial date system as 1-2-3, thus providing greater compatibility.

Many years later, we have reached a situation where Microsoft is quite well aware of the problem, but realises that correcting it in Excel would certainly create more chaos than leaving well alone. For example, if the problem were corrected in a new release of the product, some functions such as the WEEKDAY function would return incorrect values when using data imported from the earlier versions. In addition, correcting the problem would break serial date compatibility between Microsoft Excel and other programs that use dates. As it is, the only real problem is that the WEEKDAY function in Excel returns incorrect values for dates before March 1, 1900 — not a huge problem for most users.

However, Microsoft clearly had the option of perpetuating the problem in all of its products, or finding a way of ensuring that new products like Access dealt with the year 1900 correctly and also maintained compatibility with Excel. Rather elegantly, Microsoft decided upon the following strategy. If products such as Access assume that 1/1/1900 is number 2, then the first 60 dates disagree with Excel but after that they agree. This allows Access to know that the date 29/2/1900 doesn't exist, while maintaining almost perfect numerical compatibility with Excel (Fig 10). Clever, innit?

Fig 10: Date compatibility

Date	Excel Number	Access Number
January 1, 1900	1	2
February 28, 1900	59	60
February 29, 1900	60	N/A
March 1, 1900	61	61
January 1, 2000	36526	36526

there are three available Groups (Admins, Guests, Users) and that you are a member of two of those groups. If you pop down the combo box, you will find that Access also predefines a user called Guest and if you select that user you will find that Guest is a member of only one group (Fig 2).

So, Access creates three groups (Admins, Guests, Users) and two users (Admin, Guest) by default. What permissions does it assign to these default users and groups?

From the menu system, select Security/Permissions and the dialog box in Fig 3 appears. You can see the different permissions that Access defines, at the bottom of the dialog box. You can select the appropriate user/group on the left-hand side, the object on the right and see which permissions have been defined. Fig 4 shows that the group called Guests has no permissions to the table called Table1.

Once you have read this entire column, I strongly suggest that you play with these dialogs for a while, *not* changing anything but simply becoming familiar with them.

After a while, you may begin to notice that this is all rather academic. The user called Guest may have restricted access to most of the objects in the database but since Access assumes that anyone who fires it up is Admin, does this really matter? In other words, how do you get Access to ask you who you are, rather than assuming you are Admin? Before I answer that, I want to digress into a little more theory.

Data storage

If Access is going to keep track of who has which permissions to what objects, it will need to store that information somewhere.

Where does an RDBMS store data? In tables, of course. Where does it store tables? In a database. So, we expect to find the security information stored here and, by default, this database is located in the Access sub-directory and is called SYSTEM.MDA. Yes, it's a database with the extension MDA, not MDB. If you want to see for yourself, look for a file called MSACC20.INI which is typically stored in the Windows directory and open it with

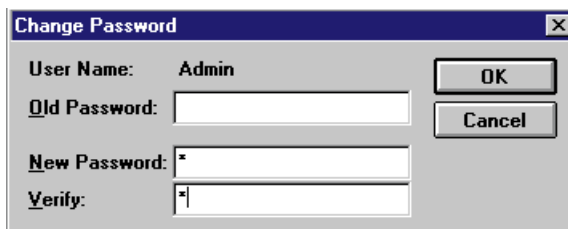


Fig 7 (left) Changing Admin's password — a fateful step!

Fig 8 (below) Logon as Admin

Fig 9 (inset) The wrkgadm.exe icon



Notepad (Fig 5). The line:

```
SystemDB=C:\ACCESS2\SYSTEM.MDA
```

tells you where my security database is stored. If I use Access 2.0 to open this file, you can see that it is an Access database with a single table (Fig 6). *I do not recommend that you start hacking this table!* However, I do recommend that before you start playing with security you make one (or more) backups of MSACC20.INI and an equal number of SYSTEM.MDA. Then, if the worst comes to the worst and you trash something, you can always get back to square one.

Let's get practical

As I wrote earlier, by default Access' security system is always working but, by default, is quiescent. The way you activate it is to place a password on the Admin account. As soon as you do that, Access will start asking who you are whenever you start it up.

To try this out, fire up Access, open a database and choose Security/Change Password. Using the dialog box, you can alter the Admin password (Fig 7). For a trial like this, choose something simple like lowercase "a". Beware! These passwords are case sensitive, so "A" is not the same as "a". Now close Access down and re-start it. You will be presented with a logon dialog box for the first time (Fig 8). You can login as Admin using the password "a", or you can logon as Guest (which currently has no password). You will find that these two persona have very different powers.

If you are logged on as Guest, you can change Guest's password. When logged on as Admin you can create new users, new groups and assign permissions accordingly. You can create a whole raft of

security levels, but... if you forget the Admin password, you are up to your eyebrows in yoghurt. (Note that your eyebrows are higher than your nostrils, which gives you a projected survival time of about 90 seconds). No problem. Ninety seconds is more than enough time to delete SYSTEM.MDA and replace it with a copy of the backup you took before we started.

However, assuming you make no mistakes, you now have a fully-functional security system in Access and hopefully enough knowledge to get started and find out how it works in detail.

More points to help you on your way

To turn off the security system, logon as Admin and clear Admin's password (Security/Users and Clear Password Fig 1).

You can have more than one MDA file and swap between them using the WorkGroup Administrator. You should find the icon for this tool in the same folder as the Access icon (Fig 9). If not, try scanning your hard disk for WrkgAdm.exe which is the tool that can be used to create new MDA files.

It also rewrites that line in MSACC20.INI if you tell Access that you want to use a different MDA file.

When many people are going to use the same Access file across a network, it is typical to use WorkGroup Administrator to point all of them to the same MDA file which is located on a network drive.

PCW Contacts

Mark Whitehorn welcomes readers' correspondence and ideas for the Hands On Databases column. Write to him c/o the PCW editorial office (address, p10) or email him at database@pow.co.uk.



Clocking on — and off

The good, the bad and the fastest: last month, Roger Gann told you how to overclock your processor to make it run faster. Now, Intel is having none of it. The story continues...

In last month's column I wrote about the process of overclocking your processor to make it run at a faster clock speed than rated, to gain performance at no expense.

Well, I've been overtaken by events and I have good news and bad news. The bad news is that the overclocking of Intel Pentium and Pentium II processors may have been partially stomped on by Intel, which appears to have disabled the pin that enables the multiplier of the system-bus clock speed to be altered.

This has come about because Intel has apparently perfected its chip fabrication techniques and yields to the point where most of the CPUs it produces are capable of running at the fastest clock speeds.

Previously, although a processor may have been available in a variety of clock speeds, Intel only ever had one production line for a particular processor, producing ostensibly identical items. But the production process was not perfect and did not yield perfect processors all capable of running at the fastest clock speed. So, the speeds of a particular processor were graded according to imperfections. The poorest were sold as the slowest, and the best ones as the fastest.

It seems that Intel is now only making 233MHz Pentium and 333MHz Pentium II CPUs. However, demand is still strong for slower CPUs: 166MHz Pentium, and 233 and 266MHz Pentium II.

Undersold and overclocked

The upshot of this is that if all or most of the CPUs Intel makes are now capable of running at full whack, then CPUs destined for slower PCs will have to be labelled with a slower clock speed even though they are

capable of running faster. So for example, a current 266MHz Pentium II may in fact be a pukka 333MHz Pentium II. Of course, these "undersold" CPUs are perfect candidates for overclocking, the practice of which Intel (not surprisingly)

views in a dim light, hence its move to prevent overclocking of these processors.

The bottom line is that current 166 and 200MHz Pentium MMX and 233 and 266MHz Pentium II CPUs can no longer be overclocked via higher multiplier settings. This is not new: certain 133MHz Pentium CPUs, labelled SY022, had their clock multiplication function disabled and the processor would only recognise a multiplier setting of x2.

Bonding banished

How is this done? By not "bonding" one of the multiplier pins. Previously, with lower more unpredictable yields of high-end processors, it was impossible to be sufficiently confident to disable the multiplying option. This is because you can only test a processor after the package has been bonded, by which time it's too late to change anything.

Note that this restriction only precludes overclocking via the speed multiplier option. Don't forget that the multiplier only multiplies the bus speed, which is assumed



Cut-down casing and cut-down power: Intel's budget Celeron

to be 66MHz. If your motherboard supports it, you can increase the bus speed to 75 or, at a pinch, 83MHz. So, you can still run a 266MHz Pentium II at 300MHz. The 4.5x multiplier will be disabled but 4x 75MHz is still available. Note that 83MHz is only rarely available as a viable option because so much hardware is unstable at this speed, particularly RAM and AGP cards which prefer to run at 66MHz.

Not the full monty?

There has been some speculation that the Pentium II is not a complete chip "package" *per se* but one that sits on a circuit board inside the cartridge. This suggests that it may be possible to open the cartridge and hack the circuit board to re-enable clock multiplying. But it seems far-fetched to me.

Intel may have taken this step but as yet rivals Cyrix and AMD have not, so overclocking via the clock multiplier is still an option with these processors. The 6x86MX is less suitable for overclocking because Cyrix seems to be less conservative than Intel: its CPUs have less "headroom" and so

are a bit unpredictable when overclocked. The AMD K6 is a much better choice for overclocking, either via the bus multiplier and/or the bus speed.

Overclocking the Celeron

OK, that was the bad news. But there's some interesting good news on the Celeron front. I have written more on the Celeron in this issue (see the PC group test, p160) but to briefly cover it, this is a less than star-struck version of the Pentium II; essentially the same as a Pentium II but without the L2 cache. As a result, the Celeron runs more slowly than other Pentium IIs but its low price is supposed to compensate for this.

It now emerges that it's possible to run the Celeron (and older Pentium II) processors not just at 66MHz "front side bus" on a 440BX motherboard but at 100MHz FSB. At present, only 350 and 400MHz Pentium II processors run at full speed on a 440BX motherboard: if you plug an older Pentium II CPU in (a 233MHz version, say) the FSB will drop to 66MHz. But with a simple alteration it's possible to make your Celeron or Pentium II 333 run at 350 or 400MHz in a 440BX motherboard.

Normally, the appropriate FSB speed is detected and set automatically — in the Celeron's case it would drop from 100MHz to 66MHz in a BX motherboard. However, it is possible to override this auto-detection and make it run at the higher FSB speed. This revelation comes from that font of all hardware knowledge on the web, Tom's Hardware Guide, which has the low-down

on this fascinating hack (see "PCW Contacts", below).

Auto-detection is achieved by the chipset checking the logical state of CPU pin B21. If B21 is logically "high", the 100MHz bus is chosen; if it's logically "low", the motherboard chooses 66MHz FSB. All that is required to set a logical "high" is to disconnect B21 which is one of the narrow contacts on the Slot 1 edge connector on the processor. It is not actually a pin, it is more like a contact.

How do you locate the elusive B21 connector among the zillions that adorn the Slot 1 edge connector? The contacts are just about labelled: on the Celeron they're labelled "B1" and "B121" on the solder side of the card, while on the Pentium II it's the side with the hologram logo. Either way you need to have the processor with the longer row of contacts to the right of the polarising notch, with the contacts pointing downwards. Starting from the right side of the cartridge, count along to the 11th of the lower row of contacts. This is B21.

Cover-up

The next job is to cover it up in some way to insulate it from the matching contact in the Slot 1. Things are made a little easier by the fact that B21 is on the lowest row of



The traditional Pentium II with its familiar Slot 1, and toast-rack heat sink

contacts. There are several ways to do this: you could cut the track (not recommended, as it's not easily reversible and a bit risky) or you could cover it up in some way, perhaps with varnish or tape. Some people have recommended using audio splicing tape because it doesn't "weep" adhesive, but you can experiment. Tape or varnish are preferable because they are non-destructive and reversible.

Because the Celeron isn't encased in a cartridge, getting at B21 is easier than with a Pentium II, which *is* encased in a cartridge. Make sure that all you cover up is B21, and that the covering doesn't get scraped off when you insert the cartridge into the Slot 1.

Don't forget to turn down the multiplier a notch or two: a 266MHz Pentium II CPU will be using a 4x 66MHz multiplier and at 4x 100MHz (i.e. 400MHz) it might be a little too much. A good starting point for experimentation might be 3.5x. And that's pretty much it. Your Celeron or Pentium II should now be running at 100MHz FSB.

A word of warning

The usual caveats apply. You'll probably invalidate your warranty if you do this and you'll get no tech support for this from your vendor. You'll be on your own. Unless you know what you're doing, don't even dream of attempting this stunt. If you do, don't forget to watch the cooling of the CPU: when it runs faster, it runs hotter and so will probably need fan cooling.

Finally, note that this trick is confined to those motherboards with the 440BX chipset and doesn't apply to 66MHz 440LX motherboards.

Ultra DMA drivers

Reader Keith Latherton emailed me with a UDMA driver query: "I read an article recently suggesting that in order to use the UltraDMA capabilities of a hard disk it is necessary to install drivers obtainable from the Intel web site. Until I read this, I had assumed that everything was handled automatically if you had a drive and motherboard that supported this feature.

"I have a 6.4Gb Quantum Fireball and an Asus TX97 motherboard, both of which support UltraDMA, and am running Windows 95. Is there anything special I need to do in order to use it, or is it all automatic? How do I know it is being used? I have visited the Intel site but couldn't find any reference to UltraDMA drivers."

The facts you read are quite true; you do need special device drivers to make full use of UDMA. Windows 95, even OSR2, doesn't ship with drivers for the Intel 430TX chipset, the first to support UDMA. As a result Windows 95, which should automatically detect such hardware and install the appropriate drivers, has no 430TX drivers and so installs the plain vanilla "Standard" hard-disk controller drivers. You should, in all cases, try to use specific drivers for your hardware in preference to generic drivers. Your Asus TX-97 motherboard should have come with a CD-ROM that has the TX drivers and you should install these. Alternatively, revisit the Intel web site and this time look for and download a file called SETUPEX.EXE; this has the drivers you require.

You can check what drivers are in use by opening Control Panel and clicking on the System icon. Open the Device Manager and select the properties for "Hard disk controllers". Here, it will list the drivers currently in use: what you want to see is "Intel 82371AB Bus Master IDE Controllers". Lots of juicy techie facts about UDMA can be found at this URL, plus the drivers: <http://developer.intel.com/design/pcisets/busmastr/bmfaq.htm>

PCW Contacts

Roger Gann can be contacted via the PCW editorial office (address, p10) or via email at hardware@pcw.co.uk. Tom's Hardware Guide www.tomshardware.com/Celeron100.html



M people make their Points

Game, set and Match-Point: Steven Helstrip winds up his series on VST with a look at how you can use M-Points to make a groove template. Another advanced feature is automation.

Concluding our series on VST, we're going to tackle some of the more advanced audio features starting with Match-, or M-Points. We'll also take a look at a low-cost DirectX plug-in suite from Waves.

Into the groove

M-Points are markers within an audio file that map its rhythmic content by identifying where each beat occurs. With this information it is possible to quantise MIDI parts with the same feel and generate a groove template.

- To extract M-Points, first select a rhythmic

pattern such as a drum or guitar loop and open the audio editor by double-clicking on the part. Ensure Dynamic Events is enabled in the View pop-up menu and select Get M-Points from the Do menu.

- To create a groove template, select Match Audio and Tempo from the Do menu, which will open the Graphic Master Track. Then select M-Points to Groove from the Audio menu, and the template will appear under Groove Quantise in the

Functions menu.

- In the Arrange window, you can use the >

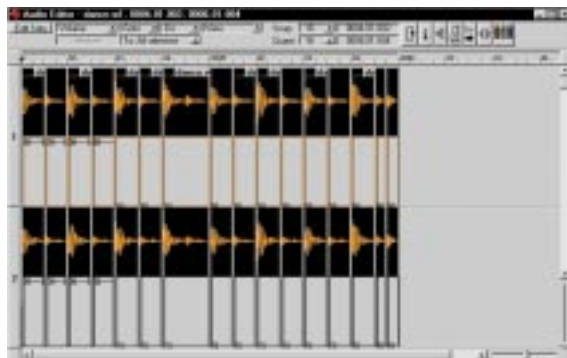


Fig 1 Chopping the loop into segments

Sound developments: Yamaha SW1000XG card

Yamaha has always been streets ahead in the sound-card market and although products don't come too often, they tend to stay forever.

Nearly four years on from its release, the DB50XG is still the best WaveTable synth you can fit in a PC. But it won't be number one for much longer, because there's a new card in the pipeline that will once again take PC audio to a new level. Get ready for the SW1000XG.

With a 20Mb, 32-channel XG synth you

would think Yamaha had gone slightly too far this time, but the list of features goes on. The card provides 12 channels for direct-to-disc recording, with EQ and effect inserts, seven real-time effects buses for all audio sources, a digital output and further expansion options with additional plug-in boards. But there's no mention of a sampler. Doh!

The synth is 64-voice polyphonic and has a staggering 1,267 instruments and 46

drumkits. On-board effects include 69 reverb and chorus settings and a five-band multi EQ. Since the effects are in hardware and situated on the PCI bus, there's very little CPU

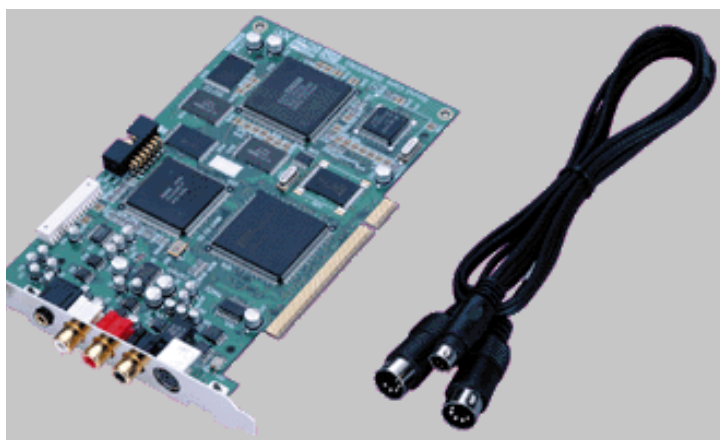
overhead, leaving room for DirectX software plug-ins to work alongside. All effect parameters and routing can be configured over MIDI.

As I write, there are currently three plug-in boards in development, including a vocal harmoniser and two synths: the VL-70M and the classic DX7. The harmoniser can take an analogue input from the microphone connector or be used as an effect from audio software, such as VST or Cakewalk.

There are four types of effect on offer, including a vocoder, and harmony progressions can be played in from a MIDI track. The VL-70M card is a monophonic, physical modelling tone generator providing an extra 256 acoustic and electronic instruments with room to store 64 user presets.

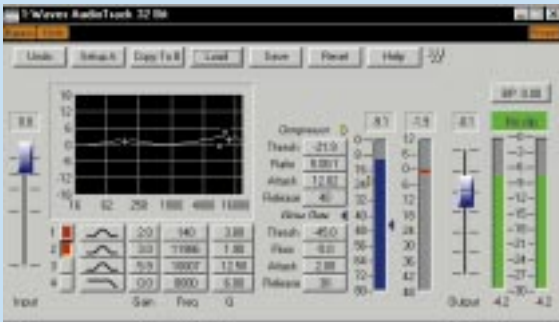
The SW1000XG certainly looks impressive on paper and will no doubt be just as good when it's released in September. Shame about the sampler, though. As yet, there's no fixed price but expect it to be around the £500 mark.

■ Contact Yamaha 01908 366700
www.yamaha.co.uk



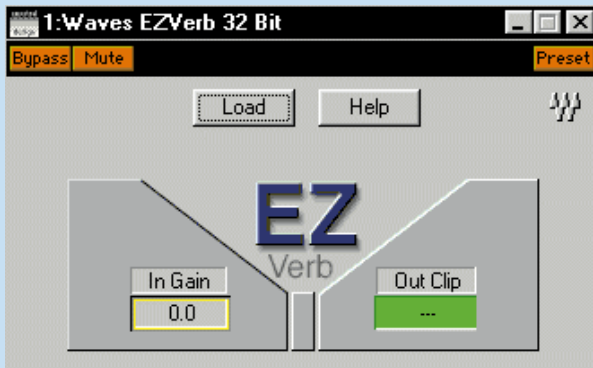


Sound judgement: EasyWaves



Left Waves AudioTrack is three effects in one. It may be budget priced, but it's big on features

Below Not much to see here, I'm afraid, but there are 22 reverbs in there somewhere



EasyWaves comprises two DirectX plug-ins, EZVerb and AudioTrack, for use with DTD applications. You get Mac and PC versions on the same CD, along with demos for the entire Waves plug-in range.

EZVerb is a preset-only reverb processor based on 22 effects from the highly acclaimed TrueVerb package. Despite the lack of "tweakability" there are some really useful effects in here, from sparkling vocal plates to drenched cathedral ambiances.

Reverb for every occasion

The only parameter at your disposal is input gain, but there's a reverb to suit every occasion and, above all, it's easy to use. The quality of effects is roughly on a par with a £150 dedicated hardware unit such as the Alesis Microverb, but you'll need upwards of a 166MHz PC for glitch-less real-time playback.

The cream of this package is AudioTrack which provides an EQ, compressor/expander and noise gate in one module. The EQ section provides four independent bands with selectable hi/low shelf and bell shape filters with adjustable Q. Bands one and four can also be configured as hi- and low-pass filters.

Although this is a highly subjective area, I much prefer the sound of AudioTrack's EQ to VST's own and it's much easier to use. You can drag the handles on the equaliser graph to home in

on frequencies, enabling you to work as you hear it rather than just punch in numbers.

The compressor/expander comes next in the chain and provides threshold, ratio, attack and release parameters. The level input meter is shared with the gate and two sliders enable you to visually set the threshold for both. There are no particularly special features in this department, but they do their job well and with very little processor overhead.

Perhaps the greatest advantage of plug-in modules of this kind is that they can be used on multiple channels with different settings. In a "real" studio situation you need to pay out for a compressor and gate for each audio channel, which starts to get expensive.

Highly recommended

If you only ever buy one plug-in module, I recommend EasyWaves. You get stacks of high-quality components for the price of just one noise gate. The EQ and reverbs are a valuable asset, and every studio needs a compressor at some stage.

PCW Details

EasyWaves
Price £125 (inc VAT)
Contact SCV London 0171 923 1892
www.scvlondon.co.uk
★★★★☆

Q&A: recording gate patterns in Cubase

Q I have heard it is possible to record MIDI gate patterns in Cubase by playing-in a rhythm from a MIDI keyboard. I've trawled through Logical edit but cannot find a process to do this. Am I just looking in the wrong place, or have I missed something?



Left and below
Here's how to configure Cubase's Input Transformer to record MIDI gate rhythms from a keyboard

Neil Simmonds

A It is possible to record gate patterns in this way, but it depends to some extent on the keyboard you're using. It's easy enough to convert Note On information to main volume (CC7) but the problem is turning the gate off again. Some keyboards don't actually send a Note Off command when a key is released but instead send a note on with a velocity of 0, which is effectively the same thing.

Although Logical edit would naturally be the first port of call, it cannot deal with Note Off information. However, using the Input Transformer you can set up two routines to first convert velocities > 1 to CC7:127 (Gate Open) and Note Off, or velocities < 1, to CC7:0 (Gate Closed). You can then record directly to the track you want to gate. The screenshots above show the settings you need.



Coming soon — ReBirth 2.0

With the imminent release of ReBirth 2.0 there will be a direct link to Cubase, enabling individual instruments (kick, snare) to be routed to VST mixer channels. But you won't just be able to automate panning, EQ and levels, you will also be able to use VST and DirectX effects: nice touch of reverb on that snare, sir...? But perhaps better than that, the TR-909 drum machine has been added with full emulation of decay and tone settings, etc. There's also a built-in compressor and a shuffle option for each of the four components.



ReBirth gets a real 909 kit. Well, virtually...

Match Quantise tool to apply the feel of an audio part to a MIDI part. Once the M-Points are established, simply pick up the audio part and drop it on the MIDI part. If you want to quantise the other way round, the loop has first to be chopped-up into individual hits, or segments.

- In the Audio Editor, select Snip at M-Points from the Do menu and the chopping is done for you. From here you can quantise the part in any way you wish. If it all goes wrong, at least you'll have the original template stored in the Functions menu.
- With the loop chopped into segments

(Fig 1, p276) it is also possible to "recycle" the constituent parts to come up with new grooves and patterns. In the audio editor simply drag the parts into any order you wish. When you have something you like, select all the parts and choose Group from the Do menu. This will enable you to copy and position the parts as a whole.

Automation in VST

Most audio parameters can be automated in VST but perhaps the most frequent are volume and pan. To accomplish smooth transitions these are best programmed in

the Audio editor with Dynamic Events.

- First, select either volume or pan to be displayed below the waveform.
- Then, with the Alt key, use the pencil tool to insert gradient points. If Q and M-Points get in the way, they can be hidden by deselecting Handles from the View menu.

Copied segments will inherit the same dynamic events but this may not always be appropriate, in which case automation of levels (including EQ and effects settings) can be recorded in real-time using the on-screen faders.

- To do this, open the Mixer window and click on the Write button. When this button is lit, all movements are recorded to a special mixer track.

- To play back the automation, deselect Write and click on Read. If you make a mistake, Ctrl Z will undo the last run and you can try again.

Sudden movements

All movements are recorded to the mixer track even when Cubase isn't playing, so don't forget to disable Write after a take.

This can be used to your advantage, though, since you can set up mixer states, or snapshots, to create sudden dynamic changes on one or several channels.

- To edit fader movements, select the mixer track in the arrange window and open the List editor. You can use Mask Event to view just one controller type and use the pencil tool to edit values. Events can also be deleted in the normal way.

It's a shame there isn't a dedicated editor for automation tracks since the List editor is a tad clumsy and you can't use the line tool. Inserting a string of events is also a real drag.

- Back in the arrange windows, the mixer track can be cut up and copied around just like standard MIDI tracks. If you have a complex mix on the boil, it's a good idea to make a safe copy of this, as editing out a handful of unintended controllers can set you back some time.

So there you are. I feel slightly disappointed that there isn't a new release of VST to finish off our series, but I do have news of what's to come — see the boxout on ReBirth 2.0 [this page].

PCW Contacts

Steven Helstrip can be contacted at the usual PCW address (p10) or via email at sound@pcw.co.uk



With **compliments**

Now that the cost of colour inkjet printers is falling, you can afford to print your own business stationery: letterheads, cards, comp slips... Ken McMahon advises on how to go about it.

Business stationery is expensive, but it is money well spent. Your headed notepaper, compliment slips and business cards are often the first chance you get to project an image of your company or services to a client, whether you're an individual working on a freelance basis, a small business with a few staff and a single premises, or a global corporation.

These days, you can create the right impression without spending a fortune. Time was when four-colour logos and business stationery were out of the reach of all but the wealthiest.

But with the price of A4 colour inkjet printers tumbling, you can buy a printer, graphics software and a pack of good-quality paper for less than it costs to have your business stationery commercially printed, which is the way I used to do it. We designed it ourselves and supplied two-colour (all we could afford) separated film to the printers. Even so, the total cost of 1,000 A4 letterheads, 1,500 compliment slips and 500 business cards for two named individuals didn't leave much change from £500.

Two into four does go

Now we do it all ourselves. Firstly, we forgot about restricting ourselves to just two colours because there's no need. We bought an Epson Stylus Color 500 inkjet printer for less than £200 last December (they are now even cheaper). At the time of writing, Hewlett-Packard, Canon, Lexmark and Epson all offer budget colour inkjets at around the £100 mark.

Next, we redesigned our company logo in four colours. We designed a new range of business stationery around the new logo, and printed letterheads and compliment slips on 100gsm Conqueror hi-white laid

Adobe Photoshop Classroom in a book

■ ISBN 1-56830-317-3

Price £41.50

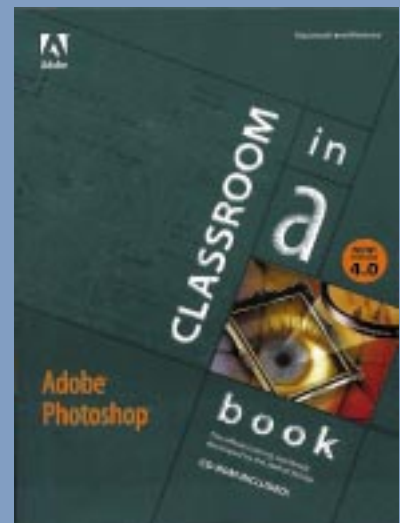
Contact Adobe Press

www.adobe.com/adobepress

There are many good reasons to buy books on how to get the most out of Photoshop. As applications go, it's about as versatile as they get, and the manual can take you only so far. Classroom in a Book is designed to complement the program's documentation by presenting a series of lessons and projects aimed at familiarising you with tools and techniques, as well as explaining many of the concepts central to digital imaging. This version of the book is current for Photoshop version 4 and no doubt it will soon be revised to include the new features in version 5.

There are 13 lessons and four projects, interspersed at intervals to allow you to practise the techniques you have learnt in the preceding lessons, which include the Photoshop work area, Image Basics, colour calibration, Selections, Mask and Channels, Advanced Layer Techniques and Special Effects. Projects include creating a CD cover, creating special effects, and photo retouching. Files for all of the lessons and projects are included on the accompanying CD.

I would not recommend Classroom in a Book to anyone who has already worked their way through the user guide — anyone who's got that far will probably find it a bit basic. Nevertheless, if you're about to start, or have become bewildered at an early stage, this would be a good book to have



Fully booked: Photoshop 4 Classroom in hardcopy. Not for experts or old hands, but a good adjunct to the user manual

around. It reinforces the material in the user manual, and the lesson-and-tutorial structure, with reviews at the end of each chapter, make a more interesting way to learn.

If you're just finding your Photoshop legs, Classroom in a Book would be an ideal way to firm up your knowledge and digital image-editing skills. If you feel confident and want to step up a gear, there are numerous Photoshop bible-type books full of hints, tips and techniques for power users that might be more to your liking.

business paper, which you can get from any good paper merchant or office supplies company. It costs around £17 for 500 A4 sheets. Cards are a bit more of a problem. There is a limit to the thickness of what you can get through most inkjet

printers, and the Epson Stylus Color 500, being no exception, draws the line at about 170gsm. So, you either have to make do with flimsy cards, or go down the commercial route for a heavier-quality card. **Simply striking speaks volumes**

p280 >



Left This is a series of logo designs we did for a local radio award: all different, but the radio theme comes across in each. The client chose the middle one on the left

Below Do your comp slips three-up on A4

business stationery, you might want it to appear on a web site, in advertisements, on packaging or on vans, buildings and uniforms. Here, you won't be able to rely on your inkjet, so you'll need to consider the cost of commercial production.

An eye-catching position

Once you've got your logo sorted, it's time to think about how it's going to appear on your stationery. Your graphics package may give you any number of layouts for business stationery, but in my experience there are two options that always look good. The first is to centre the logo at the top, and the address and other company details at the bottom.

The alternative is to range everything down the right-hand side. Which works best will depend on the logo itself and the amount of copy you have.

For compliment slips, simply arrange the letterhead information into one third the depth of your letterhead. An A4 sheet is 297mm deep by 210mm wide, so compliment slips are 210 x 99mm. Copy everything and paste it twice so you get three up on one A4 sheet. After printing, trim them out with a scalpel or a guillotine.

In business, your card is your image

For business cards, as with most design, the object is to present a lot of information in as clear and readable a fashion as possible.

There's a lot more to get on business cards these days than there used to be. In addition to company address and telephone details there are also mobile phone numbers, email and web site details.

You have two options with cards, portrait and landscape. Whichever you choose, the important thing to remember is to separate the information with space. Break it up and make the name and title, telephone numbers and other information separate and distinct blocks.

Here, there, everywhere

With cheap, in-house colour printing facilities you can extend your company image to every aspect of your stationery: simply printing your logo on all of your envelopes does a lot for your image.

Use a black-and-white version on fax header sheets and any other forms you need to produce. We use ours on estimate sheets, timesheets, parcel labels, bureau output request forms, and even T-shirts!

Where do you begin with the design? Well, if you don't have a corporate logo, you need to start there. Needless to say, you could write books about logo design, and it's far too big a subject to cover here. So let's just say this: try and keep it as simple as possible. Logos that work usually express a simple concept in a strikingly visual way.

You'll also need to consider how your logo will reproduce on a limited-resolution inkjet printer, but here you can rely on trial and error. Our Pelican Graphics logo [see opposite page], admittedly to our surprise, produces a rather nice pastel crayon effect when printed on the Epson.

In fact, it looks better in standard 360dpi mode than in high-quality 720dpi mode. Because the Epson is not a PostScript printer, it doesn't handle text that well, so we use it just to preprint the logo on every sheet, then suppress it (if your DTP package won't suppress items, just delete



them) and then run everything through our 600dpi laser printer for crisp, black text.

You'll also need to consider where your logo is going to be used. As well as on

Questions & Answers

Q I have an annoying problem which occurs on the few occasions that I use CorelDraw in "DTP mode".

I can draw text frames fine. I tend to draw them and leave them empty first, so that I can copy the layout for additional pages. But then, when I try to link them, the damned things are invisible and I have to guess where the frame I want to link to might be on the page.

Surely I can't be the only one to find this a tricky exercise? Am I doing something stupid? Having wasted considerable time and money trawling the web and newsgroups for a solution,

I decided to throw the problem at you!
Andrew South

A As the CorelDraw 7 manual helpfully points out: "Keep in mind that a frame is invisible when it isn't selected and it contains no text".

Why not link the paragraph text frames as you draw them? Then you'd only have to locate the first one: the linking arrows would show you the position of the other text frames on the same page.

Alternatively, you could create a separate layer for your text frames and use Select All from the Edit menu (or double-click the pick tool) to find out where they are.

Readers write about local printing and 4-sight

■ Get a Print.quote

Thanks to JJ@softrax for pointing me in the direction of www.print.quote.co.uk. This is a free online service which, as you'd guess from the URL, provides quotes from a local printer. You just click on a map of the UK to indicate your local area, fill in a form, and you receive (it claims) quotes from your selected printers within 24 hours. There are 12 sheet-fed litho printers from which to choose in the London area. I haven't used the service myself yet, but the next print job I do will get the print.quote treatment as well as my usual three phone calls. I'll let you know how I get on.



■ 4-sight in hindsight

In the May issue I said that 4-sight didn't have a PC ISDN card. Mr A Lake knows differently: "Actually, they have had one for some time and I use this at work to transfer graphics files to agencies that run Mac and PC systems."

It's a shame 4-sight doesn't have the extensive knowledge of its product line-up that Mr Lake does, because they told me they didn't do one and had no plans to! The company could always find out about it by visiting its own web site at www.4-sight.com.

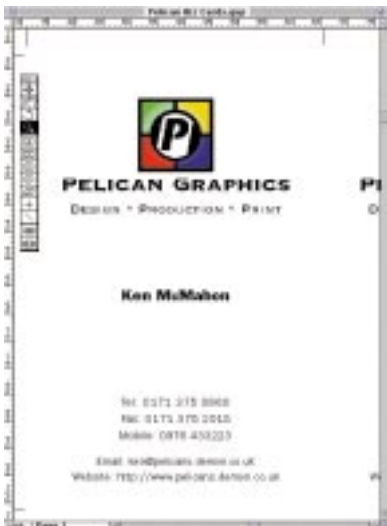
PC output bureaux

The PC bureaux are now coming in thick and fast. Here's the latest batch to add to the Corel list which we published in the June issue. I'll keep track of these, and when there are a reasonable number of new additions we'll publish an update. Thanks to everyone who sent in details, even if you were just plugging your own business!

The Electronic Imaging Co	Buckingham 01280 812197 (fax 01280 815633)
Design Type	Cheltenham 01242 221608 (fax 01242 226604)
Visual Data-Graphics	Edinburgh 0131 445 7909
Cordfall	Glasgow 0141 332 4640
Graphic Media	Glasgow 0141 226 4480
Castle Bureau	London 0171 436 3339 (fax 0171 436 1627)
Colour Bytes	London 0171 580 4271 (fax 0171 580 8162)
Imagefile	Nottingham 0115 9784505
Exeit*	Nottingham 0115 945 2525
Claughton Press	Preston 01772 335928 (fax 01772 316012)
	www.claughton-press.co.uk

*Exeit is Peter Gill's local bureau and he obviously recommends it, although he laments the general lack of support for PC-based designers. His solution is to use a Mac-based bureau, outputting PostScript files directly from the application (in his case PageMaker) and copied onto Mac-formatted removable media. Peter uses MacOpener to mount the Mac-formatted disks (he's tried it successfully with Syquest, optical and zip cartridges).

Our expanding bureau list is hopefully proof that PC users won't have to resort to this kind of thing for much longer. In the meantime, this strikes me as an excellent workaround.



PELICAN GRAPHICS

Above The Epson Stylus Color 500 gives our logo a terrific hand-coloured look

Left With cards, try and keep the information in separate, distinct blocks, and keep the type small (10pt maximum)

PCW Details

Ken McMahon can be contacted by post c/o the PCW editorial office (address, p10) or via email at graphics@pcw.co.uk.



The reel world

So you want to be a games designer? What are the prospects? Benjamin Woolley outlines the skills you need to succeed: one of the keys to employment is having a good show-reel.

During the past few months I have been looking at the use of 3D graphics in games. I will round things off with a brief look at employment prospects for budding game designers. It is, by all accounts, a good career for which to aim. It is creative, challenging and well paid. As an artist, you have a hand in key aspects of game design, and if you prove yourself to be imaginative as well as skilful with the tools, prospects for advancement are good.

There are a few concerns, though. Creativity, for example, is only welcome when it is deployed within the very tight limits of the game genre. For every graphics-rich mould-breaker like *Myst*, *SimCity* or *Theme Park*, there are a thousand virtually identical arcade-style console games. These are the ones that get published, and that 3D artists are employed to create. Also, you will have to work as part of a team; one that relies on close co-operation between programmers and artists. Being a precious *auteur* will not endear you to your colleagues, and still less to your bosses.

Demand, domination and developers

The games industry is dominated by big publishing firms supplied by a cottage industry of developers. It is the latter which need 3D artists, and they will be likely to need more. With the current and next generation of consoles and PCs having the power to handle 3D graphics, and their growing use in games as a substitute for 2D sprites and bitmaps, it seems certain that demand for these types of skills will grow.

Beyond Reality (www.beyond-reality.com) is a typical example of a smaller games development firm. It has created games for the Sony PlayStation and PC

market (for instance, *League of Pain*) and has used both staff and freelance artists.

The company's Andrew Bond kindly gave me a hint, via email, of the sorts of things that a games developer expects of prospective 3D artists.

Show and tell

The message is simple: they are not interested in qualifications so much as evidence of artistic ability, which is nearly always supplied in the form of a portfolio of work or a show-reel. Come up with something that looks professional and imaginative, and even if you have no track record, you could be in with a chance.

So what should your show reel contain? It depends on the job being applied for, according to Andrew. "If it's an animator, we would expect to see some very fluid animation and nice camera work. A modeller should be able to demonstrate his or her modelling skills in producing models of varying complexities. The same model shown in different polygon counts is a good demonstration of this. For games work, we would also like to see that the person has the ability to texture the models to a high standard as well as create them."

For a slightly more scientific assessment

of what you need to include in a show-reel, I turned to *Inside 3D Studio MAX*, published by Prentice Hall. This is an expensive and hefty work, costing over £150 for three volumes. It does nevertheless provide the basis for developing a professional-grade understanding of MAX, and a CD that has some useful tips on compiling a show-reel.

The reel nitty-gritty

Ralph Frantz, one of the book's authors (there is a team of nearly 30), conducted a survey of various industry people (unfortunately, he does not say who or how many) in which he asked them to rate the importance of the content of a show-reel on a scale from one to five, with five being the most important. He listed eight criteria that were judged and, in order of importance, this is how they came out (the ratings are shown in brackets):

- | | | |
|----|---|-------|
| 1. | Attention to detail | (5) |
| 1. | Colour and lighting | (5) |
| 2. | Modelling skills | (4.5) |
| 2. | Animation skills | (4.5) |
| 3. | Character work | (4) |
| 4. | Special Effects | (3) |
| 5. | Content geared towards a particular field | (2.5) |
| 6. | Production value | (2) |

Preparing your portfolio: time, money, and a good PC

Putting together a body of work from scratch that meets all these criteria is not easy. It requires the investment of a great deal of time and, inevitably, money. You need a pretty powerful PC to run most 3D packages, as well as access to the 3D packages themselves.

A new, or even secondhand, copy of LightWave or 3D Studio MAX, the two cheapest packages in widespread professional use, will set you back hundreds of pounds — perhaps a couple of thousand for MAX release 2.

Nevertheless, such an investment could pay off handsomely, not only in monetary terms but also in job satisfaction. As anyone who has ever rendered a scene will know, nothing can quite beat that sense of satisfaction that comes in creating a thing of beauty out of a tangle of wireframe models and a few old bitmaps.

3D Studio MAX Release 2: the highlights

Autodesk (and Kinetix, the division responsible for multimedia tools) is almost as good as Microsoft at squeezing more money out of its user base by producing new releases of its software. The company has continued the tradition with MAX, now claimed to be the most popular professional 3D package in the world, with the launch of Release 2, which was first announced last year, barely two years after Release 1.

Inevitably, Autodesk claims there are hundreds of additions and enhancements, and there is no space (nor need) to list even a fraction of them here.

The highlights are: raytrace material; NURBS modelling, which is good for creating complex curvy shapes; "dynamic simulation", which allows you to assign physical qualities to objects, such as weight; "metaparticles", for creating blobby objects using the particle system; an extended range of object primitives, including, for example, animation-ready windows and doors; and numerous detailed improvements to the interface.

The overall result is a package that offers enough tools for any 3D artist to be going on with, and to produce professional-grade results. However, as LightWave devotees will point out, much that has been

added was already available on cheaper packages. Also, LightWave still has the edge in terms of track record, having been used in a large number of TV programmes and films.

That, however, is not really the key to MAX. One of its great benefits is that it is well supported in terms of the documentation that comes with the package (now supplemented by online material), which includes a competent tutorial.

There are several third-party publications such as the *Inside 3D Studio MAX* book, a version of which has already been published for Release 2. There is also a formidable library of plug-ins now available (you can find a list at the Kinetix web site, www.ktx.com), which provide just about every tool you could ever want, though normally at a price running into hundreds of pounds.

Kinetix boasts that the interface has been improved, with the addition of facilities like tooltip-type hints to tell you the name of the object or function of the button at which you are currently pointing.

The interface itself, however, remains cluttered and in some respects quite awkward. I do feel that, as Bryce 3D has shown, there is another, more creative way to design interfaces for generating artwork, and Kinetix has so far failed to find it. Nevertheless, I did find myself able to produce new and interesting models and scenes using the package, and the examples that are supplied with it are, as usual, both inspiring and breathtaking. I doubt I will ever be able to produce anything as good as the image shown here, but I am determined to give it a go.



Example image showing off the capabilities of 3D Studio MAX Release 2, created by Beth Anderson at Arkitek

Frantz also identified three things to avoid:

1. Sloppy work.
2. Bad camera moves.
3. Too many lens flares.

Both lists are a little surprising. You might expect there to have been far more emphasis on *flair* than flares, this being an artistic profession. But the results reflect the fact that this is art applied in a very practical way, and the thing that potential employers need more than anything is evidence that the people they hire will deliver properly-finished goods on time. Perhaps attention to detail is

seen as evidence of the necessary mindset. Sloppy work, no matter how innovative or interesting it may be, could be interpreted as a symptom of sloppy habits in general.

The importance attached to colour and lighting is unexpected, but this probably reflects the fact that so many 3D artists are so dreadful at them. Garish, strobing colours and overlit scenes are recurring features of bad 3D artwork. Quite often, scenes are awash with ambient light, which is ugly, distracting and unflattering, making even the most detailed models appear

plastic and flat. The brilliance of *Luxo Jnr*, the short created by John Lasseter that eventually led to the incomparable *Toy Story*, lay partly in the use of lighting which helped to focus attention on the action and disguise the absence of extraneous details.

PCW Contact

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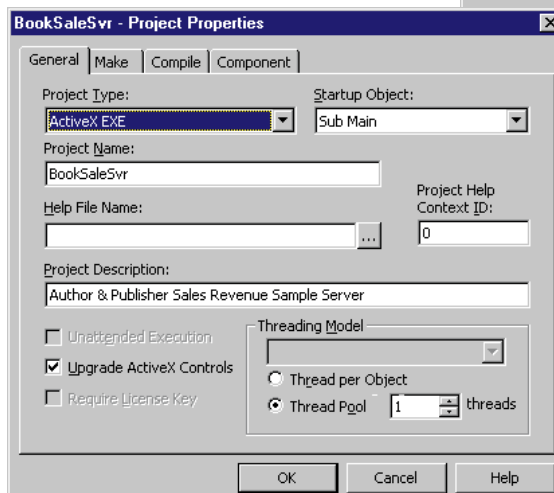


The bare essentials

Are VB objects worth the trouble? *Essential*, says Tim Anderson, who shows how to get to grips with them. He also reviews programming books and answers your Delphi questions.

Visual Basic has been criticised for going its own way in the world of object orientation. Other languages such as C++, Smalltalk, Java and Delphi's Pascal support inheritance, which means you can define a new class of objects which automatically acquires the functionality of an existing class.

Visual Basic, by contrast, offers delegation and interface implementation features that are more work to use and, I suspect, widely ignored or misunderstood by VB developers. It is worth persevering



with VB objects though, because of their integration with COM, Microsoft's Component Object Model. Visual Basic offers the easiest way to create COM objects, opening up exciting possibilities for building applications.

COM fly with me

To illustrate the potential of COM, here is a simple example that strips the process

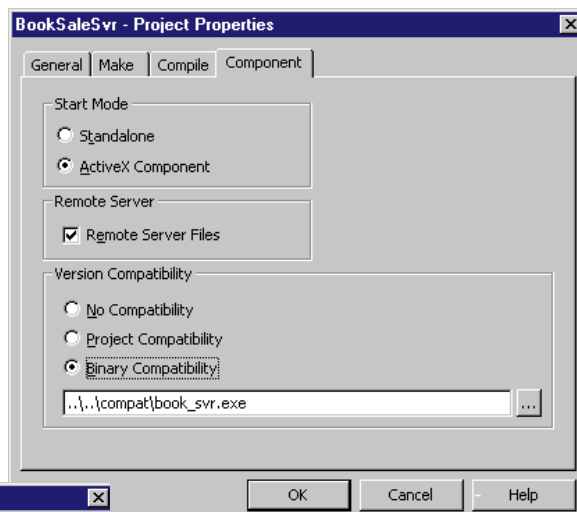


Fig 1 (left) One of the key dialogs for creating VB object servers is this one, found in project properties

Fig 2 (below, left) Threading models are set here, but deciding which to use can be tricky

down to its bare essentials. Using Visual Basic, you can build an ActiveX executable which extracts data from an Access MDB. I created a Customers class to handle data access, and a Customer class to represent a particular customer. Next, I set the start mode to ActiveX component and checked the option to create Remote Server Files, both settings on the Component tab of the project

properties. This generates a .VBR file containing registry entries for DCOM clients.

The next step was to go to another machine on the network with just the .VBR file and run a utility called CLIREG32.EXE. I then wrote a Delphi client application which contained three lines of code: to create a Customers object with CreateOLEObject, call a GetCustomer method to obtain a Customer object, and then display the

surname to show that it worked. The one remaining piece was to run the DCOM configuration utility to set permissions allowing remote clients to access my new server.

All this can be accomplished in a few minutes and the result was that my Windows 95 client was able to read the database on the NT Server. No big deal perhaps but the significant point is that the client application contained no database code. No Borland Database Engine, no JET (the Access engine) and no ODBC. Given the deployment hassles these components typically create, this is a big deal.

Having wrapped this functionality into COM objects, it would be easy to access them from other clients such as Active Server Pages in Internet Information Server. Then the database would be available to any web browser on the intranet or potentially the world wide web.

The devil in the detail

It sounds wonderful, and it is, but there's a catch. Designing distributed applications introduces a host of new and non-trivial issues. For instance, spend some time considering the threading options for an

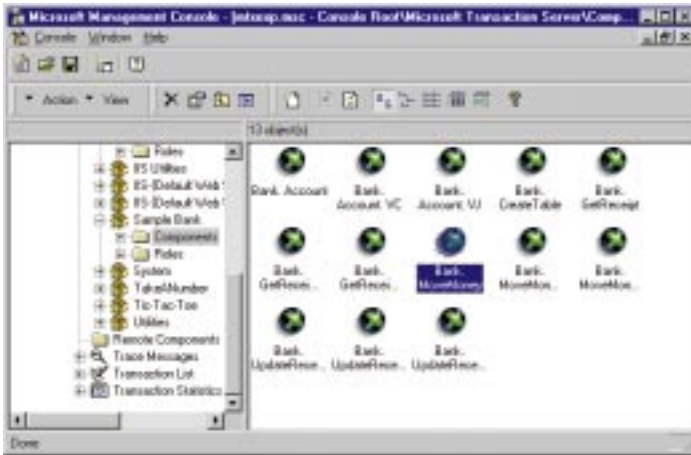


Fig 3 Microsoft Transaction Server is not just for transactions, but is near-essential for managing components for remote use

(Microsoft Transaction Server), but note that this tool introduces

ActiveX executable. Thread per object is the safest choice (although not the default) but may overload the server if too many objects are instantiated.

Thread pool looks an attractive alternative, until you face the problem of your application not knowing whether the object has its own thread and global variables, or is sharing them with another object. This is why the VB documentation emphasises the need for a pool manager; essentially an application for managing objects. Unfortunately, building a pool manager is not particularly easy, as the supplied example demonstrates.

A partial solution is to use MTS

complexities of its own.

One MTS issue concerns state, represented in most objects by properties. MTS can temporarily free an object, even when a client still has a reference to it, later recreating it transparently. If the object stores its own state in properties though, it will not be transparent, as this data will be lost. To get around this you either have to use stateless objects or explore the MTS Shared Property Manager and a new set of limitations.

Another tricky issue concerns network traffic. The more use you make of remote objects, the more network traffic increases and performance suffers. On the other

hand, the more use you make of local objects, the more you lose the benefit of low maintenance and easy deployment. There are many other issues but the point is that this is a long way from the quick-and-easy application building that made VB popular in the first place.

Where now?

If you are not using objects in Visual Basic, you are missing out on its most powerful feature. Most of the enhancements in VB since version 3.0 are to do with objects and ActiveX/COM. In particular, if you want to develop applications for web browsers this is the way to go. There is a lot of learning to do though and sadly most VB resources do not give sufficient guidance.

More resources are beginning to appear and it is critical for the continued success of VB that they do, otherwise developers will inevitably turn to alternatives. VB has lost ground to Delphi for old-style Windows development, probably because Microsoft has invested so much effort in its COM features. For distributed applications, VB competes with Java and technologies like RMI (Remote Method Invocation), Enterprise JavaBeans, and CORBA integration.

The message to VB developers is clear: use objects and learn this stuff, even if you

Beginner's Corner: Using Implements in Visual Basic

Introduced in Visual Basic 5.0, the Implements keyword is a way of creating new classes which borrow the functionality of existing ones.

For example, you might have a CPerson class with properties like Address and Telephone. CEmployee needs all these characteristics and more, so in the declarations section of CEmployee you add:

```
implements CPerson
```

Doing this means the compiler forces you to implement the whole interface of CPerson within CEmployee. Typically, you would do this via delegation, which means declaring a private CPerson object within the CEmployee class. This private object is instantiated with New in the initialize event of CEmployee.

Now you can implement the CPerson interface within CEmployee as follows:

```
Private Property Get
CPerson_Address() As String
CPerson_Address = mPerson.Address
End Property
```

This is all well explained in the *Visual Basic Programmer's Guide*, but a couple of things can still be puzzling. Why are the CPerson-related properties declared as Private, and how do you get at the Address property of an Employee object (for example) without

declaring yet another property?

First, you should definitely not declare a separate Address property for CEmployee. Although it would simulate inheritance, it undermines the purpose of implementation. If you want to get at the address of an Employee object, you do so by treating it as a Person object. In the following example, the emp variable is an object of type CEmployee:

```
Dim per As CPerson
Set per = emp
MsgBox per.Address
```

Notice that the CPerson object can be set to point to a CEmployee object, because it implements the CPerson interface. Then the properties can be accessed easily, so they are not really private at all.

This is particularly useful if you are passing object references as parameters. For example, you might have a WriteTo procedure which looks up the address details and starts a new letter in Word. WriteTo takes a CPerson object as its parameter, but there is no problem with passing it a CEmployee object. For example:

```
Private Sub LetterButton_Click()
Call WriteLetter(emp)
' emp is a CEmployee object
```

```
End Sub
```

```
Sub WriteLetter(per As CPerson)
```

```
...
```

```
End Sub
```

The particular strength of Implements comes when your class implements several other classes. If some employees have company cars, you might have a CCarHolder class. It might even be that both CCarHolder and CPerson have an ID property used for different purposes by the two classes. This is where inheritance is problematic. Many languages do not support multiple inheritance, and if they do, there are dangerous complications over such ambiguous properties.

With implementation, it is no problem. Procedures which deal with CCarHolder objects will find the CCarHolder ID, and those which deal with CPerson will find the CPerson ID, even if both are passed objects of type CEmployee. Doing objects with Visual Basic may be cumbersome at times, but you should not overlook its power.

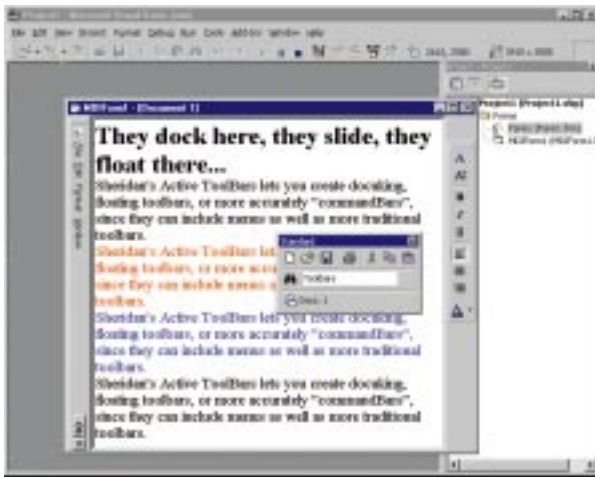


Fig 4 Sheridan's Active Toolbars let your VB toolbars float, dock and stretch

are building single-user applications. Otherwise, you will not find it easy to migrate to the web-connected model which is the way of the future.

Talking about Active Toolbars

Active Toolbars, from Sheridan, is a control which imitates the docking, sliding and floating toolbars found in Office 97. The required OCX control is around 350Kb, not exactly lightweight but acceptable for a Visual Basic application.

The features of the Active Toolbar control are impressive. Drag an SSActiveToolbar to a form, choose Configure, and you can set up one or more toolbars in a similar way to customising the toolbars in Office 97. If you are starting from scratch, you will first create tools, the buttons that will go on the toolbar. You can obtain icon images from supplied samples, draw your own in the integrated icon editor, or steal them from other applications with the Grab option.

Each tool has up to four images, for combinations of Up, Pressed and Disabled. Tools can be combo-boxes, edit boxes, menus or other controls, as well as standard bitmap buttons. Tooltips are also supported.

The only messy aspect is that event procedures are shared between tools so, for instance, there is a ToolClick event with the clicked tool passed as a parameter. You have to sort out which code executes by means of a Select Case block.

This is the sort of functionality that is hard to achieve with pure VB coding and therefore Active Toolbars are a great choice for appropriate applications. There is a caveat, however: Sheridan components do not always work well outside Visual Basic, so try an evaluation version before committing to it for use with, say, Delphi or Visual FoxPro.

Delphi file manipulation

Nigel Metcalfe writes: "I have been coding a Delphi application and have run into a problem. I want to create directories/folders and copy, move and delete files from within them just by selecting a button. The only way I can do it is by calling a .bat file, which drops to DOS, which I don't want to do."

Delphi has had excellent file functions since version 1. The problem is finding them. What you will find is a FileWrite

routine with the helpful comment that it is "an internal function and you will not need to use it". It may also take a while to find the directory-handling functions. They are there: MkDir creates a directory, and RmDir removes a directory.

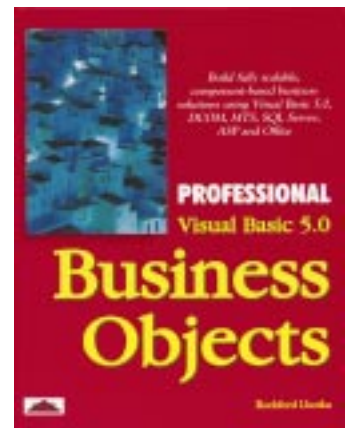
The easy way to copy a file is to find the unit FMXUTILS.PAS which is buried in the Demos\Doc\Filemanex subdirectory in a full setup of any version of Delphi. This has some handy functions, including CopyFile, MoveFile and GetFileSize. If you look at the code for CopyFile, you will see that it uses FileWrite — yes, the function you were told not to use. Another strategy for copying files is to use the API function LZCopy, part of the Windows LZExpand library. The tidiest way is to use TFileStream, which has a CopyFrom method — e.g. Fig 8 copies AUTOEXEC.BAT into a new directory.

Book Reviews

Professional Visual Basic 5.0 Business Objects by Rockford Lhotka

Although bookshop shelves are groaning under the weight of Visual Basic books, not many titles cover VB objects. This is an exception. In around 600 pages, the author explains how to create multi-tier database applications using Visual Basic and COM. Some knowledge of Visual Basic is assumed but the work of programming with objects is tackled from scratch. Subjects include Use Case analysis, implementing objects in VB, integration with Microsoft Office, creating distributed applications with DCOM, using Microsoft Transaction Server and taking your objects to the web with Active Server Pages. The best feature of the book is that plenty of example code is included, so that thorny issues like how to implement data access are not ducked but tackled head-on.

This is a welcome practical study of a neglected but vital topic, but there are weaknesses in the detail. Distributed objects are only dealt with in the last quarter of the book, and there should be more material on DCOM. You will not agree with all the author's suggestions, but he will certainly stimulate your thinking if you are ready to work with objects in Visual Basic.

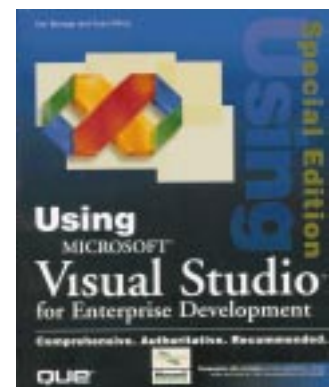


Using Visual Studio by Don Benage and Azam Mirza

Microsoft's Visual Studio is an alarmingly large product, embracing at least five languages and three integrated development environments. An 800-page book covering the whole thing is therefore an ambitious project.

Fortunately, the authors have not attempted to produce a tutorial covering all the products. Instead, this is about how to create distributed applications. The focus is on creating and using COM components, the thread that runs right through the Visual Studio product family. There is particular emphasis on Visual Basic and Visual Interdev but nothing at all on Visual FoxPro. There are good introductory chapters on Active Data Objects, Microsoft Transaction Server, Visual SourceSafe, Visual Modeler and the Microsoft Repository.

This would be an excellent choice for anyone wanting to get to grips with the Microsoft way of distributed applications, as long as you do not also expect a tutorial on traditional Windows development. It matters little, since this is already well covered elsewhere.



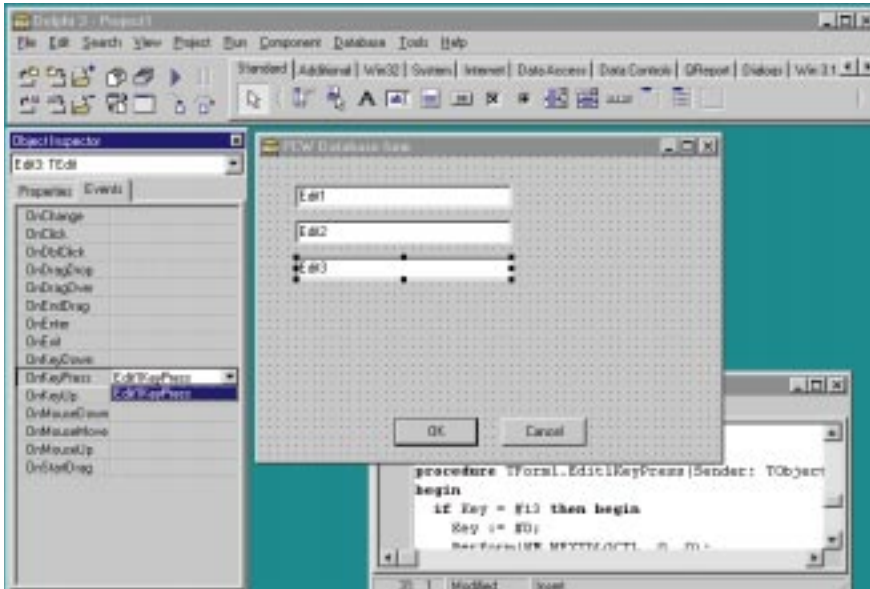


Fig 7 Sharing a keypress procedure between controls is an easy way to get keyboard-friendly dialogs

the null character to the Key parameter, you avoid generating an annoying beep. This only works with the KeyPress event. If you write similar code for KeyDown, you will find that the character is not modified and the beep still occurs.

Accessing DLL functions

Paul Davis asks: "How do you access a routine stored in a DLL? I've tried everything: the example in the help file included with the DLL, and the example in the Delphi help file. What do I get? Something about a field property not being allowed after methods or procedures. I'm

Pressing Enter in dialogs

Jeremy Collins writes: "In the May column, a reader wanted to use the Enter key to move between controls. You suggested writing an OnKeyPress event handler to shift focus to a named control:

```

if Key = chr(13) then Edit2
.SetFocus;

```

"This would require the programmer to write a separate event handler for every control; a nightmare to write and maintain. The event handler [see Fig 9] can be shared by all edit controls."

This is a good suggestion. As Jeremy

Fig 9: The event handler

```

procedure TForm1.Edit1KeyPress(Sender: TObject; var Key: Char);
begin
  if Key = #13 then begin
    Key := #0;
    Perform(WM_NEXTDLGCTL, 0, 0);
  end;
end;

```

says, it lets you share code between controls. Simply drop down the OnKeyPress event for each control and select Edit1KeyPress. Also, by assigning

currently using Delphi 2.0."

It sounds like you have the declaration in the wrong place. You cannot put the external function into the type declaration part. Instead, put it either in the interface or in the implementation part. For example, you could create a new unit for all of your DLL function declarations and add your unit name to the Uses clause in other units as required. A few tips:

1. Include the .DLL extension in the name of the external library. (Required under NT.)
2. Note that the function name is case sensitive. For example:

```

function Beep(Freq: DWORD; Dur:
DWORD): integer; stdcall;
external 'kernel32.dll';

```

3. If you are still getting nowhere, check the calling convention. In 32-bit Windows this is usually, but not always, stdcall.

Fig 8: Using TFileStream

Code to make a directory and copy a file into it. You should add exception handling for live use.

```

procedure
TForm1.Button1Click(Sender: TObject);
var
SourceFS: TFileStream;
TargetFS: TFileStream;
begin
if not directoryExists('C:\SYSBACK') then Mkdir('C:\SYSBACK');
try
SourceFS := TFileStream.create('C:\AUTOEXEC.BA', fmOpenread);
SourceFS.Position := 0;
try
TargetFS :=
TFileStream.create('C:\SYSBACK\AUTOEXEC.BAT', FMOpenWrite or FMCreate);
TargetFS.copyfrom(SourceFS, SourceF.Size);
finally
TargetFS.free;
end;
finally
sourceFS.free;
end;

```

PCW Contacts

Contact Tim Anderson at the usual PCW address (p10) or at visual@pcw.vnu.co.uk

- Active Toolbars is from Contemporary Software (01344 873434), £135.13 (£115 ex VAT). www.contemporary.co.uk or www.shersoft.com.
- Professional Visual Basic 5.0 Objects (Wrox, £45.99). ISBN 1-861000-43-X.
- Using Visual Studio 97 (QUE, £46.49). ISBN 0-7897-1260-1



Suits you, sir

How to achieve perfect connectivity from PDA to office network and back. Bob Walder has at last found a solution which almost fits the bill, and you don't need the special trousers.

Having decided to use Microsoft Exchange Server in-house for all messaging and groupware needs, I decided to go the whole hog and use Outlook 98 as the main email client.

I must digress for a moment here to explain that I have no great liking for Microsoft products in particular, neither do I have any great dislike for them. As with any software on the market today there are a number of features which I love, some which drive me to distraction, and even a few bugs to spice up my mundane daily routine.

Berating Microsoft-bashing

Microsoft comes in for a lot of stick from all quarters. Some of it is justified, but a lot of it is not. The company has its faults, as does its software, but "Microsoft bashing" seems to be in fashion at the moment and I don't believe that all the coverage you see is entirely objective.

Anyhow, whether or not you like the monopolistic hold that Microsoft has on the desktop market, the one thing the company provides is a wide range of software that you can be pretty sure will work together (most of the time). Hence there is a great

deal of logic in a network manager deciding that with NT at the server and Windows 98 at the desktop, a sensible choice would be the equivalent Microsoft messaging products. This should never be the only criteria you use to select software, but when all other things are equal, it cannot harm to go for a one-stop-shop approach, can it?

My own messaging needs are not particularly demanding, either at the server or the client, so Exchange and Outlook fit the bill nicely. All my calendar and contact information resides on the network, allowing colleagues to schedule meetings, check my diary for appointments and make tentative appointments on my behalf.

Connectivity conundrum

The problem comes when I return to the office with my PDA, on which I have made some changes to contact records and entered a few appointments. I need a means whereby I can quickly and easily synchronise my calendar and contact data bi-directionally, so both the network and my PDA reflect the latest state of play.

Regular readers of this column will know of my fondness for the Psion machines with

their excellent keyboards, superb screens and intuitive software. But to this day, what Psion has never got right is the connectivity software, so I eagerly awaited the arrival of PsiWin 2.1 since this promised me, at last, synchronisation with Outlook both for calendar and contacts data.

Unfortunately, it just doesn't work. The documentation is terrible — there are no clear instructions on how to utilise anything other than the default Outlook folders. Even when I gave in and used the default folders, it still did not provide true bi-directional synchronisation.

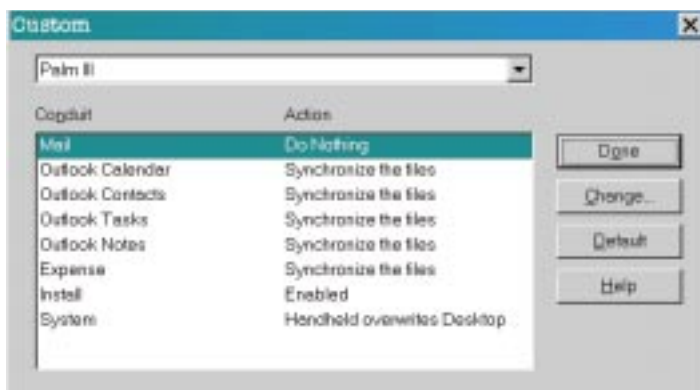
Compare this with Windows CE 2.0, another example of the logic behind selecting a single software vendor. CE 2.0's Active Sync technology looked like providing me with everything I needed. I acquired one of the new Casio Cassiopeia machines, plugged it in and watched as my Outlook data was synchronised: calendar, contacts, tasks, the lot. From then on, any changes I made either to the Cassiopeia or to my PC-based data was instantly synchronised, meaning the machine was always ready to go. Unfortunately, each time I came back, I noticed that the sync operation was too damn slow.

What a carry on! Nurse, the trousers...

I quickly tired of carrying the Cassiopeia around. It is one of the more portable of the new CE 2.0 machines but is still more like a small laptop than a true PDA. In the words of the old Monty Python sketch: "...of course it's pocketable — you just need the special trousers!"

So, a bit of lateral thinking was in order and what I came up with was the new 3Com Palm III, the latest generation of the

p295 >



Palm III HotSync options



Setting Date Book options in Desktop To Go. Note the various synchronisation options

then I cannot do it on the Palm III. I need something with a keyboard. My preference would still be the Psion Series 5, although if I needed my diary information I would

PalmPilot PDA. Of course, it has no keyboard, but after a couple of hours' practise I found that I could write almost as fast on the Palm III as I could with pen on paper, and with 98 percent accuracy.

Perfection to go

The on-board software is adequate (although all PDA vendors should really try to emulate the Psion calendar) and you can add any number of interesting applications that can be downloaded from the web. The piece of magic which made it perfect for me as a PDA, though, was some third-party software called Desktop To Go, from DataViz <www.dataviz.com>.

This integrates completely with the Palm III HotSync utility and fully supports both Outlook 97 and 98. With this, you can choose whether or not to synchronise mail, calendar, contacts, notes and tasks, and you are not restricted to using the default Outlook folders. You can choose in which direction the updates take place, and when you opt for bi-directional, the merging is complete and accurate. If you change different fields on the same contact record in the PC and the Palm III, for instance, the two changed records are merged into a single new one on both devices.

The HotSync ring of confidence

I have never yet managed to upset it and I now have complete confidence in the process. And, this thing is *really* fast. I can press the HotSync button on the Palm III cradle and see almost 800 contacts, 200 diary entries and a hundred-or-so notes. Tasks are completely synchronised in less than a couple of minutes; far quicker than CE 2.0 can manage the same operation.

At the end of the day though, it is still a compromise. If I want to do a lot of writing,

be forced to carry the Palm III as well. Or perhaps I could synchronise with a CE 2.0 machine instead and just carry that?

But if I need cellular communications, my choice is further complicated. I can connect my Nokia 8110 phone to the Palm III, the Psion or the Cassiopeia, but at some cost to both bulk and battery life. No, if I need cellular data and fax I switch to yet another device, the Nokia 9000i. But here again, the synchronisation options are abysmal.

What I want (what I *really, really* want) is something the size and weight of the Palm III with the on-board software of the Psion, the synchronisation capabilities of DataViz and the cellular communications facilities of the Nokia 9000i. I want the backlit mono screen of the Psion 3C, the keyboard of the Psion Series 5 and the whole package should run for days on a couple of penlight alkaline batteries. Is that too much to ask? Answers on a postcard, please.

Which Windows 95 is installed?

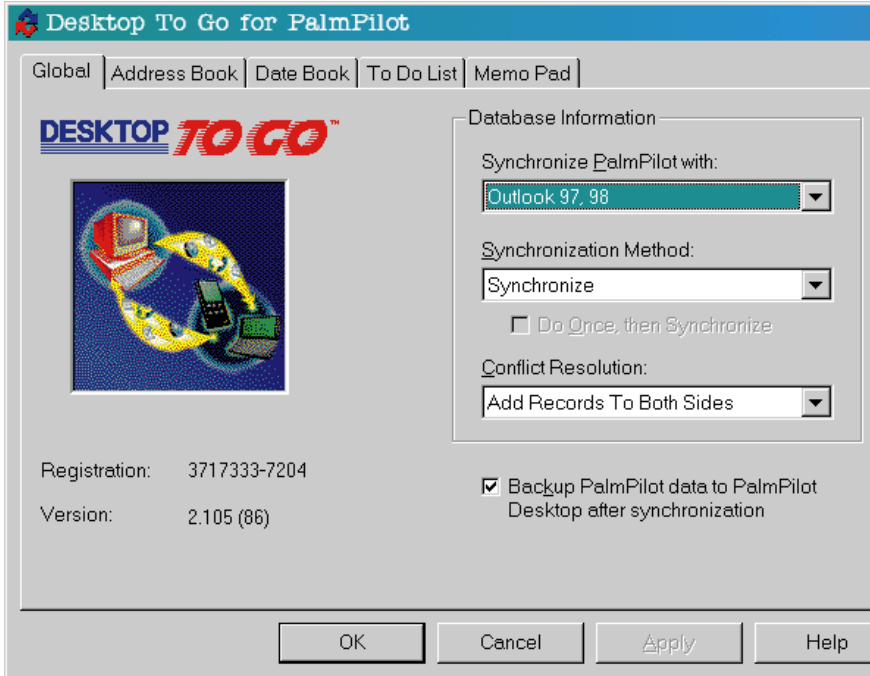
I have received another suggestion about how to determine which version of Windows 95 is installed on your system. This one that came from Roy Venkatesh.

"I missed your question in February's issue of *PCW* regarding the Pan-European version of Windows 95. Anyway, I am going to try and guess that you wanted to know how to determine which version of Windows 95 you had on your system.

"There is a useful page on the Microsoft web site at <http://support.microsoft.com/support/kb/articles/q158/2/38.asp>.

In essence, it reads: 'This article describes how to identify the following information about your Windows 95 installation:

- Which version of Windows 95 you are running.
- Whether your installation of Windows 95 is



The Desktop To Go options screen

an OEM installation.

- Whether your installation of Windows 95 is an international version.

“To determine which version of Windows 95 you are running, follow these steps:

1. In Control Panel, double-click System.
2. Click the General tab.
3. Locate the version number under the System heading and then see the following table [Fig 1].

“Notes: note that if you are running OEM Service Release version 2.1, you see the version number 4.00.950B (the same as OSR2) when you follow the steps above. To determine whether you are running OSR 2.1, check for USB Supplement to OSR2 in the list of installed programs in the Add/Remove Programs tool in Control Panel and check for version 4.03.1212 of the Ntkern.vxd file in the Windows\System\

Question & Answers: home-based web server

Q I have a small home-based business for which I would like to set up a web server and email server. We have a very small budget (almost none) and old computer systems (100MHz 486) to work with. Is a home setup a reasonable undertaking, or should I simply pay for these services to be hosted by another company?

James England

A This pretty much depends on what sort of services you want to offer and the amount of bandwidth you are going to need. As far as the software is concerned, first of all take a look at my book review in last month's column and get yourself a copy of *Red Hat Linux Unleashed*. This includes a copy of the Red Hat Linux operating system, which will run quite happily on your older 486 machines with as little as 4Mb of RAM. The CD also includes all the software you need to host DNS, mail and web services on your Linux server, so that should get you started for minimal cost.

The bandwidth is a different matter, though. Running your own web and email server requires 24-hour internet access, so unless your business already requires such access for other reasons, you will need to approach a solid, reliable ISP to get yourself a permanent 128Kbps link. This is the minimum you will require and it doesn't come cheap.

The alternative, therefore, is to look to the same ISP to register your domain name, host your web site for you and handle all your email. The things to watch out for here are that you have enough email accounts available, that there is enough disk space allocated for your web site and that it is possible to run CGI scripts on the web server if necessary, since all of these will cost extra if you don't get them included from the start.

Fig 1: Find the version

Version number	Version of Windows 95
4.00.950	Windows 95
4.00.950A	Windows 95 plus the Service Pack 1 Update, or OEM Service Release 1
4.00.950B	OEM Service Release 2 (OSR2)
4.00.950C	OEM Service Release 2.5 (OSR2.5)

Vmm32 folder. If you are running OSR2.5 and you uninstall the USB Supplement using the Add/Remove Programs tool in Control Panel, the version number changes to 4.00.950b on the General tab in System properties.

“Windows 95 may have been preinstalled on your computer. These installations are referred to as OEM (Original Equipment Manufacturer) installations. To decide if you have an OEM installation of Windows 95, follow these steps:

1. In Control Panel, double-click System.
2. Click the General tab.
3. Locate the Product ID number under the Registered To heading. This number typically contains 20 digits. If digits 7, 8 and 9 contain the letters OEM, you have an OEM installation of Windows 95. For example, the following sample Product ID number indicates an OEM installation: 12345-OEM-6789098-76543.

“If you are using an OEM installation of Windows 95, you should contact your computer's manufacturer for Windows 95 support. To determine the language version of Windows 95, follow these steps:

1. Click the Start button, point to Find, and then click Files Or Folders.
2. In the Named box, type 'winver.exe' (without quotation marks) and then click Find Now [Fig 2].



Fig 2 Result of the Find File operation on WINVER.EXE

Review: Server Resource Kit 4.0, Supplement 2

■ **Microsoft Windows NT Server Resource Kit Version 4.0, Supplement Two**
Price £46.99
Author Microsoft
Publisher Microsoft Press

This is something of a cross between a book review and a product review. I am looking at the latest supplement to the Microsoft Windows NT Server Resource Kit, to which I shall refer hereafter as "Supplement Two", given the length of its official title.

There is actually no book to be found in this package, although you can buy it from a bookshop. Supplement Two is in fact a two-CD set, expanding on the information in the original Resource Kit and its first Supplement.

For those who are unfamiliar with the Microsoft Resource Kits, they are invaluable tools for power users and network administrators. Occupying a niche between product documentation and software development kits (SDKs), this particular Resource Kit (RK) has extensive documentation about the NT operating system and utilities that fill some of NT tools' operational and administrative gaps.

Supplement Two's CD-ROMs contain all the information from the original RK, Supplement One, and the NT Workstation Resource Kit. Of course, the original RK also included three printed books, but if you are comfortable using online documents instead of hardcopy manuals you can use Supplement Two as your comprehensive NT resource guide.

Supplement Two's documentation is in Windows Help format which makes it convenient for searching and browsing, and

the new stuff includes detailed information about the changes in Service Pack 3, the use of Point-to-Point Tunnelling Protocol (PPTP) with NT's Remote Access Service (RAS) to create Virtual Private Networks, and the use of X.25 with RAS.

In addition to the extensive documentation, however, the RK and its supplements come with a large collection of useful applications, utilities and other programs. Once again, Supplement Two contains all the software from the previous resource kit releases (including updates of many of the programs) as well as an assortment of new utilities. Some of the software is available for download from the web, but some is exclusive to the RK.

The trivial stuff includes new desktop themes and animated cursor editors while much of it is devoted to the serious task of network management. There are a number of command-line alternatives to NT's GUI utilities which benefit anyone who is firmly rooted in the DOS world. Particularly, it offers a way to include advanced NT commands in batch files and scripts. With these tools you can create scripts that automate complex systems and network administration tasks using Registry modifications, event log data and OLE automation.

Finally, Supplement Two contains a sample edition of TechNet, Microsoft's technical resource which is normally only available as a monthly subscription.

All in all, Supplement Two is an extremely valuable resource containing almost 1Gb of software and documentation at a reasonable price.

● *Thanks to Computer Manuals (0121 706 6000) for supplying me with a review copy.*

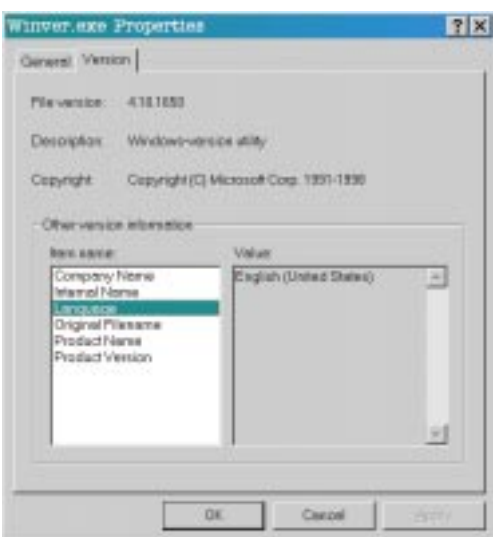


Fig 3 Viewing the properties of WINVER.EXE allows us to see the language setting

5. In the Item Name box, click Language. The language version is then displayed in the Value box [Fig 3]."

Roy goes on to say that you can get the Windows 95 Service Pack 1 for this version from www.eu.microsoft.com/windows/software/localize/pan.htm, or for other language versions www.eu.microsoft.com/windows/software/localize/localize.htm. He points out that he has used the European Mirror site www.eu.microsoft.com as it is much faster! Thanks very much, Roy, for your assistance.

3. When the file is located, use the right mouse button to click the file, and then click Properties on the menu that appears.
4. Click the Version tab.

PCW Contact

Bob Walder can be contacted via the PCW editorial office (address, p10) or by email at networks@pcw.co.uk.

PCW Reader Offers

Inside Relational Databases

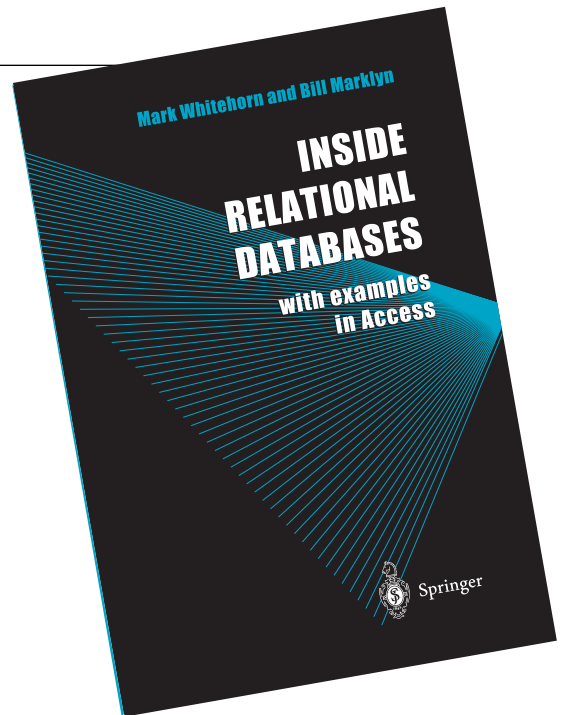
(reviewed in PCW November 97, p329)

- Written by Mark Whitehorn, who writes PCW's *Hands On Databases* column.
- Explains everything you need to know to create efficient relational databases.
- Avoids the usual database jargon.
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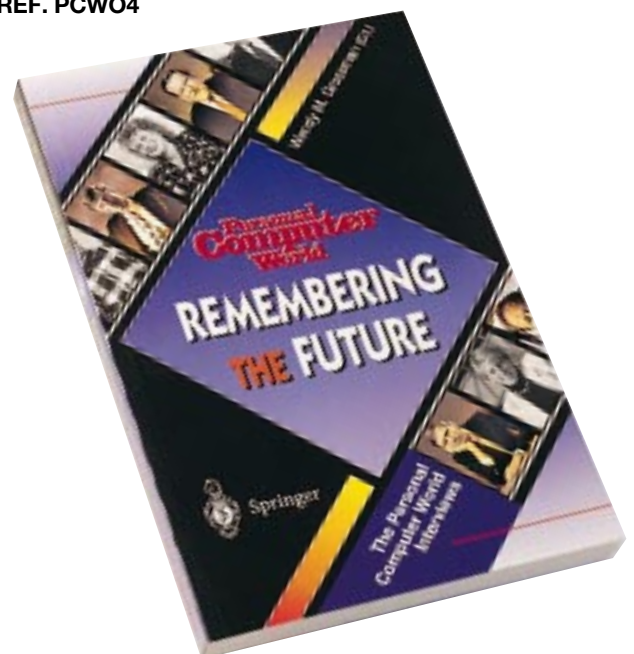
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Five alive — not once, but twice! There's a spring in our step this month, as we're giving away £2,000-worth of TEAC drives to be shared among ten lucky readers. So get into gear and go for it!

It's mad... it's ludicrous... it's absolutely barmy... and it's true. This month, PCW is giving away £2,000-worth of TEAC CD drives. We have five CD-R55SK drives, worth £329 each, as well as five 32X CD-ROM drives, each worth £82, to give away to lucky readers.

■ Five CD-R55SK drives!

The CD-R55SK drive has a sustained data transfer speed of 1,200Kb/sec using the SCSI-2 interface, with a random average access time of just 165 milliseconds. The drive can write 650Mb of information in approximately 15 minutes and reads all CD-ROM formats at 12-speed.

The CD-R55SK is equipped with a power loading tray for cost savings and added convenience. It supports CD-ROM standards such as 8cm or 12cm discs, audio CD, and CD-ROM modes 1 and 2. It is XA-ready and supports CD-I, multi-session Photo CD, Video CD and Enhanced CD.

Its use of packet writing facilitates data recording, which is particularly useful when downloading files from the internet.

■ Five CD-532E 32X drives!

The CD-532E 32X Enhanced IDE CD-ROM

has a 4.8Kbps data transfer rate and an 85ms average access time.

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multi-tasking capabilities of Windows.

The CD-532E 32X comes with interface and audio cables, installation hardware, a driver and a User Guide.



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- C 20 minutes?

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Rules of entry

This competition is open to readers of *Personal Computer World*, except for employees (and their families) of VNU Business Publications and TEAC. The Editor of *Personal Computer World* is the sole judge of the competition and his decision is final. No cash alternative is available in lieu of prizes.

How to enter the competition

1. Via our web site at www.pcw.co.uk or,
2. Write your name, address and answer on a postcard, along with your daytime phone number. Mark your card with the correct name of the competition and send it to: TEAC Comp - PCW August, P.O. Box 191, Woking, Surrey GU21 1FT. Entries must arrive by 24th July 1998.

• Please state clearly on your entry if you do not wish to receive promotional material from other companies.

Urban Assault

Quick! Upload yourself into a living computer and save the world.

Urban Assault is a massive strategy/combat game from Microsoft. The background story is suitably apocalyptic: as the ecosystem collapsed after the Big Mistake, humans were under attack from various other races and off-world species. The tide has turned though, after a bunch of hackers worked out how to hotwire the world's remaining computers into a living network.

You have been chosen as the last possible human to be "uploaded" into

the Host Station, the Command Centre that controls the Free World's remaining computers. Synthesise plasma into battle



tanks and send them off to attack, or "project your consciousness" into the tank and lead the charge yourself.

Starting from Europe, you fight it out against the backdrop of a destroyed

world. The scarred remains of the cities look particularly haunting when lit up by explosions during the night battles.

There is a bewildering variety of 15 vehicles to command. They range from jeeps to Zeppelins, and you can even extend your point of view into the missiles themselves as they hurtle towards their target — and oblivion.

There is lots to bewilder the unwary user in Urban Assault, which is why the supplied tutorials are so important. User-friendly and simple to follow, you will be glad of them when the enormity of the task ahead of you sinks in.

Paul Trueman

PCW Details

Price £39.99 (approximate)

Contact Microsoft 0345 002000
www.microsoft.com

System Requirements Windows 95, Pentium 120MHz processor, 16Mb RAM (32Mb recommended), SVGA monitor, Microsoft mouse or compatible pointing device, sound card, internet access (for net play).

★★★★☆

Monster Truck Madness 2

More tracks, more mud, more madness for off-road rednecks.

This game is a sequel to the racing game, Monster Truck Madness, and both have a touch of American flamboyance. We're talking about those awesome mean machines with gigantic tyres that bounce around and crush anything stupid enough to get in their way.

This game boasts new tracks and trucks, and owners of 3D accelerator cards will experience seriously improved graphics.

The new tracks consist of ten circuit and rally courses, with the option to change road and weather conditions for a more challenging game. You also have Microsoft's multiplayer option which enables up to seven other trucksters to join you on the internet.



Sadly, I found the gameplay tedious and uninspiring. The courses are very short and have no connection with each other, and there are no league races to give the game more endurance.

The differently-angled shots you get while racing do not help with the driving — the best view is from the steering wheel.

Rather than buy Monster Truck Madness 2 now, it might be worth waiting until it is bundled with the new Microsoft steering joystick later this year.

There are two buttons that might bring you joy, however: one beeps the horn, the other goes "Yeee-Ha!". Look out, here come the Dukes of Hazard...

Michael Murphy

PCW Details

Price £39.99

Contact Microsoft 0345 002000
www.microsoft.com

System Requirements Windows 95, Windows 98, Windows NT. P133 or higher, 16Mb RAM, 4X CD-ROM drive.

★★★☆☆

Ultimate Soccer Manager

Football's coming home to your PC. Be a big-time soccer supremo.

Years ago, back in the age of the Sinclair Spectrum, the first football management game was written. Although limited, it had all the essentials: screens full of statistics, a wheeler-dealer transfer system, and animated highlights. Ultimate Soccer Manager 98 has all of these, along with many more features and innovations.

Football management games are simple in concept but often fiendishly complicated in practice. USM98 is no exception: you must play it for hours before you get the hang of all the variables that affect your team's fortunes. But even this learning period is enjoyable, and once you've had the thrill of your first win, you'll be hooked.



You can take control of any club from the English leagues or from a host of European ones, and try to get them to the top. It's up to you to decide whether you want to manage, taking care of everything including financial decisions, or just coach, limiting yourself to the selection, training and organisation of the players.

A raft of statistics accompanies each player, including shooting ability, tackling, stamina and passing. There are overall statistics for your team, combining players' strengths at set pieces, corners and defence.

For the first time you can set up your own formations and tactics, but if all this doesn't work out, you can always try bribing your way to success!

Adam Evans

PCW Details

Price £34.99

Contact Cendant Software 0118 920 9111
www.ultimatesoccer.com

System Requirements Windows 95, Pentium 75MHz processor (120MHz recommended), 16Mb RAM, 2X CD-ROM drive (4X recommended), 65Mb hard-disk space, Microsoft DirectX 5 compatible graphics card (1Mb min).

★★★★★

Hexen II Mission Pack

'Eidolon has been defeated. Evil has not'. Pursue evil Praevus.



Eidolon. Bad news since then, I'm afraid, as a sinister winter has returned to the land and the Eidolon's slain body has disappeared. The heroes must regroup and go in search of the evil wizard, Praevus,

original heroes, or as a new fifth character, the Demoness, a former enemy who is joining you to discover what Praevus has done with the body of Eidolon, her former master.

There are new weapons, enemies and spells, but the look of the game is identical to the original so you may feel that the price is a bit steep for what is essentially more of the same.

Paul Trueman

Portals of Praevus is Activision's latest add-on for its popular Hexen II game, and there's more than enough here to keep Hexen players happy. As with most add-on packs, you will need Hexen II installed on your PC.

In Hexen II, the Necromancer, Assassin, Crusader and Paladin fought together to defeat the last known Serpent Rider,



who wants to claim the Serpent Riders' evil powers for himself. The Portal of Praevus lets you return as your favourite of the four

PCW Details

Price £19.99

Contact Activision 01895 456700
www.Activision.com

System Requirements Windows 95, Windows NT 4.0, P90 (120 recommended), 16Mb RAM (24Mb recommended), 2X CD-ROM, 45Mb hard-disk space.

★★★★☆

Jonah Lomu Rugby

Indoor fun for ruggers fans — and no ear nibbling in the scrum.

Jonah Lomu was unquestionably the star of the 1995 Rugby World Cup in South Africa. His one-man demolition of England in the Newlands semi-final (45-29 to New Zealand) is a sweet memory for all Celtic rugby supporters.

Although Jonah Lomu Rugby has nothing to do with the man himself, the game is more or less based on that 1995 tournament.

You can play as any of the teams and see how far you can get. All sides have realistic strengths and weaknesses so, if you're foolish enough to choose Japan, you



can be sure of total annihilation when you come up against one of the better sides (New Zealand beat them 145-17, scoring a total of 21 tries — that's got to hurt!).

You can play classic matches or "friendlies" between any two teams, against the computer or a friend.

The "team game" ethos is at the heart of Rugby Union and it is this, together with

the fact that there are 15 players per side, that makes it particularly difficult to simulate. But Codemasters has done a good job of capturing the fun and excitement of rugby without making it complicated to play.

The budget price reflects the out-of-date player information and the recent rule changes, such as allowing lifting at the line-out. But for armchair rugby fun at a knockdown price, you can't get much better than this.

Adam Evans

PCW Details

Price £12.99

Contact Codemasters 01926 816044
www.codemasters.com

System Requirements Minimum specification:
486 66MHz, 8Mb RAM, 2X CD-ROM drive,
12Mb hard-disk space

★★★★☆

Castrol Honda Bikes

Pile on the power and scratch around the bends on a superbike.

A brand-new Honda RC45 bike would set you back around £250,000, but thanks to the magic of simulation you can race one in this game for a whole lot less and crash it as many times as you like. Inspired by the Castrol Honda bike that won the Superbike Championship in 1997, it gives you the chance to race a Honda RC45 for a full championship season.

It is no easy task to stay on the track when you first start playing, and even if you admit defeat and switch on all the sneaky cheats that the game allows, such as assisted steering and braking, you still might find this hunk of pixelated



horsepower a touch too challenging.

You can practise as much as you like

on any of eight different courses before taking on up to 12 other riders in a full-on race. This game goes into extreme detail, and it is possible to tinker with every aspect of the bike, from setting the gear ratio to thinking about which type of tyre to use.

While this kind of detail isn't up most gamers' street, you can always let the PC handle the details and concentrate on the racing.

It is the sort of game that might be best enjoyed with a gamepad or joystick, but persevere and you'll easily be handling the bends of bike courses the world over.

Paul Trueman

PCW Details

Price £34.99

Contact 0181 293 7110
www.interactive-entertainment.co.uk

System Requirements Window 95, Pentium 133MHz processor (Pentium 166MHz recommended), 16Mb RAM (32Mb recommended), 35Mb hard-disk space, CD-ROM drive.

★★★★☆

Daring to be different

AT&T's 6300 was the bedrock on which its range of Unix and MSDOS PCs were based. Simon Collin charts its progress.

Think of AT&T, and telephone calls probably spring to mind. But if you had known AT&T 15 years ago, the company was at the forefront of a daring move to get into the PC market: it launched an almost-PC-compatible. Not very daring, you may think; but it launched this machine as a Unix PC, which was rather more enterprising.

Having recently spent a fair amount of my time tinkering with a Unix web server, I have grown to like the system. It's cohesive and powerful, if not particularly user-friendly. Why, then, has it had such relatively little commercial success and why has it not taken off as a pre-installed operating system? The answer is simple: Windows is easier to use, understand and manage, but it does require a pretty powerful computer in order to run.

Unix should have been a great hit on the desktop. It was supplied with minis and mainframes, had lots of users and lots of free software but only one manufacturer daring enough to ship PCs with it pre-installed. That one vendor was AT&T, and it became well known in the mid-eighties as a PC vendor.

Blake's Seven

AT&T started the ball rolling with its 3B2, produced in 1983. By a fluke of coincidence, later in the same decade, the 3B2 name would be used by sophisticated DTP software; but that's another story.

The 3B2 was a wonderfully dated computer. Even when it launched, it looked old. Certainly, it could be fitted with 2Mb of RAM, a 30Mb hard drive and a 5.25in floppy drive, but the styling was pure Blake's Seven. However, the point about the 3B2 is that it was supplied with System V Unix.

The 3B2 proved useful as a training ground for many of today's elder-statesmen programmers and internet hacks. As a commercial success it wasn't bad and paved the way for AT&T's most

successful personal computer, the famous 6300 [pictured]. If you haven't heard of the 6300, keep quiet, because it really was the major product from AT&T at the time.

Although Government purchasers probably thought they were buying American, the company had outsourced manufacture of the 6300 to Olivetti, which produced a rather dull IBM AT-compatible

running at a low ebb. Although manufacture of the 6300 Unix PC was stopped in that year, AT&T had used this as a platform to launch a range of Unix-based and MSDOS-based PCs. Amid a flurry of publicity, it replaced the 6300 with a new, revolutionary computer based on a 10MHz 8086 processor manufactured by Olivetti and called the M-240.

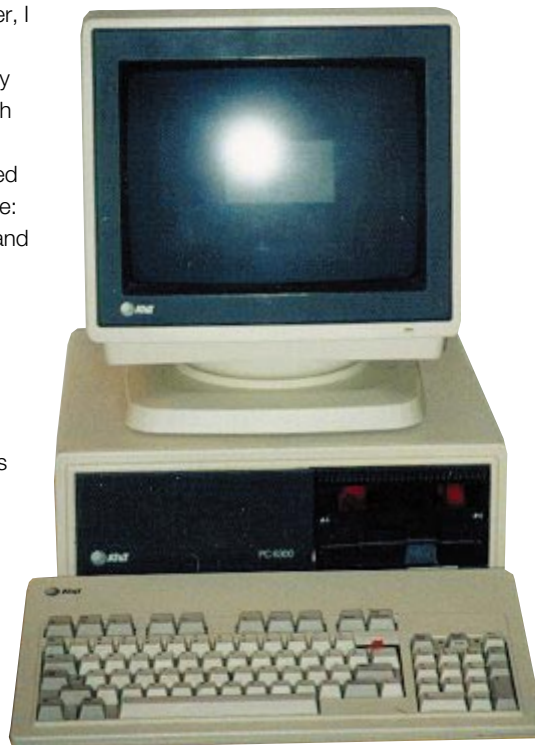
Take a moment to spot the difference. The new model, case and design was due to the extra *oomphhh* produced by pushing the same processor at an extra 2MHz. The main difference between the two models was that the 6300 could run MSDOS PC software, but was not strictly PC compatible at the hardware level. The new M-240 was fully PC compatible.

The biggest buyers of the 6300 were US Government and business customers who seem to have used it in MSDOS mode. Case studies of the time suggest that part of the US Customs ran on a 6300 with WordPerfect and dBase, which inspires a certain level of confidence.

Message from Moscow

Finally we reach 1990, and AT&T Moscow releases a press statement that describes a new personal computer that has just launched after official rules were relaxed the previous year. The model 7300 uses a Motorola 68010 processor and includes 1Mb of RAM and a 20Mb hard disk. It's different because it is supplied as standard with the Unix operating system. A spokesperson of the time was quoted as saying: "The company says that although Unix is not very well known countrywide, it should emerge very soon, and any investments into such a hardware should be considered as having a bright perspective."

Unix has always had a "bright perspective", but even the might of AT&T does not seem to have been able to promote it into the consumer market. To many users, this is a shame. ■



The AT&T 6300: manufactured by Olivetti, driven by AMD, distinguished by Unix. It could run MSDOS software, too

running an 8086 processor at 8MHz with 256Kb of RAM and a 10Mb hard disk, in one of the plainest, squarest cases of the time. The only difference from the rest of the AT-clones was that the 6300 was driven by an AMD processor, not by an Intel component. And yes, this too was launched as a Unix PC.

AT&T took a reasonable slice of market share but this slid rapidly away as new, aggressive vendors launched into the same market. By 1987, its market share was

Brainteasers

Quickie

A spider makes its home in a closed cubic box whose sides are one foot long. If he spins a strand between two opposite corners, how long will the strand be?

This Month's Prize Puzzle

A fairly difficult logical problem this month, although using a PC to sift through the possibilities could shorten your task.

• A group of eight students — four boys, named Ivor, John, Keith and Leslie, and four girls, named Mary, Nell, Olive and Pam — are each in love with, and loved by, a different member of the opposite sex in the group. Sad to say, none of the members of the group has his or her love required.

1. Ivor loves the girl who loves the man who loves Mary.
2. Nell is loved by the man who is loved by the girl loved by John.
3. Keith loves the girl who loves Leslie.
4. John is not loved by Olive.
5. The boy who is loved by Pam does not love Olive.

So who loves Ivor?

• Send your answers on a postcard, or on the back of an empty sealed envelope, to: PCW Prize Puzzle - August 1998, P.O. Box 99, Harrogate, HG2 0XJ, to arrive no later than 20th August, 1998.

Please do not send solutions on floppy disks, emails, or in envelopes. They will not be included in the prize draw.

Winner of May 1998 Prize Puzzle

Just under 100 entries were received for the problem about the population birth and death rates. The required answer, to the nearest whole, was 48 years, and most people seemed to arrive at this without too much difficulty.

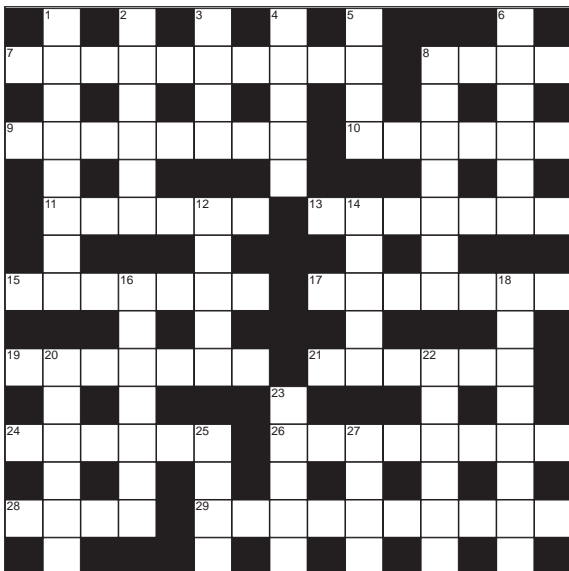
The winning card, drawn with our version of ERNIE, came from Danny Langton of London. Congratulations, Danny, your prize is on its way.

To those who didn't win, keep trying — it could be your turn next. Good luck!

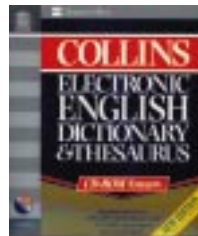
JJ Clessa

■ Please note that Brainteasers entries are not used for a direct mailing database.

Prize Crossword No. 10



Are you crossword crazy? Would you like a copy of the



Collins Electronic Dictionary & Thesaurus? Each month, one lucky PCW crossword entrant wins one — this time, it could be you. Send your completed crossword to "PCW August Prize Crossword", VNU House, 32-34 Broadwick Street, London W1A 2HG, to arrive not later than 24th July 1998.

• Please state clearly on your entry if you do not wish to receive promotional material from other companies.

DOWN

- 1 Distantly (8)
- 2 Tedious task (6)
- 3 Counterfoil (4)
- 4 Mistreat (5)
- 5 Minus (4)
- 6 Unit of current (6)
- 8 Most gloomy (7)
- 12 Exotic dance (5)
- 14 Female relative (5)
- 16 Three-pronged spear (7)
- 18 Ocean (8)
- 20 Keyboard instruments (6)
- 22 Wild West shows (6)
- 23 Superficial scratch (5)
- 25 Secure (4)
- 27 Utters (4)

ACROSS

- 7 Like storage media that can be reused (10)
- 8 Horrible place to store data temporarily (4)
- 9 Signal route for components' connections (5, 3)
- 10 & 24 Silly pix for preventing monitor burn (12)
- 11 Originally Mac-only emailing system (6)
- 13 Tapped it in (7)

- 15 The second S of SCSI (7)
- 17 The C of CPU (7)
- 19 The O of OCR (7)
- 21 Like a network made to resemble the workings of the human brain (6)
- 24 See 10 across
- 26 Permanently present in the main memory (8)
- 28 Start it up (4)
- 29 Non-traditional AI way of representing thought (5, 5)

July solutions

Across

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■ Software

Gizmos and Gadgets

When you want your children to learn a bit of science without realising they have, this could be it.

"We hate science," said the group of seven-year-olds when PCW asked them to try out this program. Science was boring, they said. But could the computer win them over? Gizmos and Gadgets is a challenging game in which the player solves various science puzzles. Correct answers are rewarded with machine parts that you collect and then use to build vehicles. You can race your vehicle against the computer's and see how your machine functions.

The program becomes progressively more difficult, but our testers were quickly engrossed in opening doors to find puzzles, running down corridors to escape marauding monkeys who wanted to steal their prizes, and



Learning how things work, the fun way

generally having fun. With the screen full of miniature detail and tiny characters, our testers thought

it looked more like Polly Pocket than a science lesson.

The puzzles cover force, magnetism, electricity, balance, energy sources and simple machinery. These are difficult concepts for young children to grasp, compared with more popular topics such as animals or the solar system. The puzzles use ideas like matching pairs and moving parts on the screen to complete diagrams.

An hour later we asked our testers for an example of mechanical and electrical energy. They reeled off correct answers, but then we asked them what they had learnt about science. "Nothing," they replied.

Gizmos and Gadgets had been a painless injection of education.

Debbie Davis

PCW Details

Price £29.99

Contact The Learning Company 0181 246 4000
www.learningco.com

System Requirements Windows 95, 386/25MHz or better, 4Mb RAM, CD-ROM.

★★★★★

Pinball Science

The pinball interface fronts up the science learning background, but you'll need wizard skills.

I'm usually a big fan of Dorling Kindersley software, but I was disappointed with Pinball Science.

The package is meant to be a "learn as you play" software game and is aimed at nine to 14-year-olds. The idea is to build a pinball machine while at the same time learning the major principles of science, such as gravity, magnetism and levers.

The concept is good and is presented very well. In order to obtain components for your pinball machine you have to answer questions from a specific text. The text is brief and the language easy for young children to understand.

Once players have gathered the components, they are able to play pinball. Completing the pinball game enables you to advance to the next pinball section.

There are three pinball worlds: the Village, the Island and the Moon. I found trying to advance from the Island to the Moon difficult and after two hours I was no nearer

"Pinball wizard, there has to be a twist..." And there is: advancing through this game is hard



to completion. Admittedly, young children can play on the computer for hours, but I found the frustration and tedium of this task a great turn-off.

None try, DK. But you need to be a pinball wizard to crack this game.

Michael Murphy

PCW Details

Price £24.99

Contact Dorling Kindersley 0171 836 5411
www.dk.com

System Requirements Windows 95, Pentium 75Hz or faster, 12Mb RAM, 4X CD-ROM drive.

★★★★★

AA Virtual Paris

Nik Rawlinson and friends embarked on a cultural excursion to Paris armed with this CD guide. *Bonnes vacances!*

What better excuse could there be for making a trip to Paris than to review this CD?

On arrival, I fired up my laptop in preparation for my tour. Suggested itineraries for one-, two-, three- and five-day excursions supplemented a selection of six walks around some of the most photographed parts of the city.

The main menu is a 360° panoramic view of a café. Click on items on the walls or tables to investigate museums, nightlife, events, history and other aspects of Parisian culture. Although this makes for ease of use, it can also mean you miss out on some vital links. Had I not visited the Saint Chapelle in person and seen the door leading to the more interesting upper floor, I would never have noticed the tiny



link to that same (virtual) door on the CD, the graphic was so small and distant.

The personalised planner allowed me to take screenshots and notes which could be printed out and used as a guide.

On the train home, I tried my luck with the Paris Quest, a chance to see how much I had



Above Our intrepid foreign correspondent (seated, left) in the Place Charles De Gaulle

learnt during my short stay, by answering questions about the 12 main areas of the city covered by this package.

This is not the easiest CD-ROM to navigate, but is nevertheless nicely presented and contains a good deal of information.

Nik Rawlinson

PCW Details

Price £29.99

Contact AA Multimedia Direct 01986 896969

www.theaa.co.uk

System Requirements Windows 3.1 or higher, 486 66MHz IBM-compatible PC, 8Mb RAM.

★★★★☆

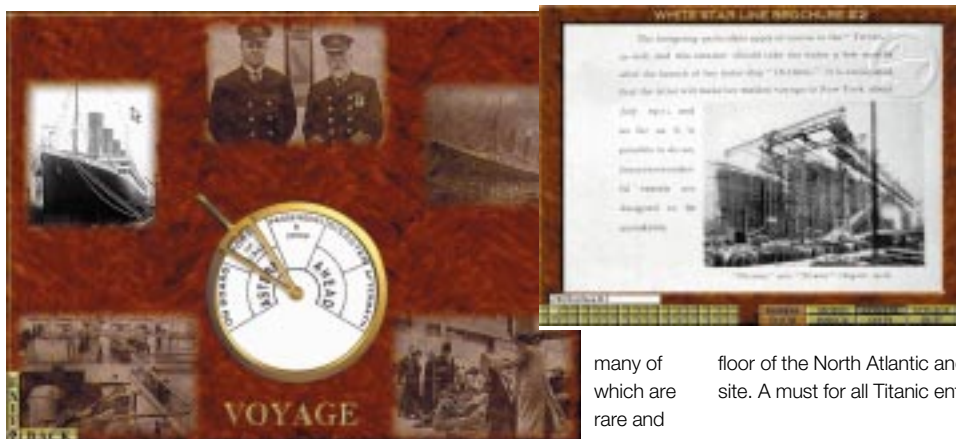
Titanic: A Voyage of Discovery

You've seen the film; now you can uncover the facts using this comprehensive CD.

The story of the ill-fated RMS Titanic holds an enduring fascination for all generations, and one which has resulted in hundreds of books and a plethora of films.

Titanic: A Voyage of Discovery is a serious CD-ROM heavily biased towards the discovery of the sunken remains. The Titanic explorer, Ralph White, provides the narrative throughout the program, partnered by Maritime historian Charles Sachs.

I would have welcomed more information about those who sailed aboard Titanic, and more on the aftermath of its sinking. But this CD nevertheless seems to be the most complete collection of Titanic material to have appeared in a single resource. There are over 600 photographs,



many of which are rare and previously

unseen — especially those of the wreck.

The CD is divided into five sections: Wreck, Construction, Voyage, Lists and Model. The last shows pictures of various parts of a model Titanic, with close-ups of various special features, and in most cases there is a video of the corresponding Titanic wreckage. There are full deck plans, factsheets, and even samples of music that we know was played aboard the Titanic.

Parts of this CD-ROM are disappointing, but

floor of the North Atlantic and visited the wreck site. A must for all Titanic enthusiasts.

Paul Begg



More than 600 photos enhance this CD

overall this is a superb collection of material enhanced by commentary from a man who has been down to the

PCW Details

Price £34.44

Contact Delta Graphics International. Available from the web at www.sstitanic.com/index.html

System Requirements Windows 3.1 or later, SoundBlaster 8-bit compatible sound card and 2X CD-ROM.

★★★★★

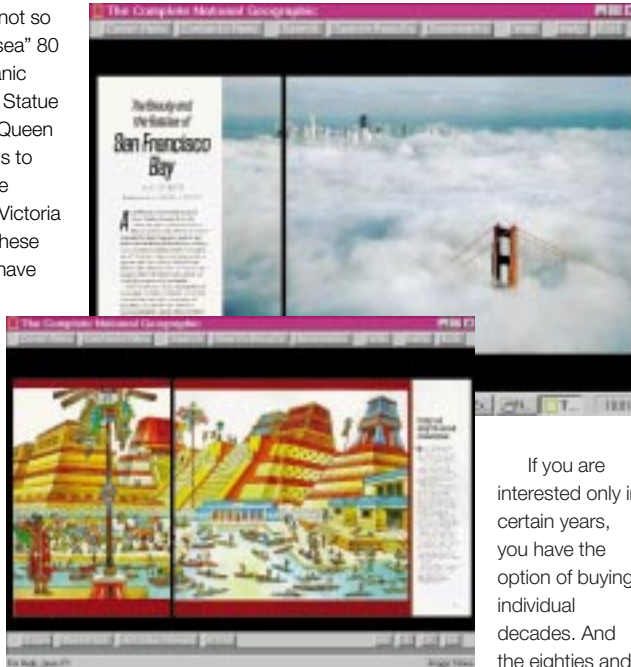
National Geographic



The entire *National Geographic* magazine output on 30 CDs, this collection is a must-have item.

San Francisco Bay is not so much an inlet as a "sea" 80 miles long. RMS Titanic was six times as long as the Statue of Liberty is high. When the Queen opens Parliament, she travels to Westminster in the Irish State Coach, first used by Queen Victoria for this ceremony in 1852. These are just three of the things I have learnt from The National Geographic CD-ROM.

Spread across 30 CDs, this extraordinary collection contains every page from 108 years of *The National Geographic* magazine, spanning more than 190,000 pages. Every photograph, story, map and graph, as well as some classic advertisements, adorn the electronic pages of this mammoth production.



been bundled on one five-disc collection.

108 years of articles, from one of the most informative magazines around, are now on CD

Unfortunately, the quality of the pages has been slightly degraded: for instance, in no way do they match the quality of the format used to compile our *PCW* CD. Scans of fold-out pages, of which there are many, include the creases, and where a photo spreads across a double page, slight misalignment of the two halves occurs.

That aside, this collection is undoubtedly a "must buy" item for anyone with a CD-ROM drive.

Nik Rawlinson

PCW Details

Price £199 (108 years/30 discs) or £29.99 per decade.

Contact Mindscape 01444 246333
www.mindscape.com

System Requirements Windows 95 or 3.1, 486DX 33MHz, 8Mb RAM, 10Mb free hard-disk space, 640 x 480 resolution at 256 colours, 2X CD-ROM drive, Windows-compatible sound card, optional printer capable of 300dpi resolution.

★★★★★

Russian Language Labs

Learning the Russian language the "thinking" way, through the association of words and pictures.

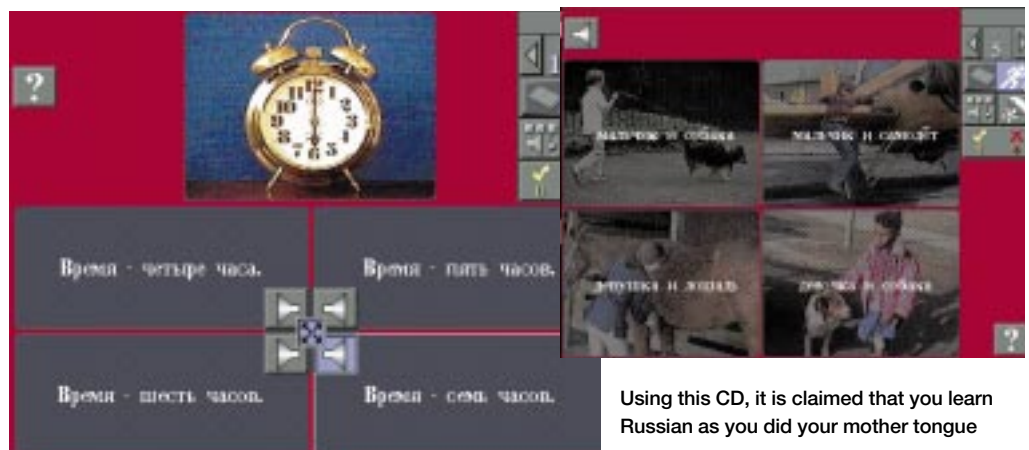
This CD-ROM is a collaboration between Europress Language Labs and Fairfield's Rosetta Stone language courses.

These courses employ innovative teaching methods. They make use of constant association between a wide selection of colour pictures, and spoken and written words and phrases.

These tuition methods are said to enable you to "think" a foreign language, rather than learning to translate it, in the same way as when you learn how to speak your native tongue.

The tutorials start with exercises presenting simple concepts and expressions in Russian, adding new vocabulary and grammar as you progress.

There are 12 modes which enable you to adapt the material presented in the package to your favourite style of learning — a welcome feature of this package. Additionally, Language



Using this CD, it is claimed that you learn Russian as you did your mother tongue

Labs includes a dictation feature, allowing you to type the spoken words as they are presented to you. There is a comprehensive tutorial section and a voice recording facility for you to check your pronunciation.

Russian Language Labs is an effective, easy way to familiarise yourself with, or brush up on, your Russian.

Michael Murphy

PCW Details

Price £19.99

Contact Europress 01625 859333
www.europress.co.uk

System Requirements Windows 95 or 3.1, 486DX or better, 4Mb RAM, CD-ROM drive, SoundBlaster-compatible sound card.

★★★★★

Books

Que sera sera: Dertouzos looks to the future. *Risky Business* sends a shiver up your spine with net danger, and be a web star.

■ Risky Business

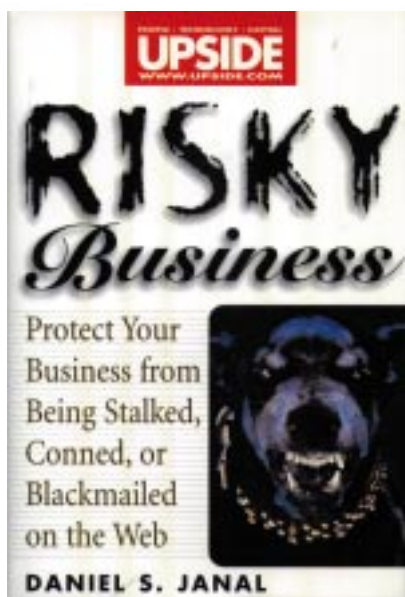
For all the hype, the internet is still often seen as a dangerous place to work and play. Horror stories about people who have been swindled, spammed and even stalked in the brave new world online. If you've ever had a moment's doubt about

whether you or your business's safety is being compromised, then online expert Daniel Janal's *Risky Business* is essential reading.

Janal pulls no punches over the potential dangers of using the internet, even naming the first chapter of the book "Cyberspace is a Scary Place". And he ain't kidding. Even if you're a slightly paranoid online user like myself, you're bound to discover at least a few more scams and security breaches that you hadn't even dreamed of before.

If you reveal too much information about yourself online, someone could apply for a credit card in your name and rack up huge bills without you even knowing it. Your personal safety might be jeopardised by a cyber-stalker who could find out where your family live, work and even what they look like by checking out your home page. And finally, you could be taken in by someone who isn't really who they claim to be. As they say, on the internet nobody knows you're a dog — and you don't want to do business with a pit bull.

Once you've got well and truly spooked over the potential personal and professional dangers, however, *Risky Business* then sets out to tell you exactly what you can do to avoid them. Janal gives clear tips on how to



take a few precautions to protect yourself from inside or outside threats, covering everything from network sabotage to employee misuse to copyright and libel issues. The case studies are particularly helpful in planning your security strategy.

Somewhat surprisingly, *Risky Business* is an enjoyable read. Janal has an enthusiastic style and he manages to reassure readers that they can take positive steps to ensure their safety. He is quick to point out that the benefits

of going online outweigh the dangers, but stresses that, on the internet, as everywhere, it's better to be safe than sorry.

Susan Pederson

■ Internet World Guide to Webcasting

Ever fancied yourself as a bit of a Kevin Greening, Dale Winton or Bert Tyler-Moore? Want to be famous and spend your days signing autographs for hordes of adoring fans? Well, while

that's not likely to happen simply because you have an internet connection, this book can at least help you overcome the practicalities of broadcasting online.

As Peggy Miles explains, in the last two years: "Webcasting has grown from zero to more than 1,000 24-hour webcast

broadcast stations". The number of local stations around the UK simulcasting their output on the net is evidence of that, and the BBC's commitment in this area is a further driving force. So what can you do to launch your own mini media empire, advertise your products using either video and audio, or simply send video of your latest offspring to the child's proud grandparents?

Starting out by answering the question "What is webcasting?" and being split into eight chapters, the book examines both the theoretical and practical sides of webcasting. Case studies provide useful illustrations of the concepts discussed and allow the reader to see how they might be applied to their own situation.

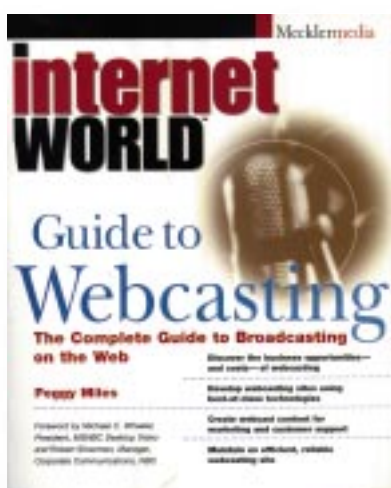
Once you have decided that webcasting really is for you, the book explains the implications of designing your content for each of the three delivery technologies: streaming, on-demand and push. Which you choose is up to you, but Miles points you in the direction of many web-based utilities and applications that will assist in

the recording and broadcast of your output, before examining issues involved in the marketing of your productions.

This book is an invaluable volume for anyone interested in using the net as a broadcast medium, and for students of IT or the media, it is a research resource second to none. The practical elements are maybe more geared towards corporate use, which is only fair since it is likely they will be the only users with

sufficient resources and bandwidth at their disposal to properly make use of the technologies discussed. But for home users and those with anything more than just a passing interest in the subject, it is an informative, entertaining and easy read.

Nik Rawlinson



Top Ten Books

1. Internet and the World Wide Web: The Rough Guide	Rough Guides	£5.00
2. SCO Companion Professional Edition	Prentice-Hall	£63.99
3. Using the Internet: 101 Essential Tips	Dorling Kindersley	£3.99
4. Microsoft Office 97 for Windows	IDG Books	£18.99
5. Being Digital	Coronet	£6.99
6. Internet for Dummies, 4th Edition	IDG Books	£18.99
7. Visual C++5: The Complete Reference	IDG Books	£30.99
8. Windows 95 for Dummies 2nd Edition	IDG Books	£18.99
9. MCSE Testprep Windows NT Server 4	New Riders	£23.49
10. SmartSuite 97 Windows for Dummies	IDG Books	£18.99

■ List supplied by Waterstones

■ What Will Be

The author of this book, Michael Dertouzos, is director of MIT's Laboratory for Computer Science and one of the founding members of the World Wide Web Consortium <www.w3.org>. As you might imagine, he knows quite a lot about the web.

What Will Be, catchily subtitled "How the new world of information will change our lives", suggests how the world will be changed by the ever-growing influence of the web and the increasing amount of data that will be carried in it.

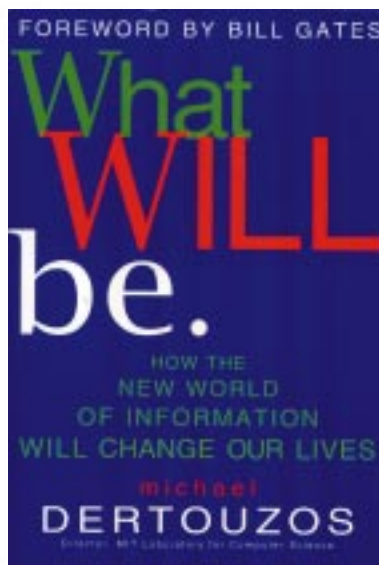
It is aimed at a non-technical reader, so there is very little about the actual networks which will carry all this data around, except that

the infrastructure will have to be drastically improved from the copper lines that currently connect most homes and businesses to the web. Dertouzos puts forward his theories as a series of sketches, discussing everything from the automatic

ordering of groceries, to videoconferencing with our families and on to teleworking. Dertouzos follows each of these sketches with a breakdown of what is and is not currently possible, what is currently being researched and what is too technically difficult to become a reality in the near future.

The emphasis is very much on the human side of the technology, and Dertouzos is as concerned with how we will interact with the technology as how it will

work. However, this can have its downsides. Although Dertouzos makes it clear



that he is concerned about the role of the individual, he does not have the sociological know-how to work out how the user will react to the technology. Instead, he seems to assume we will all blandly accept the changes in our lives and will carry on "as normal".

Equally disappointing is the technology discussed. Not only does he present to the non-technical reader advances which you and I would regard as old news, he also does not seem to take into account that in a few years we may all be using completely different gadgets and gizmos to do our work. After all, he assumes we will all still be using PCs; but with the convergence technologies fast approaching, using a PC will soon seem positively archaic.

Adele Dyer

PCW Details

Risky Business: Protect your business from being stalked, conned or blackmailed on the web

Author Daniel S Janal

Publisher John Wiley & Sons

ISBN 0-471-19706-8

Price £22.50

★★★★★

Internet World Guide to Webcasting

Author Peggy Miles

Publisher Wiley Computer Publishing

ISBN 0-471-24217-9

Price £24.95

★★★★★

What Will Be

Author Michael Dertouzos

Publisher Piatkus

ISBN 0-7499-1759-8

Price £12.99

★★★★★

You can take advantage of a third off each of the three reviewed books on these pages if ordered before August 31st 1998, from Waterstone's book mailing service on 01225 448595, or by ordering from us online from Waterstone's Bookshop on the Internet at www.waterstones.co.uk/futurecomputing.htm

Internet World Guide to Webcasting by Peggy Miles ~~£24.95~~ Wprice £16.72 (Wiley paperback)

Risky Business by Daniel S. Janal ~~£22.50~~ Wprice £15.08 (Wiley paperback)

What Will Be: How the New World of Information Will Change our Lives by Michael Dertouzos ~~£12.99~~ Wprice £8.71 (Piatkus paperback)

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Buyer's Guide



Sometimes you just want to know the names of the best products, when they were reviewed, how much they cost and where you can get them. That's where our new, no-nonsense buyer's guide comes in.

Over the following four pages we've picked out the outstanding PCs, peripherals and software packages which we can recommend without hesitation.

To make it even easier, we've included the current manufacturer's contact number and price (incl.VAT), as well as details about when and

where we reviewed the product.

For the full review, why not check out *PCW* on CD-ROM? Updated quarterly on a rolling basis, *PCW* on CD-ROM contains the full editorial from the last 24 issues, in searchable Adobe Acrobat format. It even comes with a copy of Acrobat for viewing, searching and printing.

Each CD costs just £9.95 including postage and packing, or £8.96 for subscribers. Call **01795 414870** to order your copy, or turn to the *PCW* Reader Offers on page 318 for further details.

Gordon Laing, Managing Editor

Personal Computer World Buyer's Charter

IF THINGS GO WRONG

● Mail order protection scheme

Anthony George, our Customer Services Manager, is here to help you if things go wrong or if you have a complaint about advertisements that have appeared in *Personal Computer World*. Write to him with details of the complaint and he will contact you.

Anthony George
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VNU Business Publications
VNU House
32 - 34 Broadwick Street
London W1A 2HG



Anthony George

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Entry-level PC: Watford Electronics Aries Perfecta K6 98

When we compared PCs using the AMD K6, the Cyrix 6x86MX and Intel's mew budget Celeron processor, systems fitted with the latter just didn't cut the mustard. If you must go Celeron, we recommend Watford's Aries Perfecta 6120, but otherwise, entry level PC shoppers should choose Watford's K6 machine.

PCW August 1998 p176.

Price £797.83
Contact Watford Electronics
01582 487777

Also

Recommended:
■ **Watford Electronics Aries Perfecta 6120** PCW August 1998 p176.

Price £821.33
Contact As above
■ **Panrix Lynx** PCW August 1998. **Price** £938.83. **Contact** Panrix 01132 444958



High-end notebook: Gateway Solo 9100

If you're looking for a notebook with all the features of your desktop, then the Solo 9100 from Gateway is your best bet. It has the latest 266MHz Mobile Pentium II chip, but also has 3D graphics, an optional DVD drive and a 14.1in screen, and comes complete with a 56K PC Card modem and MS Office SBE. We liked it so much, we gave it our Editor's Choice award.

PCW June 1998 p187.

Price £3,876.33
Contact Gateway 2000; 0800 282000

Also Recommended:
■ **Choice UltraLite Rodeo 5000** PCW May 1998 p144.
Price £3,876.33
Contact Choice Systems 0181 993 9003



Mid-range PC: Dan Dantium II/W5

This issue's £999 Pentium II group test showed that decent PCs had become extremely affordable. Take our Editor's Choice, the Dan Dantium II, featuring a Pentium II 266MHz processor, 6.4Gb disk, 64Mb RAM, AWE-64 sound, ATI Xpert@Work 3D graphics, 56K modem, decent monitor and good software bundle. A bargain mid-range PC.

PCW July 1998 p145

Price £1,175
Contact Dan 0181 830 1100
www.dan.co.uk

Also Recommended:
■ **Mesh Elite Professional PII** PCW July 1998 p157
Price £1,145
Contact Mesh 0181 452 1111
www.mesh.co.uk

■ **Viglen Contender II** (PCW July 1998 p159)
Price £1,175
Contact Viglen 0181 758 7000
www.viglen.co.uk



Mid-range notebook: Viglen Dossier M

This notebook has everything you need at a very reasonable price. It features the latest 266 Mobile Pentium II chip, a 4Gb hard disk and a 13.1in TFT LCD screen. It is also fitted with a whopping 149Mb RAM! We were particularly impressed by the high build quality.

PCW August 1998 p79.

Price £2,466.33
Contact Viglen 0181 758 7000

Also Recommended:
■ **Toshiba Satellite Pro 440CDT**. PCW March 1998.
Price £2,226.63.
Contact Toshiba 01932 828828



High-end PC: HP Vectra VL

For a truly high-end PC, look no further than one based on Intel's latest and fastest Pentium II processor, the 400MHz. Not only a fast mover internally, it also fits in the new BX chipset motherboards which run your cards and memory 50 percent faster than before. HP's Vectra VL 400MHz system caught our eye before it flew off.

PCW June 1998 p216.

Price £2,353.53
Contact HP 0990 474747

Also Recommended:
■ **Carrera Power Pro II** PCW June 1998 p212.
Price £3,049.13
Contact Carrera 0171 830 0486



PDA HP 620LX

For cutting-edge technology in your pocket, Hewlett-Packard's 620LX has to be the only choice. It's based on the latest Windows CE2 operating system and is the first PDA we've seen with a colour screen. It's utterly gorgeous and, at £799, a serious threat to many notebooks. PDA fans should also check out the Psion Series 5 and the 3Com PalmPilot.

PCW May 1998 p262.
Price £799
Contact HP 0990 474747



Colour inkjet: Canon BJC-80

Winning Editor's Choice in our last inkjet-printer group test, Canon's BJC-80 didn't fail to impress. Around half the size of a notebook, it's as happy on a desktop as it is on the move, with optional battery and wireless infra-red operation. Canon even offers a cartridge with a tiny (albeit slow) built-in scanner, offering still greater flexibility.

PCW January 1998 p147.

Price £233.83

Contact Canon 0121 680 8062

**Also Recommended**

- **Canon BJC-4650** *PCW April 1998 p80.*
Price £327.83 **Contact** Canon 0121 680 8062
- **HP DeskJet 720c** *PCW March 1998 p82.*
Price £270.25 **Contact** HP 0990 474747

Budget laser printer: Panasonic KX-P6300

A decent laser printer at under £200 excluding VAT? That's Panasonic's KX-P6300, which not only turns out great results in fast time, but also boasts one of the smallest footprints of any printer. Its unusual vertical design, along with being a great-value all-rounder, earned it Editor's Choice in our last entry-level laser group test. *PCW February 1998 p194.*

Price £217.38

Contact Panasonic
0500 404041

**Also Recommended**

- **Kyocera FS-600** *PCW February 1998 p189.* **Price** £280.83
Contact Kyocera 01734 311500
- **Minolta PagePro 6** *PCW February 1998 p192.*
Price £351.33 **Contact** Minolta 01908 200400

Multifunction device: HP LaserJet 3100

Good laser-print quality from this quiet machine. Intelligent enough to detect a document dropped into its feeder, it will launch an idiot-proof menu for scanning, copying and emailing. Fast, accurate OCR and 2Mb memory for incoming faxes when the paper supply is exhausted, makes the 3100 an ideal multifunction device. *PCW June 1998 p83.*

Price £629

Contact
HP 0990 474747



Also Recommended
■ **Canon MultiPASS MPC20**

PCW January 1998 p78.

Price £370.13

Contact Canon 0181 773 3173

Colour photo printer: Epson Stylus Photo

Specifically designed for printing photographic images although more than acceptable at text and business graphics, Epson's Stylus Photo is an undeniably impressive device. In addition to the standard CMYK cartridge, the Stylus Photo employs additional light cyan and light magenta ink, giving truly photorealistic output. *PCW September 1997 p145.*

Price £233.83

Contact Epson 01442 61144

**Also Recommended**

- **Alps MD-2300 Masterpiece**
PCW September 1997 p142.
Price £645.08
Contact Alps
0800 973405

Business laser printer: HP LaserJet 4000TN

King of the laser printer, Hewlett-Packard has impressed us yet again with its latest office machine. Being 25 percent faster than the LaserJet 5, with 10,000-page toner cartridge, two 250-sheet input trays, network interfaces as standard and boasting superb output, the 4000TN should be the first choice as an office workhorse. *PCW February 1998 p77.*

Price £1662.63

Contact HP 0990 474747

**Also Recommended**

- **QMS DeskLaser 1400P**
PCW March 1998 p82.
Price £938.83
Contact QMS 01784 442255

Flatbed scanner: HP ScanJet 6100C

The 6100C's software is quick and easy to use, while the bundled slide adapter makes 35mm transparency scanning a breeze. The 6100C is a SCSI device, comes with an interface card, and offers 600dpi optical or 2,400dpi interpolated resolution. It may have a slightly large footprint but offers great value for money. *PCW May 1998 p154.*

Price £708.83

Contact
HP 0990 474747

**Also Recommended**

- **Umax Astra 610P**
PCW February 1998 p115.
Price £98.70
Contact IMC 01344 871329
- **Microtek Phantom 4800** *PCW February 1998 p113.*
Price £146.88
Contact Midwich Thame 01379 649200

Digital camera: Agfa ePhoto 1280

Digital cameras have improved vastly over the last year and probably the greatest leap forward is in the introduction of mega-pixel cameras. The best of these is the Agfa ePhoto 1280, with its maximum resolution of 1,280 x 1,024 pixels and a 3x optical zoom lens equivalent to a 38 to 114mm lens on a standard 35mm film camera.

PCW February 1998 p85.

Price £650

Contact Agfa
0181 231 4906



Also Recommended

■ **Kodak DC210** PCW December 1997 p82. Price £586.32

Contact Kodak 0800 281487

■ **Sony DSC-F1** PCW January 1998 p221.

Price £457.07 Contact Sony 0990 424424

Monitor: Nokia Multigraph 447Za

No matter what you do, it's vital to get a good monitor with a clean, flicker-free display. In April 1998's group test we looked at 17in models and found Nokia's Multigraph 447Za to be the best in our entry-level category.

Those with more to spend should check out the Mitsubishi, below, which won Editor's Choice in the high-end section.

PCW April 1998 p204.

Price £440.63

Contact Nokia
01793 512809



Also Recommended

■ **Mitsubishi DiamondPro 700**

PCW April 1998 p208. Price £569.88

Contact Mitsubishi 01707 276100

Modem: BT Prologue K56EV Plus Modem

This smart little K56Flex modem features a headset, allowing it to be used as a hands-free telephone. Add a pair of speakers and you've got a full duplex speakerphone. The K56EV also supports AudioSpan

Simultaneous Voice and Data

(SVD) operation, allowing voice and data to be transmitted at the same time.

PCW July 1998 p80

Price £119.95

Contact Direct Source
0118 981 9960
www.btwebworld.com/tmd/



Also Recommended:

■ **Pace 56 Voice**

(PCW November 1997 p219)

Price £139

Contact PMC 0990 561001

Removable storage: SyQuest SparQ

With such differing capacities, interfaces and prices, there's no one removable storage device to satisfy all needs. As an overflow for your existing hard disk, the SyQuest SparQ is a clear winner, boasting excellent performance and low price. The external Iomega Zip Plus offers a good combination of ease of use and portability.

PCW August 1998 p116.

Price £169.99

Contact SyQuest
01189 880207



Also Recommended:

■ **Iomega Zip Plus**

PCW August 1998 p116.

Price £143.83

Contact Iomega

07000 466342

Iomega Jaz 2Gb PCW August 1998 p116.

Price £441.71 Contact Iomega 07000 466342

Sound card: Terratec EWS64 S

A cut-down version of the heavyweight EWS64XL, Terratec's S model still boasts much of the same sampling and processing capabilities and is also a great games card with accelerated DirectSound and positional 3D audio. There's a digital I/O option, upgradeable sample memory and the decent software bundle includes

Cubasis AV.

PCW July 1998 p210.

Price £149.23

Contact Terratec 01600 772111

www.terratec.co.uk



Also Recommended:

■ **Creative Labs AWE 64**

Gold (PCW July 1998)

Price £129.25

Contact Creative Labs 01245 265265,

www.cle.creaf.com

Graphics card: ATI Xpert@Play

For the best games performance you absolutely need a 3D graphics card. While the new 3DFX Voodoo 2 cards (see below) offer the best high-end performance, ATI's Xpert@Play card is a great entry-level choice. Note that at the time of writing, ATI only supplies Direct 3D drivers for Windows 95, so no Quake using OpenGL just yet.

PCW December 1997 p188.

Price £139.83

Contact ATI 01628 533115



Also Recommended

■ **Creative Labs 3D Blaster**

Voodoo2 PCW June 1998 p85.

Price 12Mb £229, 8Mb £179

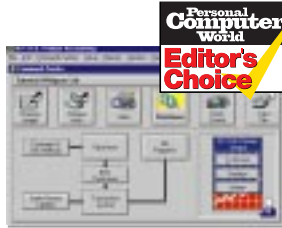
Contact Creative Labs

01245 265265, www.cle.creaf.com

Accounting: MYOB

Ideal for the owner-manager and good for bookkeepers too, Mind Your Own Business (MYOB) is our choice for accountancy software. We also recommend TAS Books which offers good bookkeeping and very powerful analysis. *PCW June 1998 p198. Price* £229.13 **Contact** Bestware 01752 201901

Also Recommended ■ **TAS Books** *PCW June 1998 p203. Price* £116.33 **Contact** Megatech 01372 727274

**Personal Finance:**

Microsoft Money Financial Suite 98

Microsoft Money Financial Suite 98 is our choice for personal finance. It offers online banking and updating facilities, and Sage compatibility, at a bargain price. *PCW January 1998 p91. Price* £49.99

Contact Microsoft 0345 002000

Also Recommended ■ **Quicken 98**

PCW June 1998 p209 Price £39.99

Contact Intuit 0181 990 5500

**Database:** Borland Visual dBase 7

The first 32-bit version of Borland's classic database manager is a significant upgrade from version 5.5, and a must-have for dBase

developers so long as 16-bit compatibility is not required. Access is particularly good value when bought with Office 97 Pro. *PCW March 1998 p92 Price* £292.58

Contact Borland 01734 320022

Also Recommended ■ **Microsoft Access 97**

PCW October 1997 p196. Price £276.13

Contact Microsoft 0345 002000

**DTP:** Serif PagePlus 5

Inexpensive, easy to use and surprisingly well equipped.

PagePlus 5 offers extremely capable desktop publishing. Those wanting the choice of professional publishers will have to fork out more for Quark XPress 4.0. *PCW June 1998 p132. Price* £99.95 **Contact** Serif 0800 376 7070

Also Recommended

■ **Quark XPress 4** *PCW June 1998 p125.*

Price £1169 **Contact** Quark 01483 454397

**Image Editing:** Adobe Photoshop 5

With version 5, Photoshop is better than ever, although some web designers will want a little more. The legendary Paintshop Pro and fun PhotoDeluxe cater at entry level.

PCW June 1998 p88. Price £763.75.

Contact Adobe 0181 606 4001

Also Recommended ■ **Adobe PhotoDeluxe 2**, *PCW December 1997 p87. Price* £57.58

Contact Adobe 0181 606 4001 **Paintshop Pro 4** *PCW December 1997 p212. Price* £58.69

Contact Digital Workshop 01295 258335

**Drawing:** CorelDraw 8

Not one of Corel's classic years, but still the Windows drawing package to own. Version 8 of the giant suite boasts better drawing and new interactive tools. Budget drawers should check out the Micrografx Windows Draw 6.

PCW January 1998 p88. Price £464.13

Contact Corel 0800 973189

Also Recommended ■ **Windows Draw 6** *PCW December 1997 p89.*

Price £49.95 **Contact** Micrografx 01483 747526

**Information managers:** Starfish Sidekick 98

The best personal information manager boasts wide customisability as its greatest strength.

For heavyweight contact management, look no further than Goldmine 4 (*details below*).

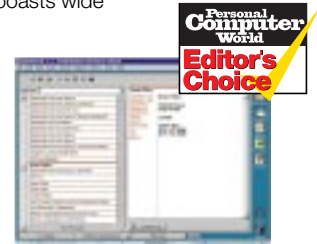
PCW August 1998 p204. Price £39.99

Contact Starfish 0181 875 4455

Also Recommended

■ **Goldmine 4** *PCW August 98 p173.*

Price £229.13 **Contact** AVG 0171 335 2222

**Presentation graphics:** Lotus Freelance 97

Our choice for electronic presentations. It may also come down to which office suite you own or are considering. As part of Microsoft Office 97, PowerPoint won't let you down. *PCW March 1998 p200.*

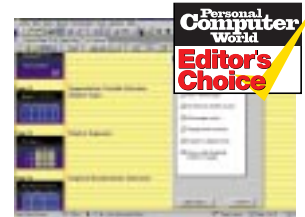
Price £49.35 **Contact** Lotus 01784

445808

Also Recommended ■ **MS PowerPoint**

97, *PCW March 1998 p202. Price*

£325.47 **Contact** Microsoft 0345 002000

**Programming tool:** Symantec Visual Café 2

Visual Café 2 is the most productive visual Java tool and has the option of native-code compilation for Windows. Windows

developers should go for Borland Delphi 3 which, although more complex, comes into its own on larger applications.

PCW April 1998 p177. Price from £79

Contact Symantec 0171 616 5600

Also Recommended ■ **Borland Delphi 3**

PCW April 1998 p183. Price from £95.18

Contact Borland 01734 320022

**Remote Access:** Symantec pcAnywhere 8.0

Takes the lead in remote access software. Remote controllers should also consider the legendary LapLink, now on version 7.5. *PCW January 1998*

p104. Price £166.33 **Contact**

Symantec 0171 616 5600

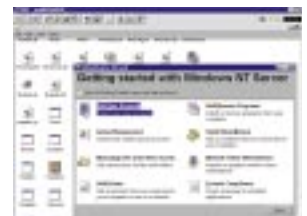
Also Recommended ■ **LapLink 7.5**

PCW November 1997 p126.

Price £176.25

Contact Traveling Software

01753 818282

**Web design:** SoftQuad HotMetal Pro 4.0

An excellent all-rounder, HotMetal Pro 4 gets our thumbs up for web design. For a slick interface and Office 97 integration, Microsoft's

FrontPage 98 is worth a look. *PCW*

January 1998 p196. Price £123.38

Contact SoftQuad 0181 387 4110.

Also Recommended

■ **FrontPage 98** *PCW January 1998 p195.*

Price £116.30 **Contact** Microsoft 0345 002000

■ **Adobe PageMill 3.0** *PCW May 1998 p158.*

Price £92.83 **Contact** Adobe 0181 606 4001

**Anti-Virus:** Norton AntiVirus 4.0

AntiVirus 4.0 is our choice for protecting your PC. It offers

the best combination of features and

performance. *PCW April 1998 p124. Price*

£49 **Contact** Symantec 0171 616 5600

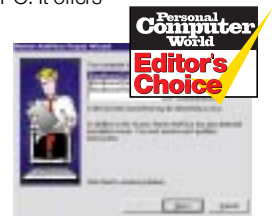
Also Recommended ■ **Dr Solomon's**

HomeGuard *PCW April 1998 p122. Price* £29

Contact Dr Solomons 01296 318700

■ **F-Secure 4.0 AntiVirus** *PCW April 1998 p122.*

Price £109.27 **Contact** Portcullis 0181 868 0098



ChipChat

Let's all do the conga

Last month's magnificent *PCW* Awards issue was launched in the splendour of the Hurlingham Club in south-west London. Fine wines flowed freely throughout the evening, as did fine whines from those unfortunate enough not to be nominated for an award. The place was packed with important figures from the IT industry; you couldn't throw a grape without hitting an enormously salaried MD plumb between the eyes (a rather unfortunate incident which we won't dwell on).

On the other side of the editorial fence, the entire *PCW* team made a rare appearance away from the cold glare of their computer screens, including staff writer, Paul Trueman, surprising us all by popping in between visits to HMV.



Gordon Laing in his everyday work clothes



A nicely-attired Gordon and *PCW* senior sub-editor, Rachel Spooner, in the party spirit

The attendees at the Awards were universal in their acclaim of the swanky Hurlingham Club and its tremendous grounds, which included an extraordinary number of tennis courts with more grass than Barbados. Sadly, ChipChat believes the opulence and sheer excitement of the

Caption competition



"I thought you only needed a box for cricket"

Think you can do better? Then email captions@vnu.co.uk or enter via our web site, or write to the usual *PCW* address [p10] with your own captions on a postcard marked "August Caption Compo" before 31st July. We'll print the funniest entry and the winner will receive a £20 book token.



Congratulations to Nick Lee, who won June's caption competition with: "I said smile! You're being paid enough".

evening may have been a little too much for our valiant managing editor. The transformation from respected journalist to freewheeling playboy is highlighted by the last known photograph (*left*), taken before his departure for San Tropez, where he can be seen boozing and schmoozing with an enraptured colleague. Party on, dude.

From the mouths of babes...

And from American IT executives comes a stream of nonsense. A recent press briefing unearthed this little gem: "We must keep expanding so we can start to verticalize the customer base". Ouch! The condition of the unlucky journalist is said to be serious but stable.

A fool and his moustache

Are easily parted. Following this month's "Tradespotting" feature [p146], our one-and-a-half fingered Begby impersonator assures ChipChat that he has hung up his ludicrous moustache for good. Readers are advised not to think about what may lurk beneath it: some things are best left unlifted.

Pratfalls and pitfalls

In early June the BBC reported the story of a man who was trapped when a twenty foot deep trench he was digging fell in on him. He was rescued a couple of hours later and suffered only "a broken leg and minor injuries". ChipChat wishes the gentleman in question a speedy and pun-free recovery.