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Macworld

Ten Years of EXcellence

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61 SHUT YOUR EYES AND IMAGINE YOU'VE JUST BEEN GIVEN £7,500 TO BUY YOUR DREAM MAC. NOW OPEN THEM, TURN TO OUR EYE-POPPING MACWORLD ONLINE COMPETITION – AND MAKE YOUR DREAM COME TRUE.

August 1999

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read me first
Simon Jary, editor-in-chief

Last year's dramatic decision by Apple to flounce out of its only UK Mac show caused chaos and confusion among exhibitors and visitors alike. Whatever the warped reasoning, the swift exit by the principal attraction devalued Apple Expo to the point of it becoming more a mini-market for resellers than a grand exhibition of the state of the Mac. Rather like the FA's awful action of forcing Man United out of the FA Cup in favour of some fuzzy global event, taking the Apple out of Apple Expo diminished the show's value. Next year, promised Apple, they'd be back bigger and better than ever before.

The real shame about the neutered Apple Expo '98 was that Apple had so much to say to its battered legion of devotees – and even more to show off to entirely new markets of fledgling PC buyers. All the talk at Apple Expo '97 was the recent return of founding father Steve Jobs. After years of massive losses and hopeless leadership, the company was still rocky, but fuelled by a sense of new beginnings. We saw the premier Apple Power Macs based on the PowerPC G3, and the first fruits of Jobs' cool 'Think Different' advertising campaign.

What could have been a gloomy gathering turned into a rather optimistic affair. This new Apple, with Steve back at the helm, would sail into uncharted waters and discover profits beyond our dreams. Just six months later, the Mac world went all translucent and Bondi Blue. The iMac template for all that would follow was joyously received. Caught on waves of profit and genuine popular excitement, it revitalized Mac communities across the globe.

Apple Expo '98 should have been the best UK Mac show ever. It could have reignited the whole Mac market this side of the Atlantic. But, because the show's initial organization was carried out during the down period in Apple's fortunes, the event organizers had refashioned it as the rather long-winded Total Design Technology Show. This new expo would welcome Windows PCs to the creative fold, and Apple wasn't best pleased by the competition.

There was a stand-off. Instead of admitting its previous perilous state and getting on with knocking the socks off the beige pretenders, Apple stamped its foot until the organizers jumped. And instead of seizing the initiative and creating the best Mac show ever, the organizers faffed around with dumb ideas until they came up with a stupid, Siamese-twin-type show of two halves that suited no one and confused the bejesus out of everyone.

Apple jumped ship. You could see its point, but nothing could obscure the fact that the company was missing one hell of an opportunity to market its renewed self and sell crateloads of iMacs to boot. Still, there was always next year. And Expo '99, remember, would be bigger and better than ever before.

Apart from it won't, because Apple has pulled the plug on the whole event (see page 16). Not only will Apple miss the chance to speak directly to its UK customers for the second year in succession, but no one else in the market will get the chance either. If the show was diminished in 1998, it has been utterly destroyed in 1999. The warning signs that not all was well with Expo '99 have been apparent for months now. We've been waiting for a series of ads since May, and exhibitor news has been as thin on the ground as snow in the Sahara. Apple Expo '99 was missing in action, presumed lost in Steve Jobs' office.

I can see the logic of Steve's eventual decision. Realigning the European shows around the big US events makes a lot of sense. That's how Apple makes its major announcements these days. Why reissue New York's news in Paris in September and then again in London in late November?

But a perfect plan from 2000 onwards and the first appearance of Steve Jobs at a UK Expo doesn't alter the fact that British users have been hard done by since they last met Apple back in 1997. How much harm has been done in terms of market share and industry perception can't be quantified. But the end result of Apple's absence is a sorry continuation of the disappointment, dejection and distrust Mac customers justifiably felt towards the company pre-Steve. Because of that, they'll be expecting something pretty damn amazing in nine months time. Apple simply cannot afford to let us down again.   MW

COVER PHOTOGRAPHY BY MIKE LAYE/ILLUSTRATION JAMES WALKER

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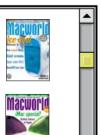
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New User
New Group
Open
Duplicate
Delete

What a lot of winners! To celebrate *Macworld*'s 10th anniversary, we ran a massive competition with over 10 giveaways and over 50 prizes. See if you're one of the winners… *Macworld* and **IMC** offered 10 top **Umax Astra 1220U** USB-based scanners. The winners are: Mr M Graham of East Sussex; Mrs G Richmond, Co Durham; Mr J Willscroft, Bucks; Mr T Pease, E Sussex; Mr R Musk, Bucks; Miss V W Wren, E Sussex; Mr I Bunt, Edinburgh; Mr P Brett, Manchester; Mr K Whitehead, Reading; and Miss G Mitten, Milton Keynes. Five readers won two high-res images from *Macworld* and **Photodisc**: Mr P Reed, Berks; Mr A Redinger, London; Mr S Bailey, London; Mr C Lindsay, Co Armagh; Ms L Grace, Herts. We had five sets of handwriting fonts from **The Type Marketing Company**, now belonging to: Mr B Stay, Herts; Mr J Clark, Cleveland; Mr I Threapleton, W Yorkshire; Mr N Methven, Aberdeen; and Mr M Bradbury, Leics. **Aladdin Knowledge Systems** helped us give away five **MacHASP USB** software-protection kits, to: Ms A Randall, Oxon; Miss N Murray, London; Mr P Thackray, W Yorks; Mrs K Fox-Boudewijn, Berks; and Miss R A Bassill, London. **Shaye** and *Macworld* proudly present two **Citizen PN60 pocket printers**, to: Mr T Harmer, Southern Ireland; and Mr S Sood, Hants. Together with Neato, we gave away a Zip drive and **Neato Zip drive label kit** to: Mr D Gill, London. The following readers won Zip-disk label kits: Mr T Bamborough, Co Durham; Mr M Schofield, Brighton; Mr S Carrol, Brighton; Mr Y Chen, London; Mr J E Attew, Surrey; Mr D J Toach, Leicester; Mr D J O'Brien, Scotland; Mr T Chokeumlerd, London; Mr J Ronay, London; Mr I G Bogoria, Edinburgh; Mr W Hannah, Somerset; Mr S Leaning, Lincs; Mr M Dunaway, Cheltenham; Mr C Goodwin, Leics; Mr W Matos, Hants; Mr W Parkin, Gwent; Mr S Reed, Middx; Mr I Morratt, Essex; Mr R Brown, Bristol; and Mrs J Hollands, Hants. **Voiceworks** joined in with its voice-recognition software, **VoicepowerPro**. A copy each to: Mr A Pagan, Edinburgh; and Mr C Cunliffe, Devon. **Marrutt** and *Macworld* gave five great software training CDs to Mr R Castledine of Essex. Time's up for these lucky readers, who won selected Apple-branded watches from **AppleWatch**: Mr M Rees, Basingstoke; Mr A Button, Derbyshire; Mr D A Hardy, Birmingham; Mr J Rae Brown, London; Mr J Peters, Herts; Mr P Casells, Chichester; Mr D Lennox, Ayrshire; Mr A Gilmore, Roath; Mr N J Gill, Derbyshire; Mr D Blaikie, W Sussex; Mr A Whitehurst, Macclesfield; Mr R Plenzik, Kent; Mr J Mason, Herts; and Ms K Booth, Dorset.

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Macworld

A 30-day trial of Macromedia Flash 4,
top demos like MetaCreations Canoma 1.0, and
all the latest shareware, games and updaters await
you on this month's CD. Vic Lennard leads the way…

FREE! 30 DAY TRIAL
Flash 4
High-impact Web vector animation tool
catbase*
iSoft Publisher Publishing
Database publishing tool
Fully functional demo
Ultimatte Knockout
Image-masking software
Fully featured demo
Games World
over 100MB including
Tanaka
Futuristic
racing game
CANOMA
Amazing
2D-to-3D
modeller
30-day trial
FREE!
Pixels:3D
3D graphics modelling tool

Install Me Before you start working your way through the software on our CD, go to the System Utilities folder and make sure you install the following:

■ **QuickTime 3.0.2**
Many of the demos need this installed. It gives you new versions of QuickTime and the MPEG, VR, Musical Instruments and PowerPlug add-ons.

■ **Acrobat Reader 4**
Install this version to be able to read many of the on-screen manuals.

■ **StuffIt Expander and DropStuff**
Versions 4.5 & 5.1.2 are included.

■ **Also included**
A number of useful utilities such as Apple Game Sprockets 1.1.4, InternetConfig 2.0 and Apple Appearance plus essential items such as Apple Disk Copy and Drive Setup.

Macworld ★★★★ reviews ★★★★★

Macromedia Flash 4

Easily design and reliably deliver high-impact, low-bandwidth Web sites to all browsers. Flash lets you produce sites with vector and bitmap graphics, motion, MP3 audio, form input and interactivity.

Use natural, vector-based drawing tools for sketching or precision drawing. Erase, brush and lasso the bézier curves of art imported from your favourite illustration program. Create translucent graphics, overlay transparent vector objects on bitmaps, and vary the levels of opacity, transparent colours, gradients and other attributes at any time.

Morph any graphic across any number of frames. Shape Morphing automatically animates the change from one shape to the other. You no longer have to draw each incremental change in its own keyframe.

Break up bitmaps and use as editable fills. Use the new lasso tool and intelligent wand to create masks with bitmaps by selecting areas of similar colour in bitmap fills.

Flash 4 includes support for TrueType and PostScript fonts, and comprehensive sprite animation. Put it through its paces for the next 30 days!

macromedia® FLASH™ 4
macromedia®

MetaCreations Canoma

Canoma allows Web content developers and graphic artists to quickly and easily create photo-realistic 3D models from 2D photos or scanned images. Use in Web sites, electronic catalogues, 3D modelling and animation packages or combine with MetaStream 3D streaming technology – a complete solution for creating 3D models and distributing them via the Web.

Create models, preview and texture them, and export in a variety of formats. If you have QuickTime 3 installed, you can output movie files with this trial version.

This version of Canoma is fully functional, but only loads the tutorial pictures included with the download. Documentation on the tutorials is also included and accessible from the Canoma Help menu. You will need to have Adobe Acrobat Reader installed to view this documentation.

There is no time limit on the trial version. A minimum of 48MB free RAM is recommended.

CANOMA

Macworld ★★★ reviews ★★★★

Serious Software

PiXELS:3D Studio 2.1.4

PiXELS:3D is an integrated suite of professional tools for creating and animating 3D characters and visual effects. PiXELS:3D gives you full control of every step in the production process. Build and edit organic models in real-time, create and apply textures/materials, and position objects and lights within a scene. Create realistic movements for all objects and produce broadcast-quality renderings of your animations.

PiXELS:3D Studio 2.1.4 is a demo on start-up, but brings up a registration dialogue box with your Machine ID code. Log on to www.pixels.net, fill out the registration (including your ID code) and a serial number will be sent to you by email. While you're there, download the PDF manual as well.

Ultimatte KnockOut 1.1 demo

Most masking programs help you find an object's edges, useful when dealing with simple edge transitions. The limitations are well known – hair detail is always one of the 'finishing touches' that requires hours of work and the result is always a compromise.

Ultimatte KnockOut recognizes that there really are no edges – only transitions. Even the sharpest edge has a transition where at least one pixel is a mixture of the colour of the foreground subject and the colour behind it. Ultimatte KnockOut reproduces the soft transitions of foreground edges while removing any trace of the visible background in that transition.

The demo is fully functional and places a 'spoiler' on the images in the form of a 'red rain'. Full instructions are included in the Help folder. The training files referred to in the manual are included in the Sample Projects/Images folders. There are several Photoshop files with subjects such as glass and translucent materials in the Examples folder. Ultimatte KnockOut is NOT compatible with Mac OS 8.5.x, but works with OS 8.6.

CatBase 4.1.8 demo

reviews See page 54

CatBase is a database publishing application that makes it easy to publish data in print, as files and on the Internet. It automatically formats the text (and, with certain publishing destinations, pictures) according to specifications set up in CatBase. Data can be exported from another system and then imported into CatBase.

Data can be published in various ways, including print, as delimited (plain text) files, HTML documents and on a Web server. Faxes, emails and letters can be sent, and labels produced directly from the database if it contains contact details. The demo version is fully functional, but limited to 50 records per table.

Don't miss…

- ■ **Netscape Communicator 4.61** – the latest upgrade
- ■ **Cool Extras!** *Mac Cycle-Logical demo* – learn bike-riding the Mac way
  - *G3 icon* – Macworld's very own G3 MiniTower icon
  - *Snapz Pro 2* – Ambrosia Software's superb screenshot software
- ■ **Mac ISP** – Abel Internet's free Internet access offer

Also on the CD

APPLE *(in the System Utilities folder) including:*
ARA 3.0.2 Client Updater
ARA 3.0.2 Server Updater
ASIP 6.2 Update
Disk Copy 6.3.3
iMac Firmware Update 1.2

COMMS & INTERNET
30 applications including:
DNS Expert
Email Merge 1.7.6
MIDIPLUG for XG
Shockwave

FONTS
Font File Helper
FontBuddy 1.2.1

GRAPHICS
14 items including:
epsConverter 1.4.1
EPS•Factory 1.0.1
Fractal Viewer
Rainbow Painter 1.0.0

INFO
Six items including:
1984 OLM Issue 2.2
About This Particular Mac 5.06
Apple Wizards – June 1999
My Mac Magazine #50
plus 10 items for developers

MATHS & SCIENCE
Eight utilities including:
Common Conversions
Periodic Table 1.2
Poly 1.02

NETWORK
The Unmounter

SOUND & MUSIC
10 applications including:
FretPet 2.0.2
Logseq
Sound Sculptor II 2.4.1

ANTI VIRUS
Four items for your data's continuing protection.

UTILITIES
Ten categories comprising over 60 useful tools for your Mac including:
AppWatcher 1.0
BeHierarchic4.0
CD/DVD Library 3.0
CopyPaste 4.3.2
Desktopper 1.3
Drag'nBack 2.9.5
iRemember 1.0.3
PrinterSwitch 1.3.4
PrintRGB
Startup Doubler 2.0
TextSpresso™ 1.1.1

UPDATERS
This month's dedicated updaters folder includes over 100Mb of patches to bring many popular applications bang up-to-date, including:
AudioVision 4.1v9
BBEdit 5.1 Update
Crescendo 1.3.6
Font Reserve 2.0.3
MagicScan 4.2
Norton AntiVirus (06/99)
NUM 4.04
ReCycle! 1.7
SAM (06/99)
Ultimatte KnockOut v1.1
Virex (06/99)

Other demos include:

ACTION GoMac 2.0.2
BladePro 2.14
ColorSafe™ 1.6.1
ImageVice™ 2.0.5
Inklination FineArt 3D
JT | Type Sampler
PhotoGraphics™ 1.0.1

Shareware

Many programs on this CD are shareware, which means that if you keep them and use them for more than the allowed time (usually up to 30 days) then you must pay for them. Treat shareware as budget-priced commercial programs – support shareware authors so that they continue to provide high-quality programs for the Mac.

Tanaka & Traitors Gate

Tanaka is a 3D race game where you guide your vehicle through the streets of the City of Tanaka in the year 2525. Some races are run against the clock, while others are Duels or Total Carnage where you must defeat the other pilots or destroy them to emerge victorious.

This demo contains three levels but has all networking features disabled.

Major Anderson, head of the European desk of ORPHIA, has defected, taking with him classified Pentagon files. These files contain detailed blueprints on how to rescue a number of priceless treasures in the event of war.

Anderson is likely to try to steal the British Crown Jewels, protected by a multi-million pound security system at the Tower of London.

PIAD, a Pentagon security department, has launched a covert operation, code-named **Traitors Gate** – that's where you come in…
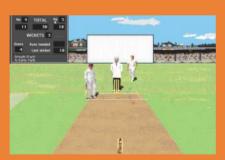
Games World

Enjoy card and board games? Head straight for the two Hoyle demos. Each gives you access to three games, including Backgammon in Board Games and Cribbage in Card Games.

This month's Top 12 shareware games includes Lost Souls, a snazzy strategy game, plus the latest versions of Cricket, PacMac Deluxe and TheZone. Native Assault 1.2.1 is really an updater – drag it into the folder of last month's Native Assault 0.9 to play.

Lost Souls

Native Assault 1.2.1

Cricket 4.0

Macworld CD catalogue

Courtesy of Mark Pirri's superb DiskTracker program, Macworld brings you a searchable catalogue of all our CDs from 1997 and '99 – almost 116,000 files! This will grow month by month to allow you to find any file you want, without wearing out your CD-ROM drive. The latest version of DiskTracker (1.1.4) is also included – don't forget to register if you find our library useful.

Macs black in   business

Could Apple be on the verge of a re-entry into the fiercely competitive enterprise market? *Macworld* investigates…

Amid calls for Apple to expand its range of Mac systems, rumours were flying before New York's Macworld Expo that the company is on the brink of a new subdivision of product lines. While the unveiling of the consumer portable – a sort of iMac laptop – had an Expo launch expected for some time (see News, July 1999), few had envisaged cheaper Power Macs and PowerBooks aimed more at business users than at design pros. Links with Palm-based handheld computers further stretch the line-up.

It was a year ago at 1998's Macworld Expo that Apple CEO Steve Jobs unveiled the company's simplified product line-up. Gone was the confusion of 1997's 15 flavours of Mac. In came a four-way split of a desktop and portable model each for the consumer and professional markets.

Today, we have the blue Power Mac G3 and slim G3 PowerBook on the creative professional side; the iMac and funky portable for consumers.

Following the phenomenal success of the iMac at attracting new users in markets previously thought lost, some analysts are speculating that Jobs is preparing to split the professional part of the line-up equation into two new segments.

Now, there is an opportunity to subdivide the professional section into two segments: creative – Web, graphic design, DTP, multimedia) – and business – Internet, accounting, Office suites.

The creative Power Macs would likely use PowerPC G4 processors (from 500MHz up, with 2MB of cache at the high end), faster graphics cards, bundles of RAM, 32x CD drives, fast and large SCSI hard drives, FireWire, and a wide range of display options. Apple Store bundles with Apple's forthcoming wide-screen Cinema Display flat-panel are also likely.

The creative PowerBook would also run fast G4 chips, and most likely include a high-resolution display of at least 14 inches – possibly larger – and extras like multi-monitor support from its on-board 16MB RAGE 128 graphics chip.

The business Macs would likely stick with the PowerPC G3 processor, further focusing on price/performance by using inexpensive Ultra ATA IDE hard disks, and midrange RAGE Pro Turbo graphics controller with 6MB of video memory. FireWire and 100BaseT ethernet will remain.

Rumours have been circulating for several months now of "more restrained" enclosure designs, using mid-tone colours, blacks, and greys – although still standing apart from the dull beige of most business PCs.

The business PowerBook would continue Apple's slimming course, being thinner and lighter than the creative portable – likely to require bulkier components.

Apple may be working on utilizing Light Emitting Plastics (LEPs) as a possible display medium for both versions. The technology (see page 64) is lighter, thinner, and uses less power than current LCDs, but is likely to be further off in the usable technology future. Other possible technical breakthroughs include the use of polymer batteries – which again are lighter than current Lithium Ion batteries.

The business subdivision is made more likely by Apple's increasingly strong partnership with 3Com's Palm Computing. Business Power Macs and PowerBooks would be intrinsically linked to Palm handhelds (see *Macworld*, July 1999). Palm and Mac would communicate via 4Mbps IrDA infra-red ports, already standard on PowerBooks.

The immensely popular Palm PDA is increasingly being targeted at the business world. At the JavaOne conference, 3Com introduced Sun's Java programming platform on the Palm V, the best-selling handheld device (see Reviews, June 1999). Handhelds featured heavily at June's PC Expo – traditionally the reserve of desktop PCs and laptops.

Apple is expected to ship its own Palm-based devices, which would come in a variety of colours. Palm already makes an IBM-branded organizer.

For Apple, it is a return to a market it pioneered – and then abandoned in 1997 with the cancellation of its fabled Newton PDA. **MW**

Apple Expo cancelled, bigger show in March 2000

Steve Jobs to open first Apple-attended UK show for three years

In a sensational move, the UK's only-Mac show, Apple Expo '99, has been dropped in favour of a much-larger show in March 2000. Industry pundits believe charismatic Apple CEO Steve Jobs will be there in person to deliver the opening day's all-important keynote speech.

Apple Expo '99 was due to run November 25-27 at London's Olympia exhibition hall, but Apple has decided to postpone it so that it runs shortly after January's Macworld Expo in San Francisco – the premier show of the Mac calendar.

This, according to Bob Denton, Apple Expo's Operations Manager, is part of Apple's "global strategy" for delivering its message.

In the same way that Apple Expo in Paris comes two months after Macworld Expo in New York, Apple wants Apple Expo UK to follow Macworld San Francisco. This could mean a high-profile UK launch for Apple's next-generation operating system,

Mac OS X – widely expected to be the big news in San Francisco next year.

"All the product and strategy announcements will be brought to London as a complete roadshow," says Denton.

Apple will now have six key events a year – two big expos in the US, two in Europe, one in Tokyo, and the California-based Worldwide Developers Conference.

The decision to move the event from its traditional Olympia base to Wembley Exhibition and Conference Centre was driven by a matter of space, claims Denton. Wembley can seat 2,600 people for the keynote address, the kind of space needed for Apple's presidential-style keynote delivery, and an opportunity not possible in Olympia.

Also, major players like Macromedia and Adobe usually stage large conferences, and Wembley is better equipped for that, Denton told *Macworld*.
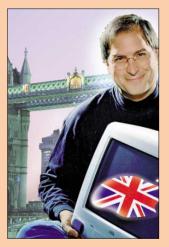
He added that while the new

show will be bigger and better, the organizers were not entirely thrilled at the news, as 70 per cent of space had already been sold for the November dates.

Users forced to wait
In addition, this is the second time that Apple has caused chaos for Expo organizers, exhibitors, and show-goers. Last year's expo will be remembered for Apple's last-minute pull-out due to a spat with then organizer Emap Trenton (see November 1998).

However, despite being "messed around" for the second time, exhibitors have generally reacted well to the news.

Gavin Drake, Quark's European programme manager said:"If anything, the switch of dates and venue for Apple Expo illustrates the increasing importance that Apple is placing on it. All the information we have so far suggests the new timing will produce a higher profile event, which is obviously of benefit to Quark's professional customer

base. I'm sure there will be disappointment from some quarters, but ultimately this will soon be forgotten if the show delivers all it promises to next year."

Those exhibitors who have paid their 20 per cent deposit for stands at the original show will be given the option to pull out and receive a refund, or to go ahead with next year's show held from March 30 to April 1, 2000. – **Louise Banbury** **MW**

Apple sues – iMac cloned as new Windows PC

Apple has filed a lawsuit against a company called Future Power, alleging the PC maker illegally copied the industrial design of its popular iMac for a Windows computer.

At PC Expo in New York, Future Power displayed its E-Power All-in-One Windows PC (top right), which is bubble-shaped just like the iMac (above) and also comes in five "fun" flavours: ruby, topaz, sapphire, emerald and amethyst.

The E-Power will have a 400MHz Intel Celeron chip, 6.4GB hard drive, 64MB RAM and 40x CD. Due to ship in September, it sells for the equivalent of £499, while the iMac sells for £749.

In its lawsuit, Apple asks the court to prohibit the companies from selling the computers. The lawsuit also seeks unspecified actual and punitive damages.

"There's a universe of original designs that Future Power and Daewoo could have created for thier computers, but instead they chose to copy Apple's designs," said Steve Jobs, Apple CEO.

"We've invested a lot of money and effort to create and market our award-winning designs. We intend to vigorously protect them under the law."

Future Power's Michelle Van Jura defended the E-Power's design: "The most natural design to ensure the smallest footprint is a convex-shaped unit." Future Power is a joint-venture company backed by the Korean Daewoo Group.

Apple's complaint offers some insights into the genesis of the iMac. In its protest against the "cheap imitation", Apple argues that the E-Power "threatens imminent and irreparable harm."

According to the legal document, "Apple bet its future on the success or failure of the iMac" and had to overcome significant design challenges.

"In order to fit all of the necessary components into the iMac's chassis, many of the technical components had to be redesigned and miniaturized. In all, Apple expended more than 100 man-years on the design and engineering of the iMac."

Apple has sold 1.15 million iMacs (designed by Brit Jonathan Ive) since its debut in July 1998.
– **Cheri Paquet** **MW**

Macworld EXPO

Point yourself at **www.macworld.co.uk** for Macworld Expo, New York

While the August issue of *Macworld* went to press before the great gathering at Macworld Expo, New York, its news team never sleeps in its bid to bring you the news first.

So running up to, during and after the Expo held from July 21 to 23, 1999, point your Web browser at www.macworld.co.uk for all the latest launches, keynote speeches, gossip and happenings from New York City.

Of course, we'll cover all the key points in our September issue (out August 12, 1999), but see the hot news first at Macworld Online. **MW**

news

Adobe plugs PDF gap

*Here we see the same page from **www.macworld.co.uk** – first in Internet Explorer and then the PDF version in Acrobat.*

So the Macintosh is No.1 with creative professionals, is it? Publishing and design pros get the best features first on the Mac, right? Wrong – in the case of Adobe's Acrobat 4.0 (see Reviews, page 48), where many of the whizzy features in the PC version are absent on the Mac.

The spanner in the PDF (Portable Document Format) works was Microsoft's OLE technology – which the Mac doesn't have, after its fruitless foray with the now-discontinued development of OpenDoc.

The most highly anticipated capability that didn't make it into the Mac version is Web Capture, which can download Web pages and convert them on-the-fly into illustrated, hyperlinked PDF files.

Adobe promised that most of the currently PC-only Acrobat 4.0 features will eventually make it to the Mac as free plug-ins. However, optimism hasn't been high. Some users even considered a switch to Windows just to play with the neat feature. But prepare for a surprise, because *Macworld* has been playing with an alpha version of Acrobat's Web Capture for the Mac. And it's a winner.

With the Web Capture plug-in, Acrobat can convert Web pages – or whole sites – to PDF on the fly. This means that you could convert your favourite sites – or sections of them – to PDF and browse them at your leisure while on a plane or anywhere away from a phone line. And, better yet, all that browsing won't cost you a penny – after the initial download and conversion.

You can set the number of levels of a Web site to capture – with Acrobat warning that more than two layers of really large

sites, such as Apple.com, will take up a lot of disk space and CPU time.

Acrobat preserves the basic components of Web pages – including standard Web elements, such as pop-up menus – but not advanced features, such as cascading style sheets, Java applets, and GIF animations.
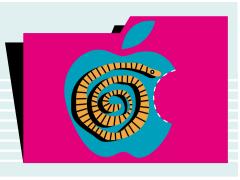
Acrobat creates bookmarks that can reflect all parts of a page, including text headings, graphics, notes, and so on. Using them makes finding and reusing a document's contents even easier than standard Web browsing.

Because of the on-screen nature of Web-page design, it's hard to guess how large to tell Acrobat to make its converted pages. But guessing is pretty easy, with a fully customizable page-layout Conversion Settings dialogue box. If you're wrong about the length, Acrobat breaks text at logical points to create new pages. It scales down the page if the width is wrong, but expect clipping of frames and images.

Converting one level – that is, the home page – of Macworld Online took just 20 seconds and created a 136K PDF file. A two-level conversion (952K) took two-and-a-half minutes. At a three-level depth, the HTML-to-PDF conversion took ten minutes, with an extra five to fix links and save the 3.6MB file. (Tests undertaken on a beige 300MHz Power Mac G3.)

Adobe still expects to have almost all the absent features available for the Mac this year – possibly earlier for Web Capture, as the alpha we tested was pretty stable.

And how could we have lived with Windows having sole rights over the best way yet to capture Web text, images, links, and frames? **– Simon Jary** MW

Rio grand!

Macintosh users looking to jump on the MP3 bandwagon got a boost when RioPort, a wholly owned subsidiary of Diamond Multimedia Systems, announced the Rio PMP 500, the first digital-audio player to support the Mac. The £199 player, expected to ship in August, will let users play MP3 audio files downloaded from the Web. It will also include software that converts audio CD titles into the MP3 format.

The Rio 500 will be bundled with a version of SoundJam MP, which lets users encode and play back MP3 titles in addition to downloading files to the player. The USB-based player offers 64MB storage – twice the capacity of the PC-only Rio 300, and enough to store up to two hours of music.

MP3 has become a popular music format for the Web, thanks to its compact file sizes and near-CD-quality audio. An MP3 song typically consumes about one-tenth the file space of the equivalent audio CD title. MP3 has raised concerns in the recording industry because it makes it easy to pirate copyrighted music. However, some musicians have embraced the format, because they can offer samples of their recordings directly to potential fans, bypassing conventional distribution channels. Some record companies have encrypted their music releases to prevent unauthorized copying, but RioPort says the Rio 500 will play encrypted files. **– Stephen Beale**
www.RioPort.com *See First Contact, page 37*

Windows-only virus warning for Mac, too

Anti-virus researchers warn that PC-emulation programs and multiplatform networks can leave some Macs as vulnerable to the Worm.ExploreZip virus as Windows computers. Only a small percentage of Macintosh users are vulnerable to the virus, but for them the danger of file destruction is a real threat, according to Carey Nachenberg, chief researcher at Symantec's AntiVirus Research Center.

Nachenberg said Macs must meet a narrow set of criteria to be vulnerable to the computer virus, which has spread across the world in a matter of days through email traffic (see below). A Macintosh must be

connected to an infected Windows PC over a file-sharing network, he said, or the malicious email file must have been opened through a PC-emulation program.

In addition, he said, the names of the vulnerable Mac files must bear Windows-compatible file-name extensions, such as .doc, .ppt, .hsm, .xls and others.

"Generally, Macintosh users are absolutely safe because this is a Windows 32-bit virus," Nachenberg said, meaning it requires a Windows 32-bit OS – such as Windows 95/98/NT – to operate. "But, some Mac users are at risk," he added.

One Macintosh user who fell victim to the worm virus is Scott Champion, whose advertising firm runs a mixed network of

two Power Mac G3s and a PC running Windows 95. Champion said the computers are connected on an AppleTalk network, and many of the file names have Windows file-name extensions to accommodate PC customers. The worm virus apparently came into the office through email on the PC, he said, and proceeded to destroy files across the network by reducing their file sizes to 1K each – wiping them clean of data.

"I've got dozens and dozens of 1K files," Champion said. "Fortunately, I've got them backed up, so it's not a tragedy."

Several anti-virus developers have posted software updates to catch the virus before it does any damage, including Symantec. and Network Associates. **– John Batteiger**

The fast-spreading W32/ExplorerZip.worm, which propagates via email and destroys files on a PC's hard drive, has infected tens of thousands of users of Microsoft Outlook and Exchange software worldwide.

Unlike the Melissa virus (see *Macworld*, May 1999), which emailed itself to recipients via a user's address book, this worm automatically replies to legitimate inbound email. Users are infected when they open email attachments that appear

to be a reply from someone to whom they sent mail.

When a user clicks on the attached file, the worm deposits the file explore.exe and modifies the Windows registry file. The worm's payload then searches the user's local hard drive for a variety of file types and attempts to erase the contents of the file, leaving a zero-byte file that cannot be undeleted with typical undelete utilities. W32/ExplorerZip.worm is categorized as a worm, not a

virus, because it copies itself to a computer's hard drive and moves from machine to machine in a network.

A virus simply attaches itself to specific files.

The destructive worm is also infiltrating systems via shared files on a network. The worm is "much more pernicious than what was originally thought," said Trend Micro's Susan Orbuch, and "much more complex and sophisticated" than its famous recent predecessor, Melissa.

The latest twist will force information technology teams and users to be clever as well. They will have to be aware of autofile backups, Orbuch said, because if systems are infected, that could result in files being overwritten as empty.

"I have no idea what these people are thinking, said David Chess, an IBM researcher.

"It's the same mind-set that makes people break car windows; it's the same mindless destructiveness." MW
– Ann Harrison

500MHz G3 bugging Apple

Apple is waiting on IBM to squash a bug in the 500MHz version of its PowerPC G3 processor, sources told *Macworld*. The timing bug is throwing up "obscure data errors", and Apple is loath to touch the chip until it's fixed. In the meantime, Apple has bumped its G3 Power Macs by 50MHz, offering the blue-&-whites at 350, 400 and 450MHz.

Apple claims the new high-end Power Mac (reviewed, page 50) offers a 23 per cent speed boost over the 400MHz version. Technical specs remain the same as the earlier Power Macs, with the exception of a faster, 32x CD drive. The 450MHz G3 chip runs 1MB of backside cache at at 2:1 ratio (225MHz). it includes 128MB of RAM, and a 9GB Ultra-2 SCSI drive.
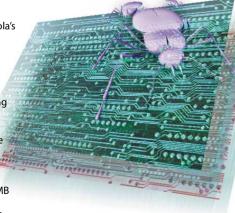
According to Robert Farnsworth, president of chip-upgrade-card maker Sonnet Technologies, we should see 500MHz G3 chips in Power Macs and upgrades by the beginning of the fourth quarter of this year. IBM recently cranked a single G3 to 600MHz and offered it to Apple so the Mac maker

could wow the crowds at May's Worldwide Developers Conference. Apple, however, refused the speedster as it is determined to push Motorola's AltiVec-boosted G3 processors.

Sonnet, now ranked by IBM as the second biggest customer for G3 chips after Apple, could also be first on the scene when the time is right for multiprocessing to make a return to the Mac. Sonnet employs many of the DayStar engineering team that produced the only multiprocessing (MP) systems, for DayStar itself and Apple.

Farnsworth told *Macworld* that Sonnet will be ready for the return of MP as soon as Apple gets Mac OS X up and running on its forthcoming PowerPC G4-driven Power Macs.

The G4 chips will be able to support up to 2MB of cache. Even when these systems are shipping (probably in early 2000), Farnsworth said that MP won't really take off until the software is there to support it. **– Simon Jary** MW

WORM BY ANDY BAKER; CHIPPY BUG BY JAMES WALKER

NY PC blues, reds, greens, yellows…

Colour-riot alert at Macworld Expo!
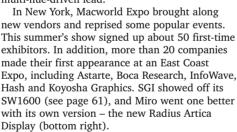
Everything is translucent, and everything connects to a Universal Serial Bus port – that's the first impression anyone gets walking into a Mac show this summer. The blaze of computing colour – started by Apple when it unveiled its iMac last year – was first evident at Taiwan's Computex Taipei, which, according to show organizers, is one of the world's three largest computer trade shows – next to only Las Vegas' Comdex and CeBIT in Hanover, Germany. At the show, it was clear the whole computing world is following Apple's multi-hue-driven lead.

In New York, Macworld Expo brought along new vendors and reprised some popular events. This summer's show signed up about 50 first-time exhibitors. In addition, more than 20 companies made their first appearance at an East Coast Expo, including Astarte, Boca Research, InfoWave, Hash and Koyosha Graphics. SGI showed off its SW1600 (see page 61), and Miro went one better with its own version – the new Radius Artica Display (bottom right).

Entrega Technologies proudly showed off its USB-to-SCSI Converter, which the company claims is the only such device that supports Iomega Zip drives as well as other products. Entrega also previewed a docking station, boasting a USB hub with SCSI and 8DIN Apple serial and USB interfaces.

David Murray, Entrega's vice president of product marketing, was an early USB-technology developer and evangelist at Compaq. He helped define USB's feature set and initial architecture.

"Intel bought into USB very, very quickly," recalls Murray. But he adds: "The momentum behind USB today has more to do with Apple and the iMac than with anything else".

Extensis used the Expo to show off PhotoFrame 2.0, an upgrade to its set of tools for designing a variety of image frame and border effects in Adobe Photoshop. PhotoFrame 2.0 offers over 1,000 image frames, with more available for download from the new, companion Web site.

The new interface offered by PhotoFrame 2.0 adds dockable palettes, maximizing usable screen area. Combinations of settings can be saved and accessed from the Photoshop menu bar – so users can apply frames without launching the filter.

Aladdin Systems released ShrinkWrap 3.5, an improved version of the utility that allows you to create disk images straight to your desktop.

The show marked the comeback of a special-interest area focused on science and technology, including an education arena. In addition, the NY Expo included the Consumer Showcase that first appeared at January's show in San Francisco.

Show winners

The event also featured three areas of creative competition. At the National Macintosh Gaming Championship, attendees tried their hands at games such as Quake II and Myth II – competing for more than $25,000 in prizes.

Elsewhere on the show floor, representatives of the International Academy of Digital Arts & Sciences accepted entries for the Webby Awards, which recognize outstanding Web sites. Academy members – including David Bowie and Gillian Anderson – will judge the awards, which will be presented in March 2000. And, the Digital Art Gallery showcased 30 winners of the second annual Macworld Expo Digital Art contest.

According to show director Nicole Derany, Expo attendees were a mix of professionals and consumers. Looking ahead to January 2000, Derany announced a scheduling tweak to the next San Francisco show, shifting it from January 3-7 to January 4-8 and adding a Saturday to the millennium's first major Mac event. MW

(Above) Several companies used a generic software driver called "MacHack" to let video cameras work with the iMac, including this as-yet-unnamed model at an Apple distributor's booth.
(Left) CompuCable's iDock comes in two versions: The one on top combines a USB hub with a USB-serial/parallel converter, and the newer version below sports an internal USB floppy drive.
(Below) The new Radius Artica Display melds SGI's award-winning flat-panel technology with Apple-style plastics.

(Top) Colourful iMac keyboards from Alps offer iMac users more finger space.
(Centre) Alps' curvy USB game controller is currently available only in Japan.
(Bottom) Artec 1236U USB scanners match all the iMac's colours.

Licence to kill

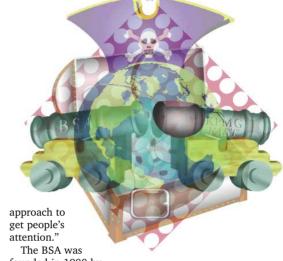## Program pirates targeted by software hardmen

A third of software in Britain is illegal. Now angry publishers have declared war on the world's program pirates, threatening to hit offenders until the problem is wiped out. So aggressive are the software companies, that direct attacks by one industry watchdog have brought censor from business and regulatory organizations. On top of this, an imminent new law in the US allows software companies to get really nasty.

A survey of over 200 companies, by the Federation Against Software Theft (FAST) and KPMG, claims that 29 per cent of all software in use in the UK is illegal. The Business Software Alliance (BSA) alleges software "thievery" cost $11 billion in 1998. The BSA has launched a campaign, called Crackdown 99, targeting small and medium-sized businesses, asking them to audit their computer systems to check for illegal software. Its strongarm tactics and threats have attracted the attention of the Advertising Standards Authority (ASA) and the Birmingham Chamber of Commerce and Industry.

If targeted businesses don't respond to its letters, the BSA threatens to place them on its public Software Watch Database of suspected pirate companies. The BSA misleadingly implies that recipients are legally obliged to answer its questions, according to the two groups. Following the complaints, the BSA toned down the language of the letters, but Crackdown campaign affairs manager, Mike Newton, is unapologetic for the BSA's tactics: "We've tried friendly exchanges in the past couple of years and we got 2 to 3 per cent response rates," he said. The new, aggressive campaign has achieved a 40 per cent response rate, he claimed.

"We're not a bunch of softies who will just roll over," he growled.

Karine Elsen, director of marketing for the BSA, agreed: "Sometimes it takes a bit of an aggressive approach to get people's attention."

The BSA was founded in 1988 by Microsoft. Other members include Adobe, Autodesk, Corel, Lotus, Novell, and Symantec.

The BSA is determined that software piracy won't be taken lightly. In 1996, BSA Europe offered cash rewards to anyone who turned in a software pirate. So-called "rat on your boss" schemes have also been enacted by the BSA across the world. The BSA claims to have extracted more than $40 million from software pirates in the last six years.
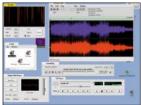
In the US, a new law – the Uniform Computer Information Transactions Act (UCITA) – will enable software companies to remotely disable programs and disclaim warranties. It, too, has been attacked by technology consumer groups – such as the Society of Information Managers (SIM). UCITA condones the building into programs of software "time bombs" and back doors – holes in a system's security deliberately left in place by designers. **MW**

Be happy with 4.5

At PC Expo in New York, Be Inc. announced a new version of its digital-media BeOS operating system that runs on both PowerPC and Intel chips.

Version 4.5 has an improved installation process and user interface, as well as additions to the Media Kit that manages multiple streams of audio and video. It ships with a Web browser, email client, media player, TV viewer, 3D audio mixer, utilities, translators and an integrated development environment.

Apple once considered buying the BeOS to use as its next-generation Mac operating system, before choosing Steve Jobs' NeXTStep OS instead. Be was founded in 1990 by former Apple head of product development, Jean-Louis Gassée.

The BeOS is gaining popularity with PC makers who see it as an alternative to Microsoft's all-pervasive Windows. Along with the new release, the company announced OEM agreements with computer manufacturers iDot and AST, who are now producing low-cost machines running the BeOS.

Software developers are also showing new support for Be. MetaCreations has announced a BeOS version of Bryce 4, and BeatWare is shipping its e-Picture Web-graphics program for the platform.

Cutting-edge 3D software developer, Nichimen Graphics will port its Nendo software (see 'Grosso', left, courtesy of artist John Feather) to the BeOS.

The UK Be market has recently been boosted by the appointment of Principal as its distributor. **MW**

For the information as it happens visit Macworld Online Daily News (**www.macworld.co.uk**), updated five times a week

The rise and fall of voice recognition

As Mac plays catch-up with Windows, experts warn "it's not for everyone"

In almost every future we've imagined, computers listen. Not just to the grumbles, curses, and pleas most of us barrage them with now, but also to dictation and commands ("Tea. Earl Grey. Hot.").

The future arrived in 1996, when Articulate Systems released PowerSecretary, the first fully fledged voice-recognition program for the Mac. But by late 1998, it was gone. Dragon Systems – a major investor in Articulate, and the distributor of PowerSecretary – killed the program. As a result, there has never been a Mac program capable of the latest advance in voice recognition: continuous-speech dictation (where you don't have to talk … like … this).

Now the possibility of relief is in sight. Two companies – an upstart, MacSpeech (**www.macspeech.com**), and Dragon Systems itself (**www.dragonsys.com**) – have promised to close the huge gap in voice-recognition capabilities between the Mac and PC by the end of this year (see News, July 1999). MacSpeech says that it will release MacDictate for less than $250. Dragon Systems has not yet announced the name or pricing of its product.

For Macintosh users who can't use the keyboard for one reason or another, often because of disabilities or computer-related injuries, the lack of voice-recognition software on the Macintosh has forced them either to use seriously outdated software or to switch to Windows.

The Mac OS does offer built-in, limited voice-recognition through the PlainTalk extension. (To make PlainTalk work, owners of iMacs and the new G3 Power Macs should upgrade to Mac OS 8.6.) MacSpeech's ListenDo! program enhances PlainTalk, allowing you to control all menu items via voice commands. But all that is nothing compared to the Windows alternatives.

Cheap talk costs

Over the past couple of years, the power of voice-recognition software for Windows has skyrocketed while prices have plummeted. To put it in perspective, the original PowerSecretary in the US cost about $3,000; Dragon NaturallySpeaking for Windows is available in several flavours, at prices from $200. It's the best-selling voice-recognition product in the US, according to market researcher PC Data.

Many people believe that using voice-recognition software will be the primary way people will interact with their computers in the future – the public nature of cubicles be damned. At least now the Mac won't be left out of the game. **– Scholle Sawyer**

The technology's ready, 'but not the people'

The quality of speech-recognition software is now high enough to increase personal productivity considerably, but only people motivated enough to train should use it, an analyst advised attendees at the Tech Talks conference.

"If, a chief information officer wanted to roll out the technology to 50 people, we wouldn't advise it. Many people don't take to it," said Jackie Fenn, vice president and research director for GartnerGroup's Advanced Technologies.

"We see a high drop-out rate among people buying the software," Fenn said. "Up to 50 per cent do not continue using it."
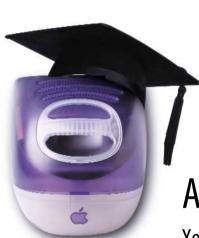
"It is not for everybody," agreed Janet Baker, CEO of Dragon Systems.

Users are finding it quicker than typing words themselves. Most people who aren't specifically hired for their typing qualifications manage to type 30 to 40 words per minute. "You can achieve four to five times that rate, even with error corrections, dictating to a PC," Baker said.

The early adopters among professionals are those who are used to dictating, such as doctors and lawyers, she noted. "It is a change of behaviour, creating documents by speaking – even though we communicate the whole time using the voice," Baker said.

Others wondered why, given their benefits, more people aren't using speech-recognition products. The accuracy of speech recognition is about 97 per cent, and a well trained system reaches 100 per cent, according to Paul Celen, general manager at Philips Speech Processing.

"I wouldn't expect speech in an OS before 2005 – it represents a fundamental shift," said Fenn.

The shift will be very like what happened when the graphical user interface and the mouse arrived. It took a long time before developers of user interfaces took advantage of the new technology, and a long time before all the interface elements were good enough.

Speech provides the same challenge, said Doug Henrich, general manager for speech products at Microsoft. **– Dorte Toft** MW

Apple 'fixes UK education prices' claim

Xemplar-only policy threatens Mac future in schools and colleges

Apple Xemplar has been slammed for effective "price-fixing" by the IT director of a major Mac-using UK university. In an open letter to Apple, Michael Priddy, technical manager at the Institute of Art and Design, University of Central England, also accused Xemplar of restricting his choice of dealer, and forcing his department to consider abandoning Macs as the preferred platform.

Until its re-launch in May 1999, Xemplar supplied kit to UK schools while higher and further education establishments were served by the normal Apple dealer channels.

The "new Apple Xemplar" has extended its service, so that higher education, further education and other educational institutions have to order directly through it, or through an approved Xemplar agent allocated according to region, in order to get the educational discounts set by Apple.

According to Priddy's letter, (**www.protova.com/thinktank/appleletter.htm**) this new agency model restricts choice of dealer. Until now, Priddy has used a large UK Apple dealer with whom he has built up a strong relationship, and who is able to offer him price-matching on peripherals and deals for students.

In his letter, entitled "101 Ways to shoot yourself in the foot, or how to alienate customers and lose sales", Priddy explains that university financial regulations oblige him to provide exact quotes from three or more suppliers. "Educational suppliers would have to pass the quote on to the local Xemplar agent, and hence I would get only one quote and price. If I was to go to non-educational suppliers I would not get quotes because they know they would not get the order when competing against Xemplar prices," he writes.

"I can only get one price? I smell the faint stench of price-fixing here!" he protests.

Nick Evans, marketing manager of Apple Xemplar, hotly denies the accusation: "His main contention is that we are restricting his choice and also that we are price-fixing. We are doing nothing of the kind."

"We are adding to his choice, because now he can buy from wherever he likes – through mail order, Apple resellers, directly through Xemplar, or through an Xemplar agent."

According to Evans, the benefit of buying direct from Apple is that equipment is built to order, to a specific configuration, and with Xemplar offering discounts not previously available to these educational establishments.

However, Evans admitted that the tendering regulations present headaches. "Tenders cause a real problem, because you have to get three different quotes. This is a real challenge for us, and we are looking at how we can tackle it.

"Xemplar was formed to put in place a structure and way of doing business that it wants to replicate all over Europe, and it wants to get it right. We will do our best, but we won't make everybody happy, because some people want to continue doing it the old way."

Priddy declined to make detailed comments, but said he is waiting for the issue to be resolved. He has received comments on his open letter, both positive and negative, and plans to post these on his Web site. **– Louise Banbury** MW

Adobe rolls out ePaper

Adobe co-chairman and co-founder Charles Geschke made a case for his company's vision of information sharing in the final keynote at New York's PC Expo. "ePaper," Adobe's name for its electronic-document products, is the key to the paperless office, Geschke said. ePaper is based on Adobe Acrobat products and the Portable Document Format (PDF), which is widely adopted by businesses for sharing documents over the Internet.

During his presentation, *The Future of Workplace Information*, Geschke compared the Internet to early TV, noting that other media must adapt with the addition of new technologies. And with the Internet doing to paper what TV did to other broadcast outlets, business communications and presentations must adapt as well.

"Pundits said television was the end of radio and movies," he said, "but both of these media are flourishing today at a much better level than in the '50s."

Enter PDF, Acrobat

Adobe's mission is to help organizations bridge the gap between the paper and digital worlds, Geschke said. The first step was the introduction of PDF in 1992.

Its appearance, Geschke noted, came as businesses struggled with a number of thorny challenges: how to improve collaboration and shorten time to market, how to leverage corporate knowledge that already exists, and how to move toward new methods of electronic business.

Capturing, sharing and reusing information in PDF helps companies achieve these goals, he said.

Geschke said that more than 100 million Adobe Acrobat readers for viewing PDF files have been distributed over the Internet and through partnerships to date.

PDF "will be the electronic form of paper for the 21st century," he said.

To back up his claims, Geschke shared some case studies of Adobe customers using PDF for document exchange. For example, pharmaceutical giant Pfizer Inc. used PDF during the approval process for Viagra. Pfizer put 2 million PDF pages on a server and shipped it to the US Federal Drug Administration to get the drug to market faster, Pfizer officials said.

To emphasize PDF's ability to maintain the information integrity, Geschke highlighted the work of a law firm that uses PDF to share evidence. It incorporates scanned images of evidence as well as text that can be quickly searched for key words and statements in its PDF file database.

Geschke concluded with a video demonstrating the often comical lengths to which businesses go in order to share documents, such as sending double overnight shipments and cutting and pasting photocopies and faxes so documents were legible. The solution to those scenarios, according to Geschke: ePaper with PDF. **– Christa Degnan**
Coming soon: The free **Macworld Digital Publishing Special Report***, focusing on PDF, Adobe InDesign and colour management.* MW

Aliens made my Mac

3-million megabyte storage planned – and then it goes all *X-Files*

You can walk into your local computer dealer and buy an EIDE hard drive with up to 28GB of storage. That may seem large, but rive makers are working hard to make it look puny – with 200GB-plus drives on the way, and a whopping three terabytes (3 million megabytes) in the distance. And after that it's a case for Mulder and Scully.

Seagate Technology has announced a breakthrough in packing data: It jammed 105,000 concentric tracks of data onto one inch of a hard drive platter. That's about eight times the density of today's hard drives. To picture just how tiny those tracks are, imagine trying to write 420 rows of text on the edge of a standard sheet of paper.

But don't expect to see hard drives based on this technology soon. Seagate's storage feat remains in the lab for now, and a spokesperson says it will be two to four years before such products are ready for Mac or PC.

Seagate uses **Optically Assisted Winchester** (OAW) technology, which combines conventional magnetic read/write heads and a low-intensity laser beam. The beam travels through optical fibre to the read/write head, where it's reflected onto the disk surface by a tiny micromachined mirror.

And instead of the conventional all-metal disk platter used in current hard drives, Seagate's technology uses plastic platters coated with an extremely thin layer of transition-metal alloy.

OAW technology allows disk platters to hold up to 36GB, and since drives usually have two to six platters, capacities of up to 216GB are possible. But you won't necessarily find drives that large available from the start. Seagate spokesperson Tyson Heyn says what ships will depend on what applications require at the time.
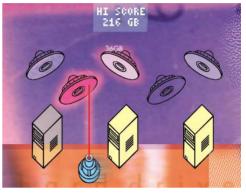
Outer limits

With this demonstration, Seagate has broken into the low end of the super-paramagnetic limit, a point beyond which magnetic instability theoretically makes it impossible to store data on a hard drive in the conventional manner.

Researchers had pegged the limit of storage densities somewhere between 20 and 40 Gbits per square inch. Seagate's current OAW technology stores data at 25 Gbits per inch. (There is, by the way, a theoretical limit to what OAW can do: 250 per inch.)

Meanwhile, other major developers of hard-drive technologies aren't exactly planning to eat Seagate's dust. IBM is pushing the limits of its current **Giant Magnetoresistive Head** technology, used in many of its high-capacity hard drives. (It has demonstrated densities approaching OAW's in the lab, as has Fujitsu.)

And Big Blue is working on some truly exotic storage technologies. **Holographic storage** uses a laser beam to store data in a crystal-lattice structure the size of a sugar cube. In a recent test, IBM crammed the equivalent of about 10,000 pages of text into a cube, and forecasts much larger capacities.

Further out, IBM's **Atomic Force Microscopy** uses technology similar to an electron microscope. Theoretically, it could read and write data at densities of up to 300 Gbits per inch. If this technology ever comes to market, it could result in hard drives packing more than 100 times the capacity of today's crop.

But for "astronomical" amounts of storage, you supposedly can't beat **Alkane/Silver Dielectric Metal-Insulator Junctions**. American Computer claims to be working on this technology, said to be obtained by the government from the alleged crash of an alien spacecraft in Roswell, New Mexico, in 1947.

According to the company, Lt Col Phillip J. Corso (now deceased) of the Pentagon Milintel Corp. claimed the technology was derived from recovered alien craft. Indirectly, Jerry Hartsell, former chairman of IBM, indicated that IBM had participated in the original study of this technology in 1950-59.

At present, it is used in 90GB form as a hard-drive caching product for Raid servers of 500GB and up. The company is "awaiting a smaller lithograph device" so it can build it as a hard-drive replacement to fit into a 3.5-inch bay. It will require a lithium-ion battery to keep it non-volatile as it requires a small charge to stay hot – the company claims it consumes no power, and can get about 20 years use from a clock battery.

No word yet on the theoretical capacity of this storage, nor on when it will make a close encounter at a computer dealer near you.

Right now, IBM is offering two new hard drives featuring expanded storage capacity and faster processing speeds. IBM's Deskstar hard drives (with up to 37GB capacities, at maximum 7,200rpm speeds) will facilitate editing video and audio content, downloading data from the Internet and improve the performance of game applications, said IBM.   **MW**

– Stan Miastkowski

LEE HASLER

Apple updates

Apple has released a couple of software updates aimed at users of its latest Mac systems.

ATI Video Software Update 1.0 (available at **http://asu.info .apple.com/swupdates.nsf/artnum/n 11475**) provides improved 2D and 3D acceleration for Macs with the ATI RAGE 128 graphic accelerator card or on-board ATI RAGE Pro graphic accelerator chip.

Fixes include:

■ A freeze when using CPUs with processor speeds of 400MHz plus, and high screen resolution (1,280-x-1,024 pixels) after heavily using off-screen graphics memory.

■ A crash when millions of colours are used.

■ It also corrects an instance with certain third-party applications where scrolling could result in a crash.

Another update (for Mac OS 8.6 users owning the latest Power Macs, PowerBooks, and iMacs) bumps the ROM to version 1.6, addressing several problems linked to the USB port. Mac OS ROM Update 1.0 (**http://asu.info.apple.com/swupdate s.nsf/artnum/n11476**) fixes various potential crashes.   **MW**

For the information as it happens visit Macworld Online Daily News (**www.macworld.co.uk**), updated five times a week

Fujifilm, Toshiba in digital camera trio

Consumers can expect a flurry of digital camera releases – with Fujifilm poised to ship two new models and Toshiba set to launch its own top-end offering.

Fujifilm's top-end MX-2900 is due in August, and its mid-level MX-1500 is shipping in the autumn. Pricing on both is yet to be announced.

The palm-sized MX-1500 has a 1.5-megapixel CCD at a resolution of 1,280-x-1,024 pixels, three JPEG compression modes, seven modes of white-balance, a fixed lens and a light aluminium-alloy body. It comes in silver, gold, or metallic blue.

The MX-2900 boasts a 2.3 million-pixel CCD, resolution of 1,800-x-1,200 pixels and a 3x optical zoom lens.

Designed with traditional camera users in mind, it has the look and feel of a 35mm SLR camera, and is the company's first consumer digital camera with more than two million pixels. Its modes include TIFF, uncompressed, Light Metering, Slow Synchro and three JPEG compression settings.

Toshiba's top-of-the-range digital camera, the PDR-M4, offers a maximum resolution of 1,600-x-1,200 pixels. A lower resolution of 800-x-600 pixels can also be selected. To make more memory available on the SmartMedia, images can be re-sized.

The camera's QuickShot feature ensures a maximum of one second between shots at top

In the frame
The Toshiba PDR-M4 includes an 8MB SmartMedia card.

resolution. With Multi-shot mode, 16 frames can be shot in four seconds and saved as a compressed single-frame. The Burst-shot option allows up to four full-sized images to be taken in one second.

Other features include a self-timer, selective focus, soft or hard focus; colour or black-&-white images and backlight and bulb-flash functions.

An 8MB removable SmartMedia card is included, as well as Mac, serial and USB cables and Image Expert software.
Toshiba, 01276 622 22
Fujifilm, 0171 465 5745

CD-RW is booster

La Cie has added to its CD-RW range, with its CD-RW Booster (below). The CD rewritable drive combines multi-read 20x CD-ROM capability and 8x CD writing and rewritable capabilities. In CD-R mode, it takes nine minutes to write a complete 650MB CD, compared to 18 minutes when using a 4x device, the company said. The £349 La Cie CD-RW Booster ships with Toast 3.8 and DirectCD. La Cie is also shipping the DiscTidy (above), a £19 CD-storage system that holds up to 60 CDs. A 20-CD version is also available, for £13.
La Cie, 0171 872 8000

Kit and kaboodle

Apricorn is now shipping hard-disk upgrade kits for PowerBooks in capacities of 14GB. The EZ-GIG kits include a PC card, software and hard disk of between 2.1GB and 14GB. AS 2.1GB upgrade kit starts at £298. The drive costs £209. The drives replace the existing PowerBook drive and users can continue working with data and applications intact. The old disk can then be used as an external data-backup device.

2.1GB to 14GB drives are available for the 3400 and G3 series. The 5300, 190, 1400 and 2400 series only take 4GB and 5GB upgrades.
Apricorn, 0800 731 5327

Pele scores on speakers

Pele Enterprises is offering Apolla speakers to UK Mac owners for $80 (£50), including shipping fee. The speakers come in blueberry, grape, bondi blue, lime, strawberry and tangerine, and ship with a UK power adaptor. They have 8W of power and can reproduce the complete audible range. The speakers can be ordered from the company's PELEZone on-line store, and shipped to the customer's address via FedEx.
Pele Enterprizes, www.pelezone.com

PCI card double

Megawolf has announced the availability of Romulus/4 and Remus/2 PCI cards. The cards add two or four additional serial ports to PCI-based Power Macs, without losing access to the internal modem and printer ports. Custom UARTs ensure minimal loading on the Mac, while supporting serial-data rates of up to 921,600 baud per port. The Romulus/4 card costs £249 and the Remus/2 card is £159.
Alta Technology, 0171 622 6606

Acer branches out

Cranfield has launched the Acer ISDN T40 for small businesses and home-based professionals. The £212 T40 allows users to run two comm-unication functions simultaneously.

A fax, for example, can be sent while receiving a telephone call. The T40 has three independent analogue ports that convert data to digital format.
Cranfield, 0870 0111 201

BBEdit souped-up

Bare Bones Software has updated its HTML and text-editing tool – BBEdit – to version 5.1. The new release has support for Perl, the programming language widely used for text manipulation and CGI (Common Gateway Interface) processing on Web sites. The update is available free of charge to registered users of version 5.0 or 5.0.x. Owners of version 2.5 and later can upgrade directly from Bare Bones for $39
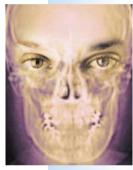**Bare Bones Software,**
www.barebones.com

Forward Granada
Granada Learning is offering three CD titles, previously available only for PCs. Maths Explorer and Maths Explorer Shape and Space (£59 each) are aimed at Key Stage 2 pupils, while About Shape and Space (£36) introduces basic maths to Key Stage 1 pupils. Multi-user discs are available, costing from £8 and £15, and student versions cost £20.
Granada Learning, 0161 827 2927

Image library stocked
PhotoDisc has released four new CDs containing images related to business, health and medicine. Anatomy of Medicine (Signature Series 36 – image featured below), Fitness and Well-Being (Volume Series 67), Banking and Finance (Volume Series 68) and Meetings and Groups (Volume Series 69). The Signature Series discs are priced at £199, while the Volume Series titles cost £229. Most of Photodisc's images can also be purchased and downloaded from its Web site.
Photodisc, 0845 302 1212

Kids number cruncher
Sherston Software's latest £50 title, Number Works for children aged 8-9 years, features number activities focusing on skills required by the National Numeracy Framework. There are three levels of difficulty, and activities can be accessed either through a menu or through an adventure game.
Sherston, 01666 843 200

Web accounting move
Access Accounting has launched AccessweB. The £450 CD allows companies to create their own working Web site within 24 hours. The CD allows users to import items like company logos then automatically creates a file that can be submitted to AccessweB by email or floppy disk.
Access Acounting, 01206 322 575

Oil on troubled waters
Macromedia's 3D graphics and multimedia package, Extreme3D, was behind many eye-catching graphics – like these two from Aberdeen-based illustrator Garry Clarke – but competition from its rival titles proved too fierce.

Macromedia: no Extreme measures

Macromedia has no plans to resurrect its Extreme3D graphics and multimedia software, but the company promises that 3D features will be integrated into other Macromedia products.

Company officials offered a few clues about its plans during a question-&-answer session at the end of its three-day European UCON '99 user conference. CEO Rob Burgess would not say whether 3D capabilities would be added to future versions of Macromedia Shockwave or Director, but he did say the company is "looking at solutions and options for bringing 3D to the Web, and I'm certain you will see 3D features in the not-too-distant future from Macromedia".

As for Extreme3D – the three-year-old 3D software that quietly slipped from Macromedia product lists late last year – Burgess said: "There will not be any future development. There is so much competition that there was no way to make it a financially healthy part of the business."

On another issue, the company said it will retain its proprietary Lingo programming language – used in Macromedia Director, for example – but will move toward wider use of JavaScript in its software.

"JavaScript is a language we are starting to use more, and we are moving in the direction of getting a common scripting interface across all products," said Kevin Lynch, Macromedia senior vice president of Web publishing.

David Mendels, another senior vice president of Web publishing, told UCON attendees that Macromedia is "actively looking" at ways to make it easier to distribute its Shockwave player with products. "You will hear more about that distribution in the relatively near future,"
– Wendy Mattson

Ray Dream Studio's new dimension

MetaCreations has announced Ray Dream Studio 5.5, the latest version of its 3D design and animation tool for Web designers, game developers and multimedia producers. The Web image on the right – by illustrator Charles Barrett (**floodzone@earthlink.net**) – is typical of Ray Dream Studio's capabilities.

The £349 title has an updated Adaptive Renderer – its hybrid scanline/raytrace renderer – and built-in Kai's Power Tools 3 filters, such as KPT Texture Explorer and Interform. New add-ons include the Motion Blur effects-tool, four plug-ins for creating earth, air, fire and water environments.
Computers Unlimited, 0181 358 5857

Entrega's old Macs USB-upgrade move

Leveraging the success of the iMac, which uses only USB (universal serial bus) ports for expansion, Entrega Technologies has announced USB upgrade kits for older Mac systems. Entrega offers both two- and four-port USB kits, along with software drivers for PCI-based PowerPC systems and Mac OS 8.1 or later.

Both the new Power Mac G3 and iMac systems include USB ports leaving users of older Macs out in the cold to many of the newest USB peripherals including cameras, scanners, and modems, said David Murray, vice president of product marketing at Entrega.

The four-port USB kit includes the drivers and an internal PCI-to-USB card with external USB connectors and will sell for £32, the two-port model is priced at £24.

Entrega has also announced a new £50 USB-to-serial converter.

The Entrega S8 USB-to-Apple Serial Converter is useful for the iMac and new Power Mac G3, which don't have serial ports.

The converter means owners can connect non-USB serial devices and that any investment made in older peripherals is not wasted. The S8 is smaller than a pager and provides one serial port. As the converter is bus-powered, there is no need for an additional power supply.
Entrega, 0118 965 7751

NEC casts light projectors

NEC has unveiled two lightweight MultiSync projectors, the MT830+ and the MT1030+.

The two projectors, aimed at the sales and marketing, design and education sectors, have built-in heat dissipaters and a 360-degree remote control facility. Both projectors incorporate NEC's Accublend Intelligent Pixel Blending technology, and use digital keystone-correction, so the user can correct keystone distortion without the loss of image detail,

The MT830+ has a brightness level of 1,250 ANSI lumens and a resolution of 800-x-600, and the MT1030+ has 1,100 ANSI lumens and a resolution of 1,024-x-768 pixels. The projectors use a 150W new short-arc, high-pressure lamp, with a life of 2,000 hours. They also feature a digital zoom of up to 400 per cent and a remote control with a laser pointer and 360-degree infrared system.

The MT830 is priced at £3,300, and the MT1030+ costs £4,300.
NEC, 0181 752 3333

Kodak ships £20k digital camera

Kodak has launched the DCS 660. a high-end FireWire digital camera. Offering six-megapixel resolution in a compact Nikon F5 SLR body, the DCS 660 comes with a price tag of £19,995. It weighs 1.86 kilograms and is designed to handle like the traditional F5. Nikon users can use their existing lenses and accessories.

It has all the features of the professional DCS 560, as well as additional features, such as a burst-rate of one image per second and an ISO of 80-200. The DCS 660 has many standard photographic functions, including autofocus, automatic exposure, metering modes, flash and self-timing, and features a built-in histogram so that photographers can review exposure accuracy in real-time.

Other notable features include calibrated-colour response and white balance, 36-bit colour – for capturing colour and detail in shadows and highlight – dual PC card/removable media for flexible storage, and voice annotation for documenting specific shots.
Kodak, 0870 606 1423

Handy bass for speakers
Yamaha has announced its YST-MS50 USB multimedia-speaker range. The speaker system is a three-piece set-up, delivering 80W and incorporating Yamaha's Advanced Active Servo technology for generating powerful bass response. The system also includes two-way satellite speakers for enhanced high-frequency response and top-end clarity. The YST-MS50D offers data-transfer rates of up to 12Mbps, and you can use the Mac to tune the speakers to match the acoustics of the listening environment.
Yamaha, 01908 366 700

First class email
CE Software has released QuickMail Office 2.0, an update to its Internet email system for mid-sized firms. It offers advanced contact-management features and includes updated client software and a new version of the QuickMail Pro Server for Macintosh. QuickMail Office 2.0 costs £90 for a five-user upgrade, £160 for a 10-user upgrade, and £400 for a 25-user upgrade.
Computers Unlimited, 0181 358 5857

I can see a Rainbow
Rainbow Painter 1.0, a new shareware program for painting and photo retouching, is available for download from Addiction Interactive. The $12 application is for PowerPCs and comes with image-editing and picture-effects tools. It supports up to eight image layers with alpha channels and a mask layer.
Addiction Interactive, http://www.addiction.se

USB Mac modem boost
PMC has launched the Pace V90 Advantage, a USB modem for Macs. The £79 modem supports data, fax, voice and speakerphone functions. It also supports dual-standard UK Calling Line Identification (CLI), meaning caller-numbers can be identified before answering.
PMC, 0990 561001

Helios Ethershare

JPY has announced a specially priced bundle of Helios' EtherShare range for the recently launched Mac OS X server. Aimed at the pre-press market the bundle is priced at £6,995, a saving of £2,495 on the list price. The range includes a 20-user EtherShare licence for file and print servers. JPY claims the bundle will offer Unix-level performance and reliability with a 'Mac-like' interface.
JPY 0181 390 8487

ScanMaker X6 and 2000

Microtek has reduced the price of two of its ScanMaker products. The 600-x-1,200 dpi resolution ScanMaker X6 USB is now £119, reduced from £129, and the high-end ScanMaker 2000 has been reduced to £4,100, from £4,499. Microtek is also shipping the ScanMaker 4 and 5 flatbed scanners with free SnapTrans templates. The templates are five film holders designed to slide into the scanner to accommodate a variety of film sizes, positives or negatives, colour or black-&-white. The ScanMaker 4 costs £499, and the ScanMaker 5 is £1,599.
Microtek, 01908 317 797

Agfa ePhoto CL50

Agfa's ePhoto CL50 digital camera has been reduced from £549 to £351. The CL50 is Agfa's first ePhoto camera to offer sound capture and burst mode facility. It offers an optical resolution of 1.3 million pixels and has four resolution settings, four flash modes, a 3x optical zoom and a 2x digital zoom in both capture and playback mode.
Agfa, 0181 231 4906

Textease Multimedia

Softease's DTP package for children, Textease Multimedia, is now bundled with free clip-art to help students create designs for Web sites, posters and letters. Each picture has been categorized into topics including animals, clothes and music. Textease costs £85 for a single user.
Softease, 01335 343 421

Sim-pull
Mac fans can be a chip off the new block with SimCity.

Mac-built SimCity

Electronic Arts' best-selling PC game – Sim City 3000 – has finally arrived on the Mac platform. The city-building simulation game, created by the company's Maxis studio, began shipping for the PC in January. It was the top-selling PC game in the US in February and March and also reached the top sales position in many European countries.

SimCity players can build cities with landscapes such as San Francisco's and Berlin's and landmark buildings like the Empire State or Big Ben. They can also create their own unique buildings using the Building Architect Tool. The metropolis then comes to life with people and traffic and, as an added challenge, players can negotiate and barter with neighbouring cities to strengthen their metropolis. SimCity players can download free add-ons and get support from Maxis' special Web site, (**www.simcity.com**). A recent addition to the site is the SimCity Exchange, a trading post where players can upload their favourite metropolis and see how it ranks in categories like pollution, traffic and crime. Free add-ons include landmark buildings and extra terrain maps, in which players can build cities.

The Mac version runs on systems with at least a 180MHz PowerPC processor and 32MB of RAM. Costing £39, it will be available in the UK in early autumn.
Electronic Arts, 01753 549 442

Sizzling read

Teac has announced the CD-R58S 8x write 24x read CD-recorder (above), priced at £299. Designed to be simple enough for beginners to install and configure, the drive ships with user manual, SCSI cable, CD-burning software and CD-R media. It has a 4MB data buffer – to provide the interface with a continuous flow of data – and a controller chip backs up the processor by controlling the data-transfer flow.

The blue-&-white drive is compatible with most formats. Its top data-transfer rate is 3.6MBps read and 1.2MBps write.
Teac, 01923 225 235

netOctopus 3.0 spreads tentacles

Netopia has updated its netOctopus Intranet systems-management software to version 3.0. Part of Netopia's Timbuktu family, netOctopus 3.0 helps administrators manage, update, configure and support a network of Macs.

It provides complete inventories, detailing the hardware and software configurations of each machine on the Intranet, without interrupting workflow. This information is then automatically monitored and reported, allowing the network administrator to troubleshoot, install, monitor and upgrade software on any machine, as well as correct and prevent system problems. Enhancements in the new release include year-2000 audit aids, HTML export and the ability to gather data on USB devices.

AppleScripts can now be executed on remote Macs, and the software has improved Intranet asset-management features. netOctopus 3.0 costs £467 for a 10-user starter pack, with volume-licence pricing available.
Principal, 01756 704 000

David Fanning

Burgeoning compressed audio-file format is set to alter Christmas wish-lists worldwide.

MP3 calls the tune

Six months ago in this column, I predicted that, with the advent of MP3, there'd be a revolution in computer music. By now, you've probably heard of MP3 in one form or another. It has been hyped as both the saviour – and killer – of the music industry. Whichever it is for you, MP3 is here to stay.

For those yet to come into contact with MP3, let me recap. MP3 is a file format for audio – part of the Moving Pictures Expert Group (MPEG) specifications. MP3 is short for MPEG1 layer 3, and it produces files so small that you can send or download them via the Internet. It is this aspect of MP3 that's panicking the music industry – because music piracy is rife on the 'Net.

One thing to have happened over the past six months, is that MP3 has achieved a degree of respectability. This is because many artists have embraced the format, making songs available both for free and commercial download. Stars like David Bowie, for example, have shown support for the format – offering members of davidbowie.net free samples of his work.

Another Web site devoted entirely to MP3 is **www.MP3.com**. Here you'll find hours of music, and all for free. You may scoff at the obscurity of the bands listed in its archives, but you may know them soon. Sites such as this are perfect springboards for budding musicians, independent as they are of the record-industry monoliths. This represents the greatest way of marketing your band since independent record labels started. I'm sure the A&R scouts from Sony, Warner and the rest must be keeping an eye on what is happening on this site. They'd be fools not to.

The MP3 site itself has links to all the MP3-associated software and – more recently – hardware. Hardware development is important for the format, because people are unlikely to listen only to music on their computers. It's no big deal plugging your computer into your stereo – but you may also wish to take music on the road with you. As you may expect, this area of the market is expanding rapidly. The first MP3 players around were PC-only devices, connecting via the parallel port. The first device of this kind – the Rio, from Diamond – was stalled by legal moves from the record companies, who claimed the Rio was encouraging music piracy. While this accusation is questionable, the format itself does encourage piracy,

although the hardware doesn't. One thing that helped Diamond win its case was the availability of legitimate MP3 music on the Internet. So long as there are legitimate uses for MP3, we can enjoy all manner of hardware without fear of breaking the law.

Of course, the law still plays a big part in the development of MP3-related products. But it *is* legal to make the equivalent of backup copies of CDs and records. To this end, there are many CD-sampling applications that will take your music CDs and create MP3 files from them. So for the price of a 4GB drive (around £150) you can create a "backup" of around 70 hours of music. This should be more than enough to get all your favourite music in one place. No more changing disks and no more splintered plastic CD cases.
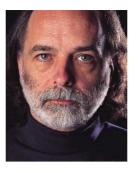
The ideal place for this, no-nonsense music is the car – something a number of companies are rapidly realizing. One of the first of these is made by Empeg (**www.empeg.com**), a Somerset-based company that's working on a 28GB car audio-system that runs on Linux – and an RDS stereo-tuner, for when you get bored with your own music. Prices start at around £650 for the 2GB version. This month, I tested the first of the Mac-compatible Walkman-style players (see Reviews, page 46). The Pontis MPlayer 3 is a poor first product, but I'm sure that there are at least a dozen worthier MP3 players in the pipeline from various manufacturers.

I predict that, by Christmas, companies like Samsung will be up-to-speed with the technology and that the marketing muscle of such companies will come into play. See what's in store, on the Samsung Yepp Web site (**www.yepp.co.kr**).

Most portable MP3 players use a Flash card to record the music. This is small and neat, but even an hour of music is proving expensive to store. Fortunately, as quickly as problems arise, answers appear. IBM has just announced a tiny hard disk that holds 340MB. Diamond has already announced that this drive will be used in the next generation of MP3 players.

Music companies are still distrustful of MP3, but the movers and shakers are jumping on the bandwagon.

I said MP3 would take off in a big way – and now it's an unstoppable force. Keep an eye on it, and you'll see a whole industry spring up within the next six months. **MW**

Michael Prochak

Letting Bill Gates program your head is a
reason for cerebration, not celebration.

Brain plougher

They used to say that you are what you eat, but with all the craziness these days about GM foods, I'm not sure what that is anymore. There's definitely a degree of sick fascination in watching humanity and technology coalesce. I must admit, I do love it when life starts to imitate art. Although not always reassuring, it sure is fun to watch. In the mid-70s, Colin Wilson wrote an intriguingly obscure novel, *The Philosopher's Stone*. Part of the premise of the book is that time is an illusion and that the mind is capable of seeing through it. As one of the book's characters puts it: "Time is a confidence trick. It's like a crooked guardian who keeps dipping his hands into your bank account. You think you've still got a fortune left, and then realise that you're on the edge of bankruptcy."

While extending the boundaries of consciousness, the protagonists of the story discover that, by inserting a tiny particle of a special alloy into the frontal cortex of the brain, you can trigger an evolutionary leap that unlocks a range of faculties that allow you to control the world around you and alter your perceptions of reality. When the book was first published, it wasn't the slant on the philosophical that seemed like fiction, it was the technology of inserting something into the brain to control objects outside the body.

Around 1984, William Gibson did something similar with his book, *Neuromancer*. In it, he invented the now popular notion of cyberspace and speculated on a world where humanity and technology converged and people could literally "jack" into a consensual matrix of shared consciousness with the aid of computer networks hard-wired to their brains.

And in the film *The Matrix*, Keanu Reeves learns kung fu by plugging directly into a computer system and downloading the information and skills directly to his brain.

Although we can't improve our consciousness by inserting an alloy into our frontal lobes, or plug our Macs directly into our brains just yet, we are getting frighteningly closer to being able to control our computers with our minds.

A number of some American scientists have already developed a bionic brain implant that can operate a computer purely by the power of thought. Like Wilson's fiction, the implants are tiny cones the size of the tip of a ballpoint, but are made of glass containing an electrode that picks up electrical impulses from the body's nerves. They have already been tested on two severely disabled volunteers, who were then able to control the cursor on their computer screens merely by thinking about moving parts of their bodies.

Before they're inserted into the brain, the implants are laced with neurotrophic chemicals extracted from the patient's knees. Once the cones have been in the brain for several months, the chemicals encourage nerve cells to grow and attach themselves to the electrodes inside the cones – until the implants become "hot-wired" to the brain. The cones are connected to a transmitter/receiver placed just inside the skull and then to an amplifier in a cap worn by the patient, which sends signals to the computer. Signals from the cones are then translated into cursor commands and can even use the computer's sound functionality to "speak" voice phrases. According to the scientists responsible for this research – from Emory University in Atlanta – commands currently available are quite simple, but will become much more advanced very quickly.

All this sort of stuff conjures up interesting visions of a possible future where teaching and educational institutions are an anachronism: people can simply buy "job" chips, or pay to download skills as and when the need them. The convergence of technology and humanity would be nearly complete and, at best, you could end up with a kind of benign Utopia, where everyone is free to pursue knowledge and consciousness as they please.

At worst, you could end up with a *Matrix*-style world, either dominated by machines, or in which all knowledge and skills are controlled and regulated by an elite few. What would happen to originality, creativity and poetic licence is anyone's guess. But you can bet it would get ugly.

I mean, think about it. Would you want someone like Bill Gates producing knowledge or job chips that you could hard-wire into your brain? Think about the prolonged and painful bug-fixes, not to mention the late delivery. And when it comes right down to it, I'm not sure I'd even want a "MindMac". Waking up every morning with that stupid smiling face floating round your brain would make you more twisted and deranged then an extended ether-binge.

Once that happens, you don't really care about what you eat anyway. And who you are becomes anyone's guess. **MW**

DAVID POGUE is the author of *iMac for Dummies* (IDG Books Worldwide, 1998) and the *Great Macintosh Easter Egg Hunt* (Berkely Books 1998). He also wrote *Macs for Dummies,* fifth edition, updated for Mac OS 8, *The Weird Wide Web* (IDG Books Worldwide, 1997) and *The Microsloth Joke Book* (Berkeley, 1997).

Use us – or lose us

Now, why am I still a Macintosh guy, despite all the hard times? Because I got my start in a Macintosh user group. In 1985, right out of college, I was the office manager for the New York Mac User Group (NYMUG), and the counter-culture spirit of the time still shapes my attitude. Deep down somewhere, I'm still cheering, as the sledgehammer in the "1984" ad smashes Big Brother's face.

But something is going on. One by one, the big user groups are dying. The biggest user group on earth, the Boston Computer Society, shut down a couple of years ago. In January, the Los Angeles Macintosh Group (LAMG) filed for bankruptcy, $250,000 in debt. NYMUG was also bankrupt when, two years ago, it was taken over by a Manhattan consulting firm and remade as a for-profit entity. Even BMUG – the hippest, most famous MUG of all; the one with the 400-page newsletter – recently fired its staff and closed its Berkeley, California, office.

It's not just user groups; the EvangeList has closed shop, too. This 40,000-member email list was started by Guy Kawasaki three years ago. Its purpose was to spread good Mac news, to combat the mainstream-media Apple bashing.

What's happening here? Why are all these useful, grassroots institutions dropping like gnats after a blast of Raid? Kawasaki says he shut down his because it had "served its purpose" in countering Apple bashing. But that explanation holds about as much water as a thimble. The media still teems with anti-Apple bigots. The battle is far from over.

The actual reason for the EvangeList's demise is more mundane. In 1998, both Kawasaki and the EvangeList's editor, John Halbig, left Apple to join a start-up company. They agreed with Apple to continue the list for one year after leaving – and now the year is up. More important, Halbig says, is that dozens of Web sites and mailing lists, such as MacMarines (**www.macmarines.com**), now fulfill precisely the same mission as the EvangeList – and with far more editorial freedom. MacMarines can call a dog a dog, without worrying about ruffling some Apple partner's feathers.

But what about the user groups? Why are they collapsing all at once? Former LAMG president (and *Macworld* contributing editor) Tom Negrino sees user groups' current

financial problems as a delayed reaction to Apple's dark days of 1995 to 1997.

"User groups are a trailing indicator of Apple's health," he says. "As Apple's ocean rises, it will lift all the boats." LAMG's declining revenue was compounded by what he calls "end-stage user-group disease," in which jaded veteran group leaders fall into endless cycles of bickering but take no action.

The bigger story, though, is once again the Internet. BMUG's motto was, "We're in the business of giving away information" – but that's not much of a business when the Internet offers 200 quadrillion times as much.

In the old days, you'd go to a user-group meeting to buy a shareware disk, hear industry gossip, and see software-company demos. But the Net offers infinitely better access to shareware, news, and rumors. And downloading trial software is often more pleasant than sitting through live software demos, especially those that involve excruciating PowerPoint presentations by wooden vendor reps.

But user groups aren't dead, nor are they irrelevant. Smaller groups, in US cities such as San Diego, Kansas City, and Detroit, are thriving; their social nature still draws enthusiastic crowds. Even among the megagroups, survival is still possible; the successful ones decentralize, responding to the Internet as just another competitive pressure.

BMUG, for example, lives on through smaller, more spontaneous meetings – in fact, Raines Cohen, cofounder of BMUG, says there are more meetings per week now than before the group's official closing. He calls it the "open sourcing" of the group; now members don't have to wait for permission – or a schedule slot – to undertake a new project. In other words, BMUG plans to survive the Internet age by both embracing the Web – moving BMUG's newsletter and BBS operations there – and exploiting its greatest weakness: the lack of live social contact.

LAMG, meanwhile, is returning to its roots as an all-volunteer operation. In both cases, these big groups are starting to resemble smaller, all-volunteer Macintosh user groups, which don't face the same problems of political infighting, high rent and staff costs.

"It's noticeable that small and medium user groups have always been the most effective," says Cohen. "It's the spirit that's important." MW

Web authoring tool

Real motion
Flash 4's Create Motion Tween command allows for more realistic animated movement.

Flash 4

Publisher: Macromedia
www.macromedia.com
Distributor: Computers Unlimited (0181 358 5857)
Pros: Improved working environment; MP3 support and QuickTime 4
Cons: Not for the complete beginner.
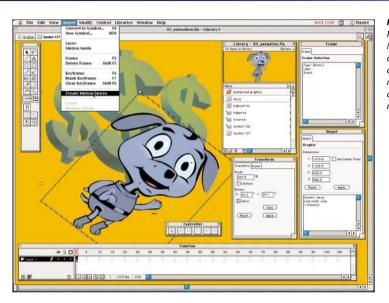**Price:** £199; upgrade £69
Star Rating: ★★★★/8.8

Macromedia's Flash Web-graphics and animation tool is a widely adopted standard for vector technology on the Internet. It is ideal for creating resolution-independent, fast-loading, interactive elements. Version 4 is the latest update with even more features and improvements for vector drawing techniques and incredible compression.

Having listened to the needs of its users, Macromedia has made Flash easier to use by improving the interface. Producing great-looking buttons, moving logos and cartoons is simpler and faster, and with the addition of MP3 compression for sound elements, Flash 4 continues to support the very latest technology. In addition the Flash player, required to view Flash content on Web sites, reaches over 100 million Web users worldwide.

MP3 compression support

Flash 4's support for MP3 audio compression is a major addition. You can use MP3 streaming audio in your Flash files while maintaining excellent compression rates for fast download. Using the timeline, it's straightforward to visually synchronize frames of animations and streaming audio.

Another important requirement on Web sites today is the ability to capture data and provide instant feedback to the user. Flash 4 now lets you add this level of interactivity by using edit fields in Flash projects to collect and send information directly to a Web server and database. Any text added to a password field will be automatically converted into an indistinguishable font for security. You can also maintain your design integrity by specifying custom fonts in the

text fields, allowing you to create front-end interfaces for Web based applications on your site.

Some of the best improvements in Flash 4 are, again, the result of Macromedia taking note of user's upgrade suggestions – including more control over your working environment. Inspector palettes are tabbed and can be dragged around to form a customized work area. The addition of a scene inspector for managing and editing multiple movie scenes, shift-selection for selecting multiple objects, plus the ability to edit your artwork in place, will increase productivity. You can undock the timeline and take advantage of additional multiple monitor support. And, when drawing rounded rectangles, you can now use the directional arrows to adjust the corner radius and create curvy buttons.

Animation is a key element of Web sites, from rollover navigation buttons to complete cartoons. It is vital to be able to create them easily and quickly. Flash 4 now has a Create Motion Tween command, allowing animations to run more smoothly. Simply select a graphic from the library, or other source, create a keyframe in the timeline by positioning it on your project area, then select Create Motion Tween from the Insert menu and manipulate the animation artwork to the desired effect. Your animations will have a more realistic movement.

A built-in library is essential for keeping track of the different elements used in your sites, like GIFs, sound, animation files and

scripts. Flash 4 has an improved library utility. You can sort elements by date, name, kind and number of times used. You can also group assets together in folders, and see a preview of the chosen element.

The time-consuming tasks of exporting, testing and previewing finished projects has been made simpler by a new Publish command. You can specify which combination of elements to publish, and it's now easier, using the Publish settings selector, to pick the correct output format.

Other additions include QuickTime import and export features and titling and animation effects. You can import custom colour sets to ensure colour consistency, and updated tutorials help you get the most out of the new features.

Macworld's buying advice

There are many improvements to Flash in this upgrade, and current users will be delighted at the attention to detail and the integration of other Web standards like MP3 and QuickTime. Macromedia has excelled itself. Flash 4 really is an unique tool for creating stunning Web sites.
Gillian Robertson

2D to 3D modeller

Canoma 1.0

Publisher: MetaCreations
www.metacreations.com
Distributor: Computers Unlimited (0181 358 5857)
Pros: It does something no other application does – turning 2D into 3D.
Cons: No QuickTime VR; needs more 'primitive' shapes.
Price: £399
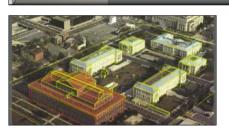**Star Rating:** ★★★★/8.5

MetaCreations has earned a reputation for unusual and exciting software. Programs like Bryce and Poser have amazing capabilities, but it can be difficult to see who needs them – Canoma is a perfect addition to the MetaCreations software stable, being both amazing *and* incredibly niche.

It is hard to explain exactly what Canoma does, because it sounds impossible: it takes a single 2D photograph and makes it into a 3D model, which can then be "explored". You can take a picture of a building or a kitchen or just about anything, and then fly around the resulting model.

This is achieved by getting the user to place wireframe boxes over the elements of the picture – letting the application know which objects are 3D and which are flat. This can be applied to quite complex pictures, building boxes upon boxes, until every element of the picture is wireframed. Obviously, seeing behind objects requires information not available from a single photograph, but there are ways around this. The simplest, but least accurate, is to mirror the front of a box to the back. This works in some situations, such as buildings with uniform windows. Anything beyond this is less convincing. The other way of doing this is to get a picture of the other side of the scene. Although this isn't always possible, it improves the quality greatly. You can combine a number of pictures in the model, which allows you to add elements that weren't in the original picture.

When the scene is finished you render the model, which takes minutes, even

Behind the scene
Canoma allows you turn turn 2D photos (left) into 3D models (above). You can then move around the model, viewing it from any angle.

for a complex scene. You can then use the controls to spin, zoom and negotiate the terrain.

For a pre-set tour of the scene you can add keyframes and even save the resulting animation as a QuickTime movie. Also, common file formats for 3D models are supported, but not QuickTime VR. This is a shame, as it is an ideal application for QuickTime VR. The supported output files are MetaStream (.mts), WaveFront (.obj), Poser Prop (.pp2) TruSpace (.scn), AutoDesk (.dxf) and VRML2 (.wrl).

This is the first version of Canoma and, while it is stable and well designed, there is plenty of scope for improvement. The "primitives" – basic shapes to fit over objects – are helpful and include shapes such as arch, roof and table.

I found that there were other shapes that would have been helpful, like a car for example. But these are just minor improvements; for the most part the software is excellent.

One problem Canoma faces is finding

an audience. At £400, it's not an impulse buy – you really have to need it to pay that kind of money. I don't think this is an unfair price, it's just that it puts a fun and powerful application strictly in the professional domain. Bryce found a following, and I'm sure Canoma will too. Architects are the prime target, I would imagine, as well as people who are currently using QuickTimeVR professionally. Using this software lets you create QTVR style animation without hours of messing around with turntables and rostrum cameras. My example took less than ten minutes to model and render.

Macworld's buying advice

If you need this kind of software you have little else to choose from. It does the job well, though I can think of some improvements that the second version should have. Like Bryce, after the obvious applications of Canoma I expect people will keep finding new ways to use the technology. **David Fanning**

Graphics card for the people

ProFormance III

Manufacturer: Formac (0181 533 4040)
Pros: Fastest Formac card yet; real speed increases over previous models; excellent value.
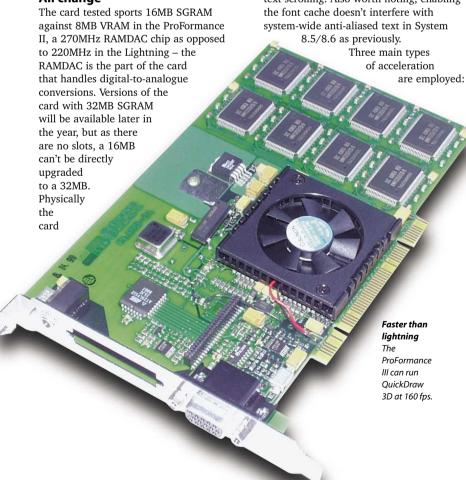**Cons:** No OpenGL drivers yet; individual models not upgradeable.
Price: ProFormance III/16, £199; III/32, £TBA; SGI Option, £69; VESA Option, £69
Star Rating: ★★★★/8.8

Graphics cards – especially 24-bit ones – used to be the stuff of dreams, attainable only by power users with extremely deep pockets. Luckily with the proliferation of cheap graphics chipsets, high-end graphics power that would have been unthinkable only three years ago is now within everyone's reach.

The new ProFormance III card from Formac is a case in point. Only eight months after releasing the highly acclaimed ProFormance II Lightning, the German company has brought out a new card based on the Permedia 3 chip, replacing the Number Nine Imagine 128/III chip in the previous card.

All change
The card tested sports 16MB SGRAM against 8MB VRAM in the ProFormance II, a 270MHz RAMDAC chip as opposed to 220MHz in the Lightning – the RAMDAC is the part of the card that handles digital-to-analogue conversions. Versions of the card with 32MB SGRAM will be available later in the year, but as there are no slots, a 16MB can't be directly upgraded to a 32MB. Physically the card

is also much smaller than its predecessor and has a lower chip count, which helps to keep costs down.

The graphics processor now sports a cooling fan, a result of its increased speed and power, but probably the most striking difference is the addition of a small piggy-back digital interface that can drive flat-panel displays with a digital input – notably the 1600 SW from Silicon Graphics (see Test centre, page 61).

The new 16MB VRAM supplied doesn't really increase the highest resolutions, although some weird possible resolutions are listed – an unusable 1 ,920-x-1,080 at 51Hz, for example. The usable ceiling is still a massive 1,600-x-1,024 at 90Hz, with the extra memory acting as a texture buffer.

Installation is simply a matter of dropping the card into its PCI slot – ease, of course, varying depending on which model of Mac you have – putting the GA control panel into its folder, and restarting.

The Control panel itself lets you access all the functions of the Monitors control panel, such as setting start-up monitors and menubar placement in multi-monitor setups. A new Monitors tab also attempts to set up your configuration to the optimum resolution/scan frequency setting, although this can also be overridden.

A few more features of varying usefulness are included such as Gamma control – very useful – others features include a screen saver, Hardware Pan and Zoom and font caching, which speeds up text scrolling. Also worth noting, enabling the font cache doesn't interfere with system-wide anti-aliased text in System 8.5/8.6 as previously.

Three main types of acceleration are employed: QuickDraw, QuickDraw 3D and QuickTime. Standard 2D QuickDraw showed a slight improvement, with the Norton System info turning in a graphics score of 340 versus the ProFormance II Lightning's 302 – a respectable, if slight 13 per cent improvement.

More impressive was the QuickTime acceleration. Playing a 43MB QuickTime movie was noticeably smoother. In fact, setting up a dual-monitor system with a ProFormance III and a ProFormance II Lightning, we could see the frame stepping introduced as the movie was dragged across to the monitor with the slower card.

Motion blur
Even more impressive was the QuickDraw 3D acceleration. Using the same dual-monitor setup, the Apple Gerbils app (with all effects) on recorded a frame rate of between 45 and 60 fps with the Lightning. With the ProFormance III the frame rate counter was a blur, but seemed to vary between a truly startling 130 and 160 fps. The time taken to play a 200-frame fully shaded preview animation in LightWave 3D was more than halved: one minute 24 seconds for the Lightning against 54 seconds for the ProFormance III. Clearly the new Permedia 3 chip needs its cooling fan.

As a comparison we tried the same preview animation with the Mac OpenGL version of LightWave and there was no difference between the two cards – not surprising, since the OpenGL drivers aren't ready yet.

What was surprising is that the unaccelerated OpenGL version was more or less the same speed as the ProFormance III accelerated QuickDraw 3D. This clearly makes a case for getting the OpenGL drivers out of the door as quickly as possible. At the present moment there are a few licensing matters to be sorted out, but Formac in Germany assured us that the drivers should be ready by mid July at the latest.

Macworld's buying advice
Finally, the digital interface for flat-panel monitors was tested with the amazing Silicon Graphics 1600 SW LCD. It worked without a hitch, driving the display at a rock-solid 1,600-x-1,024, wide-screen resolution. It is also likely to work with the new Apple Cinema Display, which is expected to be functionally the same as the SGI model. A VESA option is also available for other brands of flat-panel displays. One thing to note is that even though there are two outputs on the card, they can't be used for mirroring since the 50Hz frequency of the LCD screen is unwatchable on a CRT.

However, it must be said that using a dual-monitor setup of a Formac 19/500 CRT and SGI 1600 flat panel is about as good as it gets, and at £199 for the 16MB option the value is pretty amazing.
Tim Danaher

Faster than lightning
The ProFormance III can run QuickDraw 3D at 160 fps.

Digital-editing newcomer

Final Cut Pro

Publisher: Apple (0800 783 4846)
Pros: Elegant interface; broad capabilities.
Cons: Stiff hardware requirements; limited third-party hardware support; poor titling features.
Price: $999; UK price to be announced.
Star Rating: ★★★★/8.2

The saga of Apple's Final Cut Pro reads like that of a Hollywood epic – years in the making, an all-star cast, bounced from one studio to another, then finally released to rave reviews – more or less.

Final Cut Pro 1.0 is a video-production titan that combines the video-capture and -editing features of Adobe Premiere and Digital Origin's EditDV with many of Adobe After Effects' animation and compositing tools, all within a beautiful, efficient interface. But one price of Final Cut Pro's versatility is its stiff hardware requirements. Moreover, Final Cut Pro's new-kid-on-the-block status means that it lacks the broad hardware support the competition offers. And despite its sophistication, the program handles some tasks awkwardly.

The big picture
Apple's hardware specs call for a 266MHz, or faster, Power Mac G3 with at least 128MB of RAM – Apple doesn't warrant that Final Cut Pro will run on Macs containing G3 upgrade cards. I used a shiny new 400MHz G3 for my testing.

Final Cut Pro makes a great first impression. It sports an elegant 3D look, and windows snap to each other as you move them; when you drag and resize them, Final Cut Pro redraws their contents on the fly.

Many of Final Cut Pro's windows will feel familiar to video veterans. A Bin window holds media that you import or capture, while a Timeline window displays the sequence of edits and transitions.

For complex productions, a Browser window helps you manage media and a Find command lets you search on numerous criteria. And a Final Cut Pro project can contain multiple timelines – something you won't find in Premiere.

Final Cut Pro's Canvas window displays edited material and lets you set in- and out-points. It also lets you edit clips: drag a clip to the Canvas window, and Final Cut Pro superimposes a set of editing options on the window. Point to the desired option, release the mouse button, and the program makes the edit for you. This approach is slick and easy to learn.

Cut it up
Final Cut Pro's well-designed interface combines video editing with motion-graphics effects. Point-&-click editing makes version 1 easy to use.

Manipulating media
Final Cut Pro can import QuickTime movies as well as all QuickTime-supported image and audio formats. You can also import Photoshop images that retain their layers. Unlike Premiere and After Effects, however, Final Cut Pro can't import Adobe Illustrator or EPS files – a potentially serious drawback if your work involves animating vector-based art.

Final Cut's video-capture features work particularly well with FireWire-based DV devices. You can control such a device directly from Final Cut's Log and Capture window, setting in- and out-points for various scenes and then batch-capturing the scenes.

Alas, at the time of writing, Final Cut supports a relatively small number of DV camcorders and decks. As for non-DV capture hardware, Apple has currently certified only Pinnacle Systems' Targa 1000- and 2000-series cards. Visit Final Cut Pro's Web site (**www.apple.com/finalcutpro**) to verify compatibility with your gear.

Packing a full arsenal of video transitions and filters, Final Cut Pro is unique in supporting QuickTime 4's built-in filters. Its audio filters are ideal for sweetening and equalizing soundtracks, but it doesn't have the equivalents to Premiere 5's reverb and multi-tap delay.

Nor can Final Cut use Premiere-format audio-filter plug-ins; indeed, it can't use any Premiere- or Photoshop-format plug-ins. And the program's titling features are surprisingly weak, lacking a Premiere-style WYSIWYG titling window; you can't even mix fonts and type sizes within a title or use Type 1 PostScript fonts.

Where Final Cut Pro pulls away from the pack is in compositing and motion graphics. Click on an option in Final Cut's Canvas window, and you can animate and layer clips and still images much as in After Effects. You won't find all of After Effects' keyframe controls, but Final Cut Pro comes close enough for many jobs. The program also offers basic keying features. And advanced users will love FXBuilder, a built-in scripting language that lets you create custom filters.

When you're rendering effects, you can choose from a variety of resolution settings and apply motion blur for added realism. Final Cut Pro's rendering performance seems a bit slow at times, and no third-party rendering-acceleration cards are available yet.

Macworld's buying advice
If you're already using Premiere and After Effects, there's little reason to switch. But Final Cut's extensive capabilities and refined interface make it a first-rate foundation for a professional video-editing system. Version 1.0 is a stunning effort, and we expect even better from the sequels.
Jim Heid

Avid Cinema for Mac

Manufacturer: Avid Technology
(01753 655 999)
www.avidcinema.com
Pros: High-quality video captures; extremely easy-to-use editing software; excellent manual.
Cons: Can't output video to tape; imprecise editing controls.
Price: £199
Star Rating: ★★★★★/9.0

With its funky G3 processor and generous hard drive, an iMac would seem to be a natural platform for hobbyist video-editing. But because the iMac lacks expansion slots, it can't accept the video-input cards that let you connect a camcorder or VCR to the computer to digitize videotaped footage. True to its wordy name, Avid Technology's Avid Cinema for Macintosh with USB stashes video-digitizing circuitry in a small box that connects to the USB port on an iMac or a blue-&-white G3. The box and its simple editing software make an excellent entry-level video-editing system – provided you don't need to output your finished product to videotape.

The paperback-size USB box sports one composite-video connector and one S-Video connector. To digitize video, simply plug your video device into the box and plug the box into your Mac. Avid Cinema uses

Avid editing
Avid Cinema makes it easy to add effects and music.

the Mac's built-in audio circuitry to record sound.

With the USB box, an iMac can digitize 30 fps video at a movie size of 320-x-240 pixels. That isn't full-screen video, but it's ideal for movies that will be stored on CD-ROM, compressed for the Web, or played from the Mac's hard disk.

If yours is an older iMac, you'll need to update its firmware before installing the Avid Cinema software. The Avid Cinema CD-ROM includes Apple's updater software and instructions; the process takes about a minute.

Version 1.3 retains Avid Cinema's simplicity while broadening your output options. The Storyboard screen helps you plan the shots and editing sequence for dozens of movie types, such as birthday parties and real-estate tours. On-screen tips give shooting and editing advice and the excellent manual elaborates on many of them. If you prefer to wing it, you can skip this screen and proceed directly to digitizing, which is just a matter of pressing your VCR's Play button while clicking on Avid Cinema's Record button.

After you digitize your clips, you can change their duration and sequence, create superimposed titles, and add sound effects and music tracks (see "Avid editing"). Avid Cinema provides all the common video effects – such as dissolves, wipes, and spins – but it doesn't give you precise control over their duration. Indeed, the lack of precise editing control is Avid Cinema's chief shortcoming.

When you've finished your video, you can view a full-screen version of it. You can also compress it in a variety of formats; an advanced mode lets you specify QuickTime compression settings. What you can't do is output your final product to videotape – the USB box is input-only. To record a completed project to tape, you'll need to move it to a first-generation Power Mac G3 with an Apple video input/output card.

Macworld's buying advice
Avid Cinema for Macintosh with USB's inability to record projects to tape is a show-stopping limitation for moviemakers who want to commit their efforts to video cassette. But if you're content to view your movies on screen or you plan to deliver them via CD-ROM or the Web, Avid Cinema is a winner. There's no easier way to edit video with a Mac, and there's no other way to digitize video with an iMac.
Jim Heid

Win

... A copy of Avid Cinema for Mac with Macworld Jackpot. Ring 0900 1010 251 before August 31. Calls cost 60 pence per minute.

MPlayer 3

Manufacturer: Pontis
www.mplayer3.com/
Pros: Small and light.
Cons: Tiny capacity; too slow to load music.
Price: $195
Star Rating: ★★/3.4

Since I first came across the MP3 format I have been predicting the downfall of the major record labels. Having portable MP3 playing hardware is part of the scenario, so I had great hopes for the Pontis MPlayer 3. It didn't match my expectations. There are serious flaws that stop it from being a practical proposition.

The music is held on a card much like the kind of Flash card used in digital

Size matters
MPlayer 3's small Flash card stores only 15 minutes of music; making it impractical.

cameras. It isn't exactly the same, meaning that the flash-card market, which already has two competing formats, now has another. The largest capacity card holds just 16MB, enough for about 15 minutes' music. This isn't much, but there's room for two cards to be loaded. Even so this gives a maximum of 30 minutes of music, which is, as far as I'm concerned, useless. If you did want to increase its capacity, an additional 16MB card will set you back an extra £30.

The troubles don't end here: before you can listen, you must download it from your

Mac to the MPlayer. This is done via a serial cable, which not only precludes it from use with any currently shipping Mac, but it also takes forever to download – around twice the time it takes to listen to the music. A full 15 minutes of music takes 30 minutes to download to the player. To me, this just about makes it unusable.

On a more positive note the sound is excellent – it is not CD quality, but it is close enough for me to barely notice. You can also set the sampling rate for your music. You need to use 128bit for best quality, but lower rates are acceptable and give you more audio capacity.

Macworld's buying advice
There is a lot of room for improvement here, and that improvement can be made by Pontis, or the others in the MP3 player market. The minimum capacity for a useful player is about one hour – less is a waste of time, especially if it takes so long to load music files. In the future, we should see players that use USB, which will be much faster for transferring music. Until then, save your money. **David Fanning**

Railroad Tycoon II

Publisher: Poptop software,
www.poptop.com
Distributor: Softline (0181 401 1234)
Pros: Long lifespan, gorgeous graphics, steaming game play.
Cons: Fat controller comments.
Price: £34
Star Rating: ★★★★/8.5

My name's Matthew Bath, and I'm a trainspotter. But with Railroad Tycoon II steaming away on my Mac, the lure of a large, fur-lined anorak, Thermos, cucumber sandwiches that mummy made, chunky specs and crumpled notebook has to take second place to the king of all nerd-'em-ups.

Railroad Tycoon II could well be a sleeper hit of the year. It offers game play akin to SimCity 2000 and Civilization II, but

Virgin country
Spanning the centuries Railroad Tycoon lets you start a network from scratch and then build it into your own, Bransonesque empire.

lets you build and maintain a complex railroad that spans both continents and centuries.

Starting off with the first railroads in the UK and US, you lay track, build stations, go loco buying trains, woo passengers, lug goods and play the stock market – in fact, everything but toot your train whistle. As time chugs by, new trains to buy and industries to supply spring up, matching historic developments and events.

Graphically, Railroad Tycoon II is on track for best- looking strategy game of 1999. Fantastically detailed graphics let you zoom down from country to station level, and, even from afar you can see your

trains scurry about, complete with trailing smoke.

The play area too benefits from lavish attention to detail – you get to build in scaled maps of most major countries with town names, and developments realistically handled. Even the choo-choos are well designed, with mini-carriages that rumble along after the main engine. Get further into the game, and the entire map is a hive of development, transport and competition.

Macworld's buying advice
This isn't just an overgrown train set, there's a virtual world in there. Stock-market gambling, mergers, computer and human competitors (you can play over a LAN or over the Internet, but only Mac to Mac). Real-estate purchase and development all add pressure to your business and the small fact you need to deliver a dividend to your shareholders.

Add in a steamy mix of 18 scenarios that take you through the development of the railroad, a cracking map editor and the ability to download thousands of maps from the Internet, and you have a game that could well last longer than a Virgin Trains London-to-Manchester journey.
Matthew Bath

Carmageddon 2: Carpocalypse Now

Publisher: SCI
Distributor: Softline (0181 401 1234)
Pros: High-speed carnage, lots of blood.
Cons: A tad repetitive.
Price: £34
Star Rating: ★★★★/8.6

In the wake of recent tragedies involving undersupervized minors and overly powerful weaponry, politicians and parents have taken aim at video games and computer games that glorify violence. Although id software's long-in-the-tooth

Blood and guts
A passer-by bites the dust, covering your car in blood.

Blaze of glory
If you can't lose the police, smash into them.

game Doom seems to be taking the brunt of this criticism, these individuals would consider Doom small spuds indeed, were they to catch a glimpse of Carmageddon and its sequel, Carmageddon 2: Carpocalypse Now. Unlike Doom, where your arguably noble objective is to hunt down the spawn of Satan, the Carmageddons ask that you participate in a series of automobile races with the express goal of careening into your opponents and mowing down as many innocent pedestrians as possible.

If you find this kind of gratuitous bloodshed despicable, please feel free to avoid these games. Although I'm not terribly offended by this sort of cartoon violence – I have a fairly firm grasp on what's real and what isn't – I am bothered by a game that is so repetitive that even the cheap tricks of fast action and violence can't keep me engaged. And that, ultimately, is the problem with Carmageddon 2. It's just the same old thing over and over again – start the race, try to keep your barely

controllable car on the road, slaughter innocents, pick up bonuses, and bash your opponents into submission.

Carmageddon 2 isn't without charm, however. There's a degree of grisly good fun in the proceedings. For example, I couldn't help but be amused by the Drunken Pedestrian bonus, which causes your foot-bound victims to stagger and weave; the Groovin' Pedestrians bonus, which results in passersby who perform a version of the hully-gully; and the Peds With Stupid Heads bonus, which operates as advertised. Such bonuses abound – each goofier than the next. Also, Carmageddon 2 was built in 3D from the ground up – supporting both 3Dfx Glide and RAVE – and although it still looks cartoonish, its graphics are far superior to the original's.

Macworld's buying advice
If you're offended by the game's concept – or just want a game that offers more than the opportunity to repeatedly biff pedestrians and automobiles – skip Carmageddon 2: Carpocalypse Now. If you have the cash spare, possess a compatible sense of humour, and don't mind the repetition, give the game a shot.
Christopher Breen

Win

... Five copies of Carmageddon II with Macworld Jackpot. Ring 0900 1010 252 before August 31. Calls cost 60 pence per minute.

Route 66 Britain 99

Distributor: Softline (0181 401 1234)
Pros: Easy to make maps, find directions and claim mileage expenses.
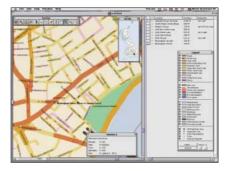**Cons:** Can be a little slow; sometimes has quirky routes.
Price: £25.50
Star Rating: ★★★★/7.8

Before I get into this review I just want to say that despite this application's flaws, everybody needs it. Everybody who travels, who gives directions, everyone who ever had a house party needs this program. It will replace every road map you ever had. It can direct you from any street in the country to any other street in the country, mapping every junction and listing every road on the way.

If you are familiar with the original version of Route 66 you will know how easy it is to find your way from town-to-town. The new version gives you even

Going back to your routes
Route 66 gets you anywhere in the UK – from anywhere.

better detail, right down to streets and back alleys. However, there are limitations on how you find the place you want. For example, you have the option to show railway stations and parks but not smaller airports. There are other omissions. For instance, stadiums are a perfect example of a place that many people tend to go to every week, but none are listed as places of interest, not even Wembley. I know not every B&B or sports centre can be listed, but Wembley Stadium should be there.

Route 66 performs much better when you get to long distance travelling. City-to-city directions are excellent, and the pushpin feature lets you input regular destinations. This would enable a travelling sales person to mark out groups of clients,

and pick the best route, and even the order in which to visit them. At the same time it will measure the mileage, fuel consumption and expenses allowance for the trip.

There are some situations where Route 66 really looses the plot. For example one route I looked at directed me down a flight of stairs just off the Strand. Fortunately I know London well and this little faux pas wouldn't really have me driving down stairs like a scene from the Italian Job. However I would consider it a bug because Route 66 can tell the difference between a real road and a pedestrian zone.

Macworld's buying advice

There are other niggles, such as the lack of motorcycle settings, it includes only car and truck preferences. But the package is good enough to let you forget these flaws. It does the job better than I could in almost every case, and there are no maps to fold, no books to loose the page in. It really is indispensable. **David Fanning**

Adobe Acrobat 4.0

Publisher: Adobe (0181 606 4001)
www.adobe.co.uk
Pros: Some enhanced features, including the ability to simulate fonts and filter annotations by type or creator.
Cons: Windows version offers key capabilities not on the Mac; numbering feature prevents printing.
Price: £159, Upgrade £59.
Star Rating: ★★★★/7.8

After slogging away for several years, Adobe Acrobat is now the undisputed standard for electronic document production, whether on the Web, via CD-ROM, or in print publishing. Version 4.0's new interface masks a variety of moderate improvements. Few have a "Wow!" factor, but some will make your life a little easier.

The biggest change is under the skin: Acrobat 4.0 uses a new version of the Portable Document Format (PDF) that's based on the PostScript 3 language. This will have little effect on most users, but it should be a boon in prepress operations as PostScript 3 output devices come to be used more widely.

The most visible effect of the new PostScript 3 engine is the new Prepress Options dialogue box, which lets you implement colour trapping when producing film. You can also preserve the original CMYK values in a PDF file, bypassing any modifications made by colour-management software installed in your system.

Experienced users will see a revised interface that alters most menus and keyboard shortcuts, part of Adobe's long-standing effort to impose a similar look-and-feel in each of its programs. Expect to lose time getting used to this,

Fortunately, Acrobat's revised interface doesn't usually get in the way. Our biggest problem was figuring out how to create thumbnail previews of images, which in Acrobat 3 was an option in the main menu. In version 4.0, you access the feature through an easily overlooked palette menu in the Thumbnails pane or by control-clicking on the same pane. Control-clicking is an action few Macintosh users have adopted, unlike savvy Windows users.

Some features have been renamed but are otherwise the same: Notes are now Annotations, and the Scan OCR function, for converting scanned documents to editable text files, is now Paper Capture. Acrobat Exchange, the core application in the package, is now simply Acrobat.

Beyond these changes, Acrobat 4.0 feels like a minor upgrade. There are many nice touches, but you won't find any "must-have" additions, but several moderate enhancements stand out.

Minor improvement
Acrobat 4.0 features few must-have improvements.

One of the most powerful features of Acrobat technology is its ability to simulate the appearance of fonts that are not installed in your system. If the PDF document includes Gill Sans but that font is not on your Mac, Acrobat can still display a reasonably good approximation.

Acrobat Distiller 4.0 also makes it easier to create PDF files for specific purposes by adding canned settings optimized for screen display, printer output, and prepress output. You simply pick the setting from a pop-up menu, and the program generates a PDF file with the appropriate options. You can also create your own settings and associate them with a folder so any documents dropped in automatically convert to PDF files. That's handy.

When editing text, you can now change the font and type size, although you're still limited to working on one line of text at a

time. You can also edit embedded bitmap and EPS files by double-clicking on them; Acrobat launches an apt program, such as Photoshop or Illustrator.

Despite the improvements, there are some flaws. For example, the ability to renumber pages would seem handy when you're merging several PDF documents. Unfortunately, these page numbers display only within the Thumbnails view, not on the actual pages.

You can also use non-Arabic numerals – such as i, ii, and iii – to number pages in the table of contents or in other front or back material. However, you can't print pages numbered in this manner unless you print the entire document. Acrobat's Fit Text To Selection option, a good idea introduced in Acrobat 3.0, still works awkwardly. This feature squeezes or stretches revised text to fill the space of the original text. But you must select this option before entering text – you can't use it once you've started typing, even if replacing an entire line.

Acrobat 4.0's biggest flaw is what's lacking: the Windows version includes several useful features that aren't currently available for the Mac, including the ability to import Web pages. Adobe says it plans to offer these features to Macintosh users as free plug-ins, most likely beginning with the Web-capture utility.

Macworld's buying advice

Acrobat's price – £159 for a new copy and £59 for an upgrade – means its easy for most users to upgrade, even given its moderate enhancements. If you're a Web, CD-ROM, or print publisher using Acrobat files, there's no compelling reason not to upgrade.

And if you're happy with Acrobat 3.0, there's little reason to jump quickly to version 4.0, at least not until the Mac version adds what Windows users are getting.

Take your time, since the gratification in making the switch is not tremendous. **Galen Gruman**

Affordable archiving

ReMix DVD-RAM/ CD-RW

Manufacturer: Mac & More
(01442 870 300)
Pros: Infinite capacity; tons of flexibility.
Cons: Could conflict with your colour scheme.
Price: £599.
Star Rating: ★★★★/8.5

The ReMix range has always joined complimentary technologies in one box, and this model continues this. DVD-RAM is a cheap and fast optical format, but it has failed to capture peoples imagination. I suspect this is about to change because, as an archiving format, it is unbeatable. Cartridges can hold 5.2GB of data, and at just £25, they're a bargain.

The ReMix drive offers extra flexibility for the DVD-RAM drive by adding a quad speed CD-RW – meaning you can retain compatibility with older archives.

Even if used for reading data the ReMix offers an unprecedented range of compatible media. DVD-RAM is supported, plus other flavours of DVD – though to watch DVD-Video you do need an MPEG2 card – and all CD types are supported as well.

This all adds up to a perfect machine for a busy studio or pre-press environment, where compatibility with a wide selection of formats means less headaches all around. Also the archives produced whether CD-RW or DVD-RAM are flexible enough for you to change things without wasting a disk.

Your flexable friend
The ReMix features a CD-RW as well as a DVD-RAM.

Macworld's buying advice

I hope to seethe DVD-RAM format become more popular, because it is well suited to increasingly larger file sizes. If you only need the DVD-RAM part it is also available as a single drive. Buying the whole ReMix package gives you compatibility with all major archiving options well into the future. **David Fanning**

Speed-bumped G3

PowerMac G3 450MHz

Manufacturer: Apple (0800 783 4846)
www.apple.com/uk
Pros: Faster for the same money.
Cons: Only slightly faster.
Price: £1,699
Star Rating: ★★★★/8.7

Apple has released a 450MHz version of the G3: a speed bump for no extra money. Once, buying a Mac was risky, because you never new if there was a new, faster, bigger and better one just around the corner. Now all that guesswork is a thing of the past, there is always a bigger, faster, better machine just around the corner. The 450MHz G3 offers a relatively modest improvement in speed. The 12.5 per cent increase in processor speed is somewhat diluted when factored in with the other speed critical parts of the computer. When we test a Mac we test disk speed and the video card to give an overall score. The score is divided three ways, processor, disk and video. The 450MHz G3 only affects the processor speed so only one third of the score changes, making for an almost unnoticeable overall improvement.

I understand that the 450MHz G3 is a depressing thing for people who have just bought the 400MHz version. It's never good to see a new model for the same price. But we must be grown up about this and take it on the chin, because what are the alternatives. A few years ago there were people actually suggesting that technology was developing too fast, and measures to stop this and the associated depreciation of computer values. No, we should just be thankful that we are getting something extra for no extra money.

Macworld's buying advice

Don't let processor envy upset you, just buy the fastest machine you can afford when you need a machine. It is a good idea to buy just after a speed bump as you may get an extra few months as the fastest machine in town. If you can't afford to be so cutting edge don't worry, you most likely wouldn't notice the 50MHz difference. **David Fanning**

Speed bumps

☐ **Best results in test. Longer bars and higher scores are better.**

	Overall Performance	Processor Mix	Disk Mix	Graphics Mix
Power Macintosh G3 450MHz	2,153	1,466	1,340	3,588
Power Macintosh G3 400MHz	1,933	1,408	1,310	3,019

Music composing for all

Sibelius 1.2

Publisher: Sibelius Software (01223 302 765)
Pros: Very fast; flexi-time intelligent-MIDI input; scanning; excellent print quality.
Cons: Chord symbols.
Price: £599
Star Rating: ★★★★★/9.3

For the past few years, music-notation software has been judged by the Sibelius standard, accepted as the most advanced and comprehensive system available. Glowing reviews from composers, claims that it "may soon transform the very nature of composition" had Macintosh users shrugging their shoulders and changing the subject, as it was originally only available only on the Acorn platform. A Windows version followed and now it has finally arrived for the Mac, updated from scratch, and not a moment too soon.

The manual is clear, concise and witty. It caters for people who have used other scorewriters before, but also for complete beginners – without a hint of patronization.

Input is either by MIDI or directly on to the page. A few MIDI glitches made me start with writing the tune note by note. It was easy, if different from my previous software. But within a few minutes, I was on my way.

There are no scroll bars – slow and tedious in other programs. A mini screen in the corner – called the navigator – allows you to move to any point in the score instantly. You feel like you are shuffling real pages on your desk.
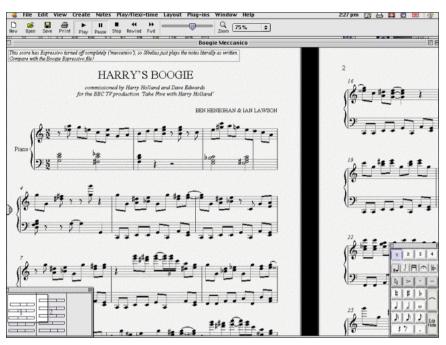
Moving staves, or any other change, reformats the score in less than a second. Changing pitch and note values is simple and, once you understand the order, even simpler using the on-screen keypad.

Copying, repeating and other highly boring processes are painless. You're encouraged to learn the keyboard commands and put the mouse on the floor so that you won't be tempted to use it. This is really great advice, because constructing a score of whatever size is a long business, so anything that saves time is a plus.

Bar talk

The program is full of well-thought out elements. For example, when you assign a stave to a particular instrument this gets automatically routed to its GM (General MIDI) number and plays back the right sound without having to set it up.

If you score a note too high or too low for that instrument it will show up in red instead of blue or black, saving you that embarrassing moment in rehearsal! Bars

Know the score
Sibelius looks great on screen, but it comes into its own when a score is printed. The need of many composers to see their work on paper is satisfied with gorgeous-looking notes.

rethink themselves when you add a note, filling blank sections with the correct rests, not moving notes to places where they are not wanted. Instruments are automatically transposed in the score, but play back remains in concert pitch.

Know the score

Sibelius was created for the composer who works with a written score as the primary composition tool, not as an add-on to a sequencing program.

However, this software also incorporates a totally new feature called Flexi-time. This "intelligent real time MIDI input system", that allows you to record to a click that moves with you, so that a slight rubato will not result in a miasma of tied demisemiquavers across the page. This does away with the restriction of quantizing everything and is a marvellous development for players who might sway a little in the wind of creativity.

Playback also has the human musician in mind, giving you a range of expressiveness from Meccanico – literally playing what's written – to the slightly hysterical sounding Molto espress which, I suspect, should be treated with great care. It can swing, jive and probably boogie as well.

A range of plug-ins is also available including PhotoScore Lite that can scan in printed music and read it intelligently. It can then be manipulated like any other document – transposed, aand parts extracted.

Currently, this feature is available as a download from the Sibelius Website, **www.sibelius.com**, but the full version will be on sale soon. This represents a massive advance in the technology, and only a respectful silence will do as musicians begin to realise what this will mean for them.

A complaint about previous versions of Sibelius was that it was too clumsy when it came to adding chords. Unlike scorewriters such as Encore, it does not guess at them, which can be scary. But even so putting them in seems a little bit fiddly.

There appears to be no real book-chord symbols, such as triangles and crossed circles, but with the range of styles and fonts available, I expect this could be easily customized – and this is a very small whinge in the light of all the other benefits.

Macworld's buying advice

There are many other useful features: alphabetic input of notes, undo and redo as far back as you want, saving files directly as a Web page for publishing on the Internet, writing in several different voices on the same stave – they've thought of everything.

I have to mention the sexiest part of this delicious program and that is its relationship to paper. The makers of Sibelius understand the not-so-hidden paper fetishism of some composers, and offer you a range of paper textures and colours on the screen, inviting you to touch and feel.

Naturally, the printed score is gorgeous, and when you have it in your hand it satisfies the need to see your work beautifully expressed in the mystical language of notation. **Dorota Kotz**

Win

... One of two copies of Sibelius with Macworld Jackpot. Ring 0900 1010 254 before August 31. Calls cost 60 pence per minute.

Colourful-USB mouse

UniTrap Mouse

Manufacturer: Contour Design
Pros: Cheap alternative to buying a new USB mouse. Matches well in plastic texture and colours to new iMacs and G3s.
Cons: Slighty heavier than other USB alternative mice.
Price: £11
Star Rating: ★★★/6.9

The ergonomic Unitrap mouse cover disguises the shape of your 'hamburger-like' mouse so that it resembles a traditional mouse. All you do is carefully snap off the two blue plastic pieces on the side of the blue/white mouse, slip the Unitrap shell over the top, and snap it into place. The style of plastic used to make the mouse, matches the iMac and the blue-&-white G3's style, preventing the UniTrap looking too alien to the new Macs – as some third-party iMac extras do.

A selection of coloured buttons are also included to match your flavoured iMac. You can click on different coloured button every day, if you're so inclined. Snap-on strawberry-, blueberry-, tangerine-, lime- or grape-coloured buttons come with the basic cover – letting you swap them around to your hearts content.

Once fitted over the original round mouse, the light add-on cover is smooth to touch and comfortable to use. The larger button section increases control and, although the original round mouse is completely covered up, this does not increase the width of the mouse. The mouse and cover are a little heavier to move, although those of us with larger hands will find it much more comfortable to manipulate than the small round mouse.

Colour co-ordinated
UniTrap's mouse comes in five colours to match your iMac.

Macworld's buying advice

If you're looking for an improvement to the original mouse without shelling out too much cash, UniTrap will suit admirably, especially if you prefer something a bit more fun. For additional ergonomic handling and comfort, it is perfect, and looks strangely snail-like parked next to your keyboard. **Gillian Robertson**

iMac video-capture package

InterView

Manufacturer: Interex (01923 266 400)
Pros: Affordable and easy-to-use, full software, VideoShop version 4 included free. (£89 to upgrade to latest version 4.5)
Cons: Not for professional video editors.
Price: £99
Star Rating: ★★★★/8.7

Those of us new to the Internet and impressed by the wide range of data delivery formats available, such as audio, video, image and text, will not only want to see other people's multimedia content, they will also want to host their own Web sites. The lack of PCI expansion slots has, so far, prevented the use of video-capture cards for getting video information onto the iMac. XLR8's InterView video-capture package for iMacs and USB Power Mac G3s plugs this gap. Interview will allow you to capture in real-time – 320-x-240-pixel movies or 640-x-240-pixel movies.

The InterView package is easy to set up – the manual takes you through the software installation. Once you've got the system and software drivers set up all you do is plug in the InterView devices and run the set-up checker – InterReView.

The hardware device comprises of a small black box with a USB connector on one end and a composite and S-Video – higher quality picture – input ports at the other. Once you've installed all the software, you simply plug it in to any video source, such as a digital camera or VCR, and begin. Digitizing video onto your iMac will allow you to modify filters, and then distribute them on CD, the Web or via email. You can do this with VideoShop, the free software provided. QuickTime can also be used to edit, adjust and convert movie files for publishing on the Web. You simply select the required sound and video settings and then, in VideoShop, open the Digitizing window, start your video tape and view the preview. When ready, press record and when finished, the captured clips are stored in QuickTime format ready for viewing or editing in VideoShop. The tutorial and manual will show you how to get the most from all the features in VideoShop

Macworld's buying advice

As a cheap and simple-to-use add-on for a USB Mac, InterView is great for getting your home-movies or corporate video digitized into an online format. **Gillian Robertson**

iMac swivel-stand and hub

iDock

Manufacturer: New Motion (IMC, 01344 871 329)
Pros: Handy for people with older peripherals.
Cons: It's the wrong colour for new iMacs.z
Price: £129
Star Rating: ★★★★/7.1

The iDock is a weird beast, combining all kinds of iMac connectivity in a swivel stand for your iMac. It allows a degree of swivel, though not as much

as I would like. On the back of the stand there is a host of sockets for almost everything you could want. There is a USB hub with one upstream and three downstream ports, two Geoport serial ports and, strangely, a parallel port. The hub makes perfect sense, though more ports would be nice. The serial ports are handy for people using older peripherals, but they can't be used for networking.

The odd one is the parallel port – a port usually only found in PC peripherals. This means that you should, potentially, be able to use old PC printers, but that may not be as easy as it sounds. Finding the correct drivers may well be troublesome.

Aesthetics is another issue. If you have the older Bondi Blue iMac you're in luck. But if you have the newer fruity flavours, it may clash. The manufacturer of the iDock has solved this problem by making a clear version, available later this year.

Macworld's buying advice

If you need a hub or a serial port, and also want to swivel your iMac, this is for you. If you need more than one of the iDock's features it could be a good deal. **David Fanning**

CatBase

Publisher: CatBase Software (0700 228 2273)
www.catbase.com
Pros: Complete catalogue-publishing package; hides the complexities of relational databasing from the user; comprehensive set of export functions; excellent documentation.
Cons: Some anomalies with standard Mac keyboard commands.
Price: Single-User, £695; Multi-User (two workstations), £1,795; LE (1,000 records per table maximum), £395.
Star Rating: ★★★★★/9.1

The Mac platform is reasonably well catered for in the database department – from the evergreen FileMaker Pro through to the heavyweight 4th Dimension. Sometimes, a particular aspect of business requires a dedicated solution. This may be as simple as a CD-cataloguing program: it would not be difficult for a novice to use FileMaker Pro to design a database for such a task. But take a more complex scenario, and the desire to 'hide' the nuts and bolts of databasing from the user, and a far higher level of expertise is required. CatBase has been developed in 4D to provide a complete databasing solution for publishing catalogues, directories, or any other projects that handle the relational side of companies and their products. It also provides export facilities for print and Web.

CatBase revolves around the relational set-up between its three main tables: Companies, Products and Product Details. When adding information for each company, a further table comes into play (Contacts) and likewise for Products (Categories). Data can be imported in the standard three formats of tab-delimited, comma separated or fixed length, so supporting a variety of existing sources.

While you could start from scratch, designing a database from the fields upwards, it is simpler to zap all records from an existing file and to rename standard fields as required. In this respect, a project can be up and running very quickly.

Exporting information

Getting data into a database is the easy part; creating an output template so that minimal work is required once imported into the publishing program is a totally different problem. In this department, CatBase excels and provides full QuarkXPress, PageMaker and Multi-Ad Creator2 support for print, HTML for Web and RTF (Rich Text Format) for any other applications.

Database output often consists of a repetitive set of data. For example, a catalogue may have a company's name and details followed by a list of its available products. CatBase uses Style Sheets to define all aspects of how information will export. For QuarkXPress, this includes font size, style and colour, tracking, baseline shift, scaling, indents, leading, drop caps – in essence, every paragraph function that would usually be set manually. Text box creation – anchored and unanchored – with columns, text inset, frame style, alignment – the list is almost endless.

The next step is to decide what each output paragraph consists of. Some of these will be Style Sheets – such as a company name and address; simple punctuation – such as a line feed or tab; a formula or calculation; fixed text or a picture. The last item tends to cause many problems with data output as, in QuarkXPress, it requires an XTension called Xtags (£175, Digital Toolbox, 0181 961 6622) whose command-set is rather difficult to use.

In keeping with the general ethos of the program, CatBase hides such complexities, allowing you to set frame details and then call in an existing picture. The final result is an export file that flows seamlessly into a DTP or Web program, requiring minimal further tweaking.

CatBase offers integration with a number of existing products, each of which can be purchased as an optional extra. The 4DWrite word processing plug-in (£95; ACI, 01625 536 178) can create emails, faxes and mail-merged documents; the FaxExpress plug-in (£50; Glenwarne, 01628 667 702) can send faxes directly from the database. There is also built-in support for Indextension (£99; CatBase, 0700 228 2273), an indexing XTension for QuarkXPress, and OCR (Optical Character Recognition) that comes bundled with Xerox TextBridge 8 (£69; Digital Toolbox, 0181 961 6622).

More exciting is the fact that CatBase can be run as a completely self-contained Web server. This adds significantly to the value of the package.

Macworld's buying advice

CatBase Software has gone to great lengths to ensure that the user interface is as straightforward as possible. Each window is of a uniform nature with standard icons, and small, floating palettes are used for menus. Neat and easy to work with, though full support for the return key to close windows would have been nice – and ⌘-w turns the Web Server off.

There are two schools of thought regarding databasing and catalogues. The first is that, once data has been exported, any further changes are made to the DTP document with a substantial update requiring a further export. CatBase is of this variety. The second is that the database should remain permanently linked to the DTP document so that changes to data cause an immediate update to the document. Such software is inevitably far more expensive – and given the export functionality of CatBase, little alteration should be required once data has been exported.

See the full 50MB demo on our cover CD, along with third-party XPress XTension demos and full documentation. If you're involved in the publishing of databased information, spend some time with this demo – and be prepared to contact CatBase for a full version.

Vic Lennard

Deceptive looks
Behind the standardized dialogues and floating palettes for menus hides a powerhouse database for publishers.

preview

Photoshop 5.5

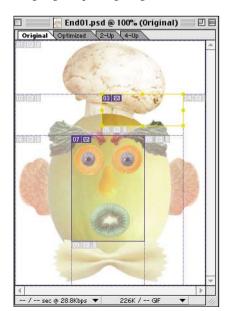**Publisher:** Adobe (0181 606 4001)
www.adobe.co.uk
Pros: Excellent Save for Web feature; professional standard masking tools; integrated with latest version of ImageReady for Web processing.
Cons: ImageReady integration slightly cobbled-together; you pay for ImageReady even if you don't need the Web functionality.
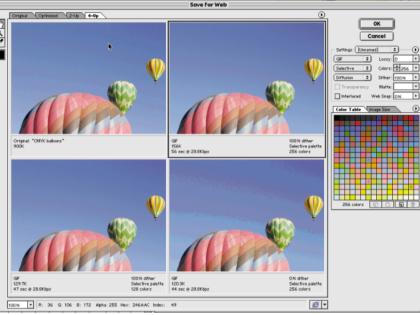**Price:** £425; (upgrades – £75 from v.5; £119 from v.4).

Although Photoshop has long been the image-manipulation package of choice for print designers, it's less obviously a choice for Web designers. While Macromedia Fireworks has steamed ahead in the past couple of years with fully featured image-creation and Web-optimization facilities, Photoshop's claim to the soul of the Web community has rested on a handful of export plug-ins. But Photoshop has over 80 per cent of the digital image-manipulation market worldwide, and Adobe isn't going to cede market share without a fight.

The new 'Web radical' Photoshop 5.5, due for release in August this year, aims to provide mixed-media and Web designers with "the first integrated toolset for designing and printing images for the Web".

Save for Web
Web designers will find the new Save For Web feature in Photoshop 5.5 extremely powerful. The 4-Up window displays four versions of a graphic, along with estimated download times at different modem speeds.

What that basically means is that Photoshop 5.5 has been integrated with the latest version of Adobe's Web-based graphics creation and export tool, ImageReady 2.0.

Grafted on

Actually, perhaps 'integrated' is putting it too charitably: ImageReady isn't integrated with Photoshop so much as grafted onto it. At the bottom of the toolbar, you get a toggle switch between ImageReady and Photoshop; clicking the relevant icon opens your current file in the other application. It's all part of Adobe's plan to make it so easy to switch between Adobe software that we'll never want to use anything else.

The bad news, though, is ImageReady 2.0 will not be made available as a separate software in its own right. If you have ImageReady 1.0, you'll be able to buy Photoshop 5.5, including ImageReady 2.0, for the same price as an existing Photoshop 5.0x user upgrading to 5.5 (£75). A good deal for ImageReady users. But the flip side of the coin is that if you're an upgrading Photoshop user, you pay for ImageReady whether you want it or not – a needless expense for non-Web designers.

To sugar the pill, Adobe has added some impressive new features to Photoshop's core functionality. Probably the most significant of these is the new Extract feature, which offers excellent masking capabilities. Extract uses a marker-pen tool to roughly mark the edge of the object you want to mask, and then define the area to protect. Tests of the Extract feature on pictures of hair – the average Photoshop user's nightmare –

Sliced veg
ImageReady's Slice tools allow everything to be done directly on the image, without a dialogue box in sight.

produced results comparable to those of high-end proprietary pre-press systems.

Where the Extract feature provides professional quality masking, the new Eraser tools work as a quick-and-dirty alternative. The Erase Background tool effectively works as a colour-specific eraser: set the Sample drop-down to Once, and it erases the first colour you click on, or set it to Continuous and it erases not only the first colour you click on, but also any others over which you linger too long. This last is slightly counter-intuitive – it's difficult to tell when you've sampled another colour to erase by accident. The new Magic Eraser removes entire swathes of adjoining/non-adjoining colour in a single click, like a combined Magic-Wand-and-Delete facility.

Fractional improvement

The Type tool dialogue box now has a Fractional Widths checkbox, which makes a fractionally better job of Photoshop's sometimes bizarre kerning and tracking. There's also an underline and some faux bold and italic effects. Most useful of all is the drop-down menu specifying degrees of anti-aliasing – lifted straight from ImageReady – which can be used to great effect to improve the legibility of on-screen text, particularly on smaller font sizes.

Other new features include Contact Sheet, which prints thumbnails of all the graphics in a specified folder: anyone with a digital camera will find this handy. The Web Photo Gallery creates thumbnails of graphics in any folder you point it at, plus
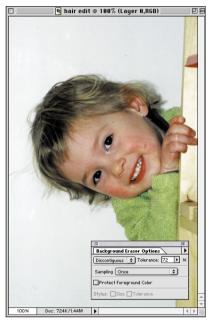
preview

all the HTML to place them on a Web page where they're linked to full-size versions of themselves. A new Color Fill layer effect offers the ability to change the colour of a layer's contents without losing the original colour – useful for quick rollover creation. Finally, the new Art History brush creates some interesting painterly effects – perhaps as a sign that with the integration of ImageReady, Adobe is moving towards the inclusion of drawing/painting tools in Photoshop? Let's hope so: if Adobe is serious about Photoshop's chances in the Web-design area, it needs tools for creating graphics as well as manipulating them.

Web designers will find the new Save For Web feature in Photoshop 5.5 extremely powerful. The 4-Up window displays four versions of a graphic optimised using different tolerances on-screen, along with estimated download times at different modem speeds. Or you can do the whole optimization process the other way around by specifying a file size and letting Photoshop choose the best possible settings.

Using the Color Table's Lock feature, you can protect certain colours so they don't get lost during dithering. There's also a very handy Preview feature that can handle a preview for Windows gamma and browser dither; plus an ICC profile compensation feature that previews images with embedded ICC profiles. A Web Snap feature can be set to a percentage figure: the higher the percentage, the more colours are forced to snap to a Web-safe palette. Optimization settings can be saved and applied wholesale to other images, and an optimized Web image can be previewed in a specified Web browser – or several – with just one click.

The bundling of ImageReady and Photoshop has been underpinned with some significant work on ImageReady 2.0. Its creation and export tools are, thankfully, vastly improved over those of version 1.0, which means that until it's absorbed into Photoshop properly, ImageReady can give Macromedia Fireworks 2.0 a brief-but-glorious run for its money. There's a larger selection of tools in ImageReady 2.0 than in 1.0 – including an airbrush, a clone tool, and a new shape tool that draws rectangles or rounded-corner rectangles and fills them in one operation. ImageReady also has Photoshop's Dodge and Smudge tools, and a Levels control; but there are no channels, which means no alpha masking facilities. You can have multiple, separate swatches, rather than having them all appear in one enormous swatch as in Photoshop 5.5.

Bad-taste bevelled button designers will revel in the Styles palette, which contains 18 pre-defined styles – 'floating plastic',

Bad hair day
Photoshop 5.5's new Eraser tools provide a high standard of image masking even for difficult images like hair.

'button shiny', 'water glass' – besides the facility to define your own styles. And there are some easy-to-use controls for creating rollovers and GIF animations that can work with separate layers or layer effects to create rollover states or animation frames.

ImageReady 2.0's slicing tools are out of this world. Draw one slice and ImageReady will chop up the rest of the image to fit it. Each slice can be given a name, a URL to link to, a rollover state and an ALT string, The HTML for all of these is generated automatically along with the HTML to reassemble the image. Slices of the same image can be previewed as a composite image, and saved as JPEG, GIF or PNG-8 or 24 files – and everything is done live on the image without a dialogue box in sight.

When exporting, ImageReady 2.0 can tag its own images on exporting HTML – which means that if you change an image's attributes, you can use the Update HTML feature to get ImageReady to root around your HTML file and update the image tag accordingly. The Save Optimized As feature even gives you the option to define how the HTML looks – the cases, indents and line endings, plus the origin of image maps, empty cells and spacers. The Saving Files Options dialogue box allows you to choose how all your image filenames are linked and where the files are stored. You can't fault Adobe on user research – those two features alone are probably top of every Web designer's wish list.

ImageReady 2.0's interface is a step ahead of Photoshop 5.5 – as if Adobe has rolled out a set of experimental improvements on the non-mainstream

package before risking it with its giant-killer. There are features like layer effects that appear within the layer, drag-&-drop colour from swatches, and the ability to edit text directly within the image without recourse to a dialogue box. In fact, there seems to have been a concerted effort to get rid of as many dialogue boxes as possible: more operations are done via floating palettes, such as the Layer Options palette that becomes a Layer Effects editing palette when a layer effect is selected. Features like these will presumably appear either in the shipped release of Photoshop 5.5 in August, or in Photoshop 6.0.

Macworld's buying advice

With the new masking features in Photoshop 5.5, Adobe has clearly done its best to include features that appeal to its core customers, and hence persuade them to upgrade even though they may not need the Web functionality. But the main focus of Photoshop 5.5 is Web tools, and if you've no use for those then the price of the upgrade may not be justifiable. If, on the other hand, you are a Web designer, Photoshop 5.5 could be all your Christmases rolled into one.
Karen Charlesworth

Win
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Flat hunting

Flat-panel monitors look good – and save on energy and space. **By David Fanning**

Like something straight out of a science-fiction movie, flat-panel monitors are a slick addition to any desktop. When they first appeared, LCD screens were an expensive fashion item. It was difficult to justify buying them, because quality did not match price. Over the past three years, flat-panel prices have become reasonable – if not yet cheap. Quality has also improved, but there's still a way to go.

Here, we take a look at the current crop of flat-panel monitors and check out the latest developments in this fledgling technology. The models we examined are LCD-based, using similar technology to laptop screens. The main difference is size: the PowerBook screen measures 14.1-inches diagonally, while those we looked at go up to 18.1 inches. All bar one use a traditional analogue interface, the exception using new digital interface technology.

There are some flat-panels smaller than 14-inches available, which many Macintosh users will find too cramped for creative uses. Currently, 18 inches is the largest LCD flat-screen available; but other options, such as plasma screens, offer viewing areas as large as 40 inches. Unfortunately, they are usually unsuitable for computer use because the smallest available pixel size on a plasma screen is much larger than with either CRT or LCD monitors. The way plasma – or "gas plasma", to give it its full name – works is similar to neon-lighting technology. Each pixel is a tiny fluorescent light, illuminated by a small electrical charge. The results are impressive, but more suited to television – which has a relatively low resolution – than to up-close computer work. Even if this didn't put you off gas plasma screens, the price tag certainly will: a 40-inch screen will set you back more than £10,000.

LCD flat-panels cost considerably more than their CRT (cathode ray tube) equivalents. A 15-inch LCD screen now costs between £700 and £1,000. Although similar to last year's prices, quality does appear to have improved.

The larger sizes – more than 15 inches – are still very pricey. The cheapest 18-inch screen is just under £2,000 – a considerable and, for many people, unjustifiably large outlay. But why would you want a flat-panel monitor anyway?

For most people, there's no technical justification for choosing a flat-panel monitor over a CRT – it's just a matter of aesthetics. Sadly, IT managers are notoriously unimpressed by upgrades that are based on aesthetics. But with more and more companies looking to become feng shui-compliant, maybe flat-panels will be considered a welcome improvement on office aesthetics.

Realistically, flat-panels are most useful for impressing clients. A presentation on one will always impress, and a flat display in a reception area gives the impression of a high-flying, high-tech company. Graphics professionals usually get the pick of the crop when it comes to new and impressive equipment. It's something of a turnaround for the sales department – and the receptionist – to be the natural recipients of the latest computing goodies. For creative teams, quality is an issue with flat-panels. Their colour fidelity is OK for most things, but they are difficult to calibrate to a high degree of accuracy. One of the reasons for this is rather silly: the suction

Editors' Choice

15-inches: Apple Studio Display
Macworld Rating ★★★★/9.2
In the 15-inch value stakes, there's one model that's far and away the best on price and features: the Apple Studio Display. It offers a colour co-ordinated solution with software controls and even a video input.

Editors' Choice

Large: SGI 1600 SW

Macworld Rating ★★★★★/9.0
The larger-screened flat-panels are more difficult to quantify than their smaller counterparts, but the SGI 1600SW offers exceptional value, even when you include the price of the digital-video card that's needed.

Nice price
The Belinea 10 15 10 may not be the best looking monitor – but at £749, only the LG 500LC, and Apple's Studio Display cost less.

cup of the hardware calibration tools damage the fragile LCD screen. Hardly an insurmountable problem, I admit, but it has affected the ability of manufacturers to achieve perfect colour.

Another factor is that data is translated too many times before hitting the screen. A traditional monitor is analogue, and uses pulsing magnets to direct the cathode ray. LCD monitors address each pixel individually, and these are turned on or off digitally. This becomes complicated, because the obvious way to control a digital monitor is with a digital signal. The signal starts out being digital, but because monitor outputs are analogue, flat-panel monitors require hardware to convert an analogue signal to digital again.

Only one of the monitors tested – the Silicon Graphics model – has a digital input. This requires a digital output from your Mac, supplied by a digital-video card. The only problem with this is that the screen can take only a digital input, and video cards with a digital output are as rare as rocking horse poo. Luckily, we managed to get one from Formac, which has beaten even Silicon Graphics in launching a Mac-compatible digital-video card. That's assuming the one I have isn't the only one in existence. (For an in-depth look at the Formac card, take a look at the review of it on page 44).

If you're in the minority, and rely on a colour-calibrated monitor, a flat-panel monitor will not be able to match your

colour fidelity. In this regard, the rest of us have nothing to lose by turning to a flat-panel model. In some ways, a flat-panel monitor actually beats the accuracy of CRT monitors.

Trinitron monitors have terrific contrast and the colour is good too, but they suffer from poor convergence. If you're looking at a Trinitron or a Diamondtron monitor, take a look at the straight black line in the corner of the screen. You will almost certainly see that the top and bottom of the line are shadowed by a blue or green tinge. This is a symptom of misconvergence; the cathode rays are slightly off target. This doesn't happen with LCD panels as they don't use cathode rays.

Another problem with traditional monitors is their pincushion alignment – so-called because it's the shape of the image on the screen. Lines are often not straight and this can distort the picture. You can adjust the pincushion, trapezoid, flare and other things, but often it makes things worse. The LCD panels don't have this problem, because all pixels are arranged in straight lines. You get a perfect picture and a perfect aspect-ratio every time.

Space race
Also, the thinness of flat-panels is really helpful when you're working in a confined space. Take a look at your current monitor and imagine what it would be like to regain all that desk space. Their space-friendliness has made flat-panels popular on City trading desks. Being able to keep an eye on two or three screens at once is a boon to stock-market traders with limited space but almost unlimited cash. Three years ago, when large flat-panels came in at between £3,000-£6,000, City traders were actually among the few buying them.

Falling prices have changed all this, as office designers realize that flat-screens allow more people to be squeezed into a given space. More bums on seats, more revenue. Simple. When EasyJet opened its online booking office recently, it was kitted out entirely with LCD screens. LCD screens also generate less heat. If you take a busy office like *Macworld*'s, which is crammed with 21-inch monitors, the amount of heat that is generated very quickly is amazing. This is all wasted power – worsened by the need for year-round air conditioning. So, if you work for an environmentally aware company, you can always try playing the energy-conservation card.

Now down to the nitty gritty. In testing the screens, we took a number of factors into account. Resolution on an LCD screen is pre-set. You can interpolate different resolutions on some models, but it's rarely a good idea. The smaller screens use a 1,024-x-768-pixel resolution, and the larger models use 1,280-x-1,024 pixels. The Silicon Graphics monitor didn't conform to either of these resolutions, opting instead for a wide-screen aspect ratio. This means that, with regard to

resolution, most flat-panels are level-pegging, unlike CRT monitors.

Another CRT variable not present with LCD's is the way size is measured. If you take a look at a 17-inch CRT screen, you'll see that the diagonal measurement of the image displayed is more like 15 inches. This is because manufacturers have traditionally quoted the size of the glass tube rather than the visible image. Although an accepted practise, this is an inaccurate measurement. Fortunately, things are starting to change, with more monitors now also citing visible image.

It's a relief to find that, in the world of flat-panels, what you're told is what you get. When you buy a 15.1-inch screen you get a 15.1-inch viewable image. This isn't because LCD manufacturers are especially altruistic, rather that there's no way they can cook the vital stats.

Another key measurement from the world of traditional monitors is refresh rate. But, because of the way LCD screens display images – and a feature called "soft decay" – a high refresh rate is unnecessary.

A CRT with a high refresh rate, though, appears flicker free, at least when compared to one with a lower refresh rate. LCD technology doesn't suffer from flicker, because the light that illuminates the image is constant, rather than eminating from a cathode ray that quickly scans the screen.

Piles of style
We had to look beyond numbers to learn the real character of the screens tested. Design is more important with these screens than with most. Apart from their price making them status symbols, they need to look the part. Scores awarded to these

Take a view
The Viewsonic VG180's big screen looks great – but you get basic controls for your money.

displays take into account design, as well as the more tangible factors. It's likely that, when used with a Mac, most of these screens would be plugged into a Power Mac G3. Almost all of the screens on offer, while not exactly clashing with the G3, only offer a neutral grey case. The obvious exception is the Apple Studio Display and the Silicon Graphics screens.

The models tested can be split broadly into two categories: smaller 1,024-x-768-pixel models; and larger models, which include the 1,280-x-1,024 and the 1,600-x-1,024-pixel resolutions.

Of the smaller monitors, only one – the Samsung SyncMaster 320 – is under 15 inches. Although it performed well, it wasn't the cheapest flat-panel we tested.

Flat panels: big, flat, and wide

COMPANY	PRODUCT	STAR RATINGS	PRICE	SIZE (INCHES)	RESOLUTION (PIXELS)	COMMENT	DISTRIBUTOR	CONTACT
Apple	Studio Display	★★★★★/9.2	£699	15	1,024-x-768	Great design, price and colour coordination	Apple	0870 600 6010
Belinea	10 15 10	★★★★/8.2	£749	15	1,024-x-768	Cheap, but can't beat Apple	MaxData	01344 788 900
Eizo	L630	★★★/6.9	£959	15	1,224-x-768	Too pricey for a 15-inch screen	PDS	01483 719 500
Eizo	L660	★★★★/7.8	£2,299	18	1,280-x-1,024	Looks good but basic design	PDS	01483 719 500
Hitachi	CML 150X8	★★★★/7.2	£929	15	1,024-x-768	Good but pricey	Hitachi	01628 643 307
Iiyama	Pro Lite	★★★★/8.1	£785	15	1,024-x-768	Fully featured with USB hub and speakers	Iiyama	01438 745 482
Iiyama	Pro Lite	★★★★/8.1	£815	15	1,024-x-768	Also with USB hub and speakers	Iiyama	01438 745 482
LG	500 LC	★★★★/8.3	£680	15.1	1,024-x-758	The cheapest but not the smallest	LG	01753 500 400
Mitsubishi	LSA810W	★★★★/8.2	£1,995	18.1	1,280-x-1,024	Good value, big screen	Mitsubishi	0800 731 1222
NEC	MultiSync 1810	★★★★/8.0	£2,472	18	1,280-x-1,024	Great, large screen and price	NEC	0181 752 3535
NEC	MultiSync 1500M	★★★★/7.8	£824	15	1,024-x-768	Looks good but expensive	NEC	0181 752 3535
Samsung	SyncMaster 320 TFT	★★★★/7.4	£770	13.3	1,024-x-768	Smaller but not cheaper	Samsung	0181 391 0168
Samsung	SyncMaster 700 TFT	★★★★/8.0	£2,140	17	1,280-x-1,024	Good looking, good value	Samsung	0181 391 0168
SGI	1600 SW	★★★★★/9.0	£1,810	17.3	1,600-x-1,024	Sex on a stick – high resolution, but low price	SGI	01324 614 300
Sony	CPD L150	★★★/6.8	£999	15	1,024-x-768	Sleek design, big price	Sony	0990 424 424
ViewSonic	VG 180	★★★★/76	£2,197	18	1,280-x-1,024	Attractive, but suffers from basic spec	ViewSonic	0800 833 648
ViewSonic	VP1509	★★★★/7.7	£859	15	1,024 x 768	Expensive for a basic design	ViewSonic	0800 833 648

Play it again, Samsung
The 17-inch, £2,140 Samsung 700 TFT is a good-looking monitor and thinner and better designed than most.

That honour goes to the £680 LG 500LC, which was also significantly better. At £90 less than the Samsung, it offers great value.

But in the 15-inch value stakes, there's one model that's far and away the best on price and features: the Apple Studio Display. It offers a colour-co-ordinated solution with software controls and even a video input. But the most amazing thing is that it's the second cheapest screen – at just £699. There are a number of reasons why the Studio Display puts the other models in the shade. The most obvious thing is its design – another classic Jetson-esque piece from Apple's Industrial Design department. Its colour scheme has been updated from bondi blue to blueberry blue, to match the new G3. It still retains the excellent control software, which gives the user a control panel to access all the adjustment controls usually found on the front of the monitor. With fewer buttons to interrupt its design, this makes for cleaner lines. Its video input is also a great bonus, as it allows you to play video directly on the screen without even the need for your Mac. Frankly, the Apple Studio Display would still get the Editors' Choice if it cost an extra £200.

This isn't to say that the other 15-inch screens are without worth, for many have excellent extra features, such as speakers or built-in USB hubs. However, if you were to need these, you could always buy them separately – and still save money.

There's a marked price-hike between the 15-inchers and the larger models. The most expensive 15-inch screen is the Sony LPD L150, at £999. The cheapest larger screen is £800 extra. The increased acreage does make a big difference for working with images – although even the 15-inch screens don't feel cramped, because they are the equivalent of 17-inch CRTs. The 18-inch models are the equivalent of 19-inch CRT screens.

As you might expect, the more expensive large screens are increasingly likely to boast additional features. For example, the Iiyama not only includes speakers and USB but also pivots. This feature has been around for quite a while. Years ago, Radius had a 15-inch Pivot monitor. Like the Iiyama, the screen could be tilted to give a portrait or landscape display. In the past, this was a help, as monitors were extremely expensive. Now, the feature is less relevant, more of a novelty. ViewSonic and NEC also offer 18-inch models, but the most striking of the larger monitors was the Silicon Graphics 1600SW.

Once again, the first thing that makes an impression is its sleek design. But it's not just a matter of looks that sets this screen apart. Its interface is digital, which makes for an image untainted by analogue at any stage. This does require a video card that can support a digital signal, so you should factor-in an extra £200 for the Formac card. The resolution is 1,600-x-1,024 pixels, which makes for a wide screen-aspect ratio. This is ideal for 3D modelling, or video editing or any software that uses floating palettes liberally. The image is as crisp and sharp as can be, and the whole package is high-performance. Although it's smaller than the other large screens, the 1600SW's 17.3-inch screen is put to good use. Ignore the slight colour-co-ordination faux pas and this is currently unbeatable in its class.

It's hardly a secret that Apple has a new flat-panel monitor up its sleeve, and that it's likely to ship soon. Dubbed the Cinema Display, it's likely to share many of the characteristics of the SGI model, including its digital interface. If the Studio Display is anything to go by, it will be unbeatable on price and features – and even colour co-ordination. We'll have to wait and see.

Macworld buying advice.

In the smaller-screen bracket, the Apple Studio Display offers the best features for the best price.

With the larger screens, the SGI 1600SW is exceptional value, even with the price of the digital card that's needed. As for the other models, some makers seem to still be selling to city brokers with deep pockets.

If you're prepared to wait to see what Apple has to offer with the Cinema Display, you may get a pleasant surprise. But there's no guarantee, because of the lack of official line on this product. My advice is look out for it during July's Macworld Expo in New York. If it doesn't appear then, buy the SGI 1600SW instead. **MW**

Plastic fantastic

The future holds ever-more nifty solutions to avoid the lumbering hulks of CRT monitors. One of the most exciting and high tech inventions in the imaging field is LEPs (Light Emitting Polymers).

This is a simple sheet of plastic with almost magical properties. When an electric signal is passed through the plastic it lights up, with no LED or CRT gas plasma, the plastic itself glows. It's still two or three years away from the public domain, but concept monochrome-screens have already been demonstrated.

One of the most intriguing features of LEPs is the fact that the plastic used can be flexible. This means that a portable Mac screen could have a roller-blind action to extend the display. On a larger scale, you could have moving adverts on pillar-box style hoardings, or curving around buildings.

There are other technologies that are in various stages of development, though which ones actually make it to market is really anybody's guess.

Electroluminescent display technology is similar to LCD, except that, rather than backlighting, each pixel actually glows. If such a display was to be mass-produced it would be low-cost, because of the single substrate used. LCD panels require two substrates which must be aligned – a more expensive process.

Similar to the electroluminescent display are field-emission displays (FEDs) in which each pixel is a essentially a miniature CRT.

Colours are displayed sequentially – red green and blue – and the soft decay characteristics produce a flicker-free image. However, a single vacuum tube is needed for a normal CRT screen; for a FED screen, you would need 400,000 vacuum tubes. This may prove their downfall in mass-production.

Millennium Mac

The coming year will see big changes to the Mac OS. **By Stephan Somogy**

LEE HASLER

The year 2000 is coming fast. Depending on who you ask, the dawn of the next millennium will either mark a new golden age – or the beginning of the end. It's easy to dismiss all that talk as hype and hysteria. Except for one thing – when it comes to the Mac OS, it's actually true. In the next year, the Macintosh will undergo the most radical change in its history. The foundations of the Mac OS will be replaced by a system that's much more powerful, stable, and efficient than the one we use today. In July's *Macworld*, we looked at the news coming out of Apple Worldwide Developers Conference. Here, we've assembled everything we know into one guide to the future of the Mac OS – assuming, of course, that we all make it past the fateful stroke of midnight on December 31, 1999.

In the year 2000

Early next year, Macintosh users will sit down at their desks, press the power keys on their computers, and load an operating system that is reminiscent of the one we use today – but underneath it all will be something unlike anything they have ever seen. This isn't to say that in the year 2000 all of us will be using Mac OS X – Apple is also continuing to revise Mac OS 8, with a major update, code-named *Sonata*, due to appear this autumn. But while Mac OS 8 will be there for older Power Macs, eventually all new Macs will come with OS X, and owners of G3-based Power Macs will be able to buy an upgrade to OS X.

Starting up The first thing you'll likely notice when starting up Mac OS X is that the icons you usually see marching across the bottom of your screen have disappeared. That's because extensions, those bits of software that load at start-up to customize your Mac, will be obsolete under Mac OS X. Extensions latch on to parts of the Mac OS directly, and so contribute a great deal to the OS's instability.

For several years, Apple has encouraged software developers to move to a different model for extending the Mac OS: faceless background applications. These programs run invisibly on your Mac, altering its behaviour without making dangerous modifications to the Mac OS itself. The downside to the move away from extensions is that, if you use old software that needs extensions to function properly, you may not be able to use that software with Mac OS X.
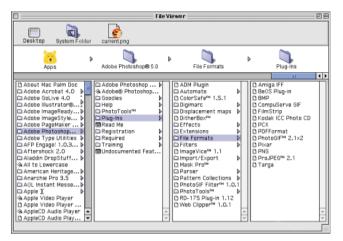
A different Finder For all the talk about OS X's radical changes, it's still called "Mac" and it still has a Finder you use to view files and folders. However, this new Finder is being completely rewritten by Apple. At the Developers' Conference, Steve Jobs and software chief Avie Tevanian showed off a Finder interface that looked a lot like the interface found in Mac OS X Server, Rhapsody, and the Next OS (see the screen shot "Next Finder?" overleaf).

This new File Viewer is a multi-columned window that lets you view several levels of a hard drive (or items across a network) simultaneously. When you click on a folder in a column list, the contents of that folder are automatically displayed in the next column to the right. You can continue to move deeper and deeper into your folder hierarchy with this approach and can quickly move back up to higher levels – via a horizontal scroll bar set just above the columns. You can also drag favourite items into a shelf at the top of the window for quick access.

It sounds like an intriguing addition to the Finder – but there's a catch. Jobs and Tevanian suggested that the new File Viewer wasn't an addition to the traditional Finder interface but rather a replacement of it. They received a flurry of criticism from many members of the Mac programming community.

Why? Because the new File Viewer is a far cry from the interface that we have become expert in over the past 15 years. This new browser may have some appeal for novice users, because it's probably easier to understand the geography of a hard drive when using the browser metaphor than when navigating the Mac's classic list and icon views. But the browser becomes much more

Next Finder?
Apple's declared vision for the Mac OS X Finder features a File Viewer window that displays graphically where you are in the folder hierarchy, with room at the top of the window for the placement of favourite files or folders.

complicated when you have to move files between different branches of a folder hierarchy.

Sources close to Apple indicate that the group of programmers working on the Mac OS X Finder are writing it to include both the traditional Mac Finder and the NeXT-inspired File Viewer interface. If that's true, then Apple will be able to add a useful new means of viewing files and folders to the tried-and-true system we use today. But if Jobs and Tevanian should remove all traces of the old Finder interface, Apple could be in danger of alienating a large portion of the Macintosh faithful.

Powerful graphics Macintosh users in the publishing business depend on Adobe's PostScript technology every day, when they print, use fonts, and work in drawing programs. For them, Mac OS X's new graphics engine, called *Quartz*, should have a lot of appeal. Quartz is based on Adobe's Portable Document Format (PDF) technology, which is itself based on PostScript. As a result, Quartz will allow applications running on Mac OS X to handle and display PostScript and PDF information much more accurately than apps running on the current Mac OS. Quartz also adds powerful compositing features, such as alpha channels, to the Mac OS, which should lead to faster and higher-quality image display. And Quartz's use of PDF means that just about any Mac OS X–native application will be able to export to PDF in a flash.

Speedy and stable Mac OS X will incorporate two features whose absence has long been the target of those critics who call the Mac OS slow and unstable: memory protection and pre-emptive multi-tasking.

If you've ever had one of your programs crash and lock up your entire Mac, you know why there's a need for memory protection. In

Mac OS X, the system essentially erects walls between all the running programs. That way, if one program misbehaves, all the rest of your programs – and your Mac itself – continue running with nary a hiccup. A side effect of this new memory protection is the disappearance of one of the most frustrating experiences we have to go through: setting the memory size of your applications. In Mac OS X, that problem disappears – OS X's memory system gives applications as much memory as they need.

If you've ever tried to perform a lengthy download in the background while you're busy working in some other application, you've seen the limitations of the Mac's co-operative multi-tasking. Each open application can take up as much processor power as it wants, often shutting other applications out and slowing them down. In Mac OS X's pre-emptive multi-tasking, the operating system itself determines how much processing time individual programs get.

This means not only that the application you're working in should feel more responsive in Mac OS X, but also that all the programs running in the background should be working more efficiently as well. It should also mean that Mac OS X will be much more efficient at processing audio and video and understanding spoken commands.

Savvy networking When the original Mac OS was designed back in 1984, the Internet wasn't really on the minds of its designers. But the developers of Mac OS X have kept the Internet in *their* thoughts. For starters, the Finder will no longer treat items on a network as second-class citizens, to be viewed through the Chooser or the Network Browser introduced in Mac OS 8.5. Items on the network will be as much a part of your Mac OS X desktop as your hard drives. You'll be able to quickly browse through your local network and even access computers elsewhere on the Internet, all from within the Finder itself.

In a first for Apple, Mac OS X will include its own built-in email program, written in Java. Apple says the MailViewer program will support both POP/SMTP and IMAP, but the company didn't give any more details.

Mac OS X is definitely focused on Internet networking, meaning Apple has decided to abandon one of its own creations: AppleTalk. Mac OS X will exclusively use TCP/IP, or Internet-style networking, to browse networks and share files. What ramifications this has for AppleTalk-only devices such as printers remains unclear, although it's likely that an AppleTalk add-on will be available from a third party.

Not all programs are alike
An important goal for the first version of Mac OS X is for it to run existing Macintosh software well enough that the transition from Mac OS 8 is smooth. However, old Mac applications won't be capable of taking advantage of new Mac OS X features such as memory protection and pre-emptive multi-tasking. Consequently, Apple's come up with a multi-faceted strategy to help programmers create modern Mac OS X programs without forcing users to abandon older Mac programs they've grown accustomed to.

The result is an operating system that will run three completely

Mac OS 8: preparing for the new millennium

This much is true: Apple's long-term future will be based on Mac OS X. In the meantime, Mac OS 8 is firmly in charge. And for older Macs incompatible with OS X, Mac OS 8 will likely be the only game in town. So it's only right that, while Apple's Mac OS X team cranks away on the Macintosh of 2000, a separate team of programmers is carefully crafting new releases for good old reliable Mac OS 8.

Mac OS 8.6 Released in May, Mac OS 8.6 is a free update that every Mac OS 8.5 user should install. You can download it for free from Apple's Web site (**www.apple.com/uk**) or get it on CD for £14. Be warned: it's a big download – nearly 40MB – and even getting hold of the CD is a headache if you're not connected to the Internet.

The key part of Mac OS 8.6 is something that no user will really see – a new nanokernel, a low-level part of the operating system that operates like a traffic cop. The OS 8.6 nanokernel offers several benefits. For PowerBook users, it is much smarter at understanding when the processor can rest and when it has to work hard. The result is that PowerBooks are more energy efficient – they last longer on batteries and run cooler than they did under previous versions of the Mac OS.

The nanokernel also brings multiprocessing back. A few years back, Macs and Mac clones with more than one processor inside started appearing, and many of us thought this augured a future where all Macs doubled up on chips to get immense speed boosts. This didn't come to pass, not only because the G3 processor prefers to work alone but also because the Mac OS was designed with a single processor in mind.

But Mac OS 8.6's nanokernel is built to understand Macs with more than one processor, fixing several long-standing bugs. For example, owners of multiprocessor machines can finally turn on virtual memory, which was previously incompatible with multiprocessor Macs. Also, this newly introduced nanokernel will certainly benefit users who buy new multiprocessor Macs, whenever they appear.

Sonata: Bridge to OS X The next release of the Mac OS is due this autumn and is code-named Sonata. It's meant to bridge the gap between Mac OS 8 and Mac OS X, but if you think it'll be called Mac OS 9, you're probably wrong. That's because another company, Microware Systems, already has an operating system called OS-9, and it's unlikely that Apple will want to bother with the potential confusion (and lawsuits) caused by calling Sonata Mac OS 9 or even Mac OS IX.

Since Sonata will be the version of the Mac OS that exists when Mac OS X arrives, it has to provide compatibility with as much of that new operating system as possible. As a result, Sonata will be able to run Carbon-based applications automatically. Mac OS 8.1 through 8.6 will be able to do this,

too, but they'll require a special system file called CarbonLib.

Multiple users One of the other features Apple is promising for Sonata is support for multiple users on one machine. If you've ever shared your Mac with other people – most likely at home, in a college apartment, or in a small business – you've probably dealt with the difficulties inherent when several people are constantly modifying each other's application preferences and stepping on each other's personal files.
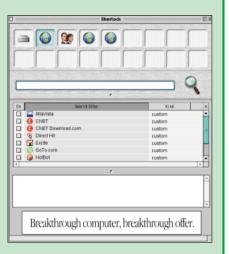
In Sonata, you'll be able to set up a Mac to ask users to log in before they can access the system – an approach similar to using Apple's At Ease software but one that is integrated directly into the Mac OS (see top right). After logging in – either via password or through a cool voice-identification system – each user will have his or her own protected file area, along with common areas where any user can share files. Each user will also have their own set of preferences, start-up applications, and the like, making the Mac a much friendlier place for people who must share computer space with others. It's essentially the same procedure Apple uses for NetBoot, the system that lets PowerMac G3s or iMacs boot off of a Mac OS X server and log in using their personal files and preferences. From all appearances, Apple has taken NetBoot and implemented the same interface for a single Mac, one that uses its own hard drive – instead of a remote OS X server – as a repository for files.

Security With the advent of multi-user access in the Mac OS, Sonata will also add new security features to the mix. It will let you encrypt documents from the Encrypt File command in the File menu. Sonata will also reintroduce the Keychain, perhaps the best part of Apple's discontinued PowerTalk software. With the Keychain, you'll be able to save your passwords for encrypted files, file servers, Internet FTP sites, and more in one centralized location – and have one master password that unlocks it, making it easy to collect all your secret codes without having to remember a dozen different passwords for different occasions.

Sherlock 2 Sonata will also offer a major update to Sherlock – the all-purpose search utility introduced by Apple in Mac OS 8.5. Sherlock 2 sports a silvery interface similar to that found in the QuickTime 4.0 player (see bottom right). At the top of the Sherlock window is a Favorites bar in which you can place buttons to control exactly what Sherlock searches – be it a local hard drive's files, the text on local drives, or files on the Web. Search pre-se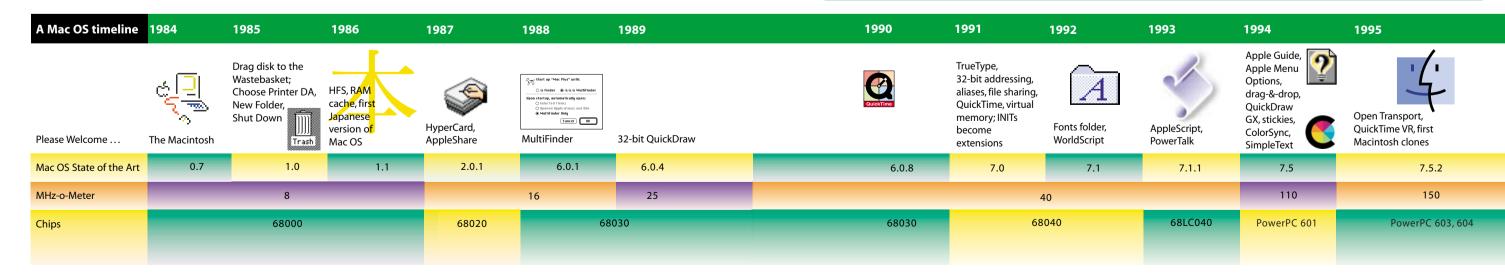ts let you can click on a button to search a different set of sources for different tasks, such as finding news stories, sports scores, or general Web pages.

In addition to the search views available in today's

Sherlock, the new Sherlock will let you search for people's names, phone numbers, email addresses, and other contact information. It will then return the listings in a results window with appropriately named columns, such as Name, Phone, and E-mail Address. Likewise, searches for products in online stores will return results that can be sorted by name or price, letting users compare shops in a flash. Other Sherlock 2 improvements include a separate window for advertisements, and separate items in the Finder's File menu for searching your hard drive and the Internet, making it easier for users who were confused by Sherlock's array of different search facilities.

The immediate future Will Mac OS 8.6 and Sonata last us through the next decade? No – that's the job of Mac OS X. But given that older Power Macs likely won't be able to run the new operating system, these updates to Mac OS 8 add new features to OS 8 while providing an important connection to Mac OS X. **Jason Snell**

A Mac OS timeline	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
	Please Welcome …	The Macintosh	Drag disk to the Wastebasket; Choose Printer DA, New Folder, Shut Down	HFS, RAM cache, first Japanese version of Mac OS	HyperCard, AppleShare	MultiFinder	32-bit QuickDraw	TrueType, 32-bit addressing, aliases, file sharing, QuickTime, virtual memory; INITs become extensions	Fonts folder, WorldScript	AppleScript, PowerTalk	Apple Guide, Apple Menu Options, drag-&-drop, QuickDraw GX, stickies, ColorSync, SimpleText	Open Transport, QuickTime VR, first Macintosh clones
Mac OS State of the Art	0.7	1.0	1.1	2.0.1	6.0.1	6.0.4	6.0.8	7.0	7.1	7.1.1	7.5	7.5.2
MHz-o-Meter		8			16	25		40			110	150
Chips		68000		68020		68030	68030	68040		68LC040	PowerPC 601	PowerPC 603, 604

different kinds of applications, all from within the same interface. (You'll still be able to copy-&-paste, drag-&-drop, and use other features that let various applications interact). Those three new application types are called Classic, Carbon, and Cocoa.

Classic Formerly called the *Blue Box*, Classic is a system that lets Mac OS X run old Mac applications without requiring them to be modified in any way. In Mac OS X Server and Rhapsody, the Blue Box was a separate environment – similar to an emulator – that the user had to switch into and out of. But in Mac OS X, Classic applications will appear on the same screen as all other Mac OS X applications, co-existing with Carbon and Cocoa programs. However, there's a big drawback to Classic programs – one that will spur their authors to update them for Mac OS X: even though Classic programs will be running in OS X, they'll still experience the same limitations they did when running in the Mac OS 8.X environment.

Classic is designed to be a system that smooths the transition from Mac OS 8 to OS X through backward-compatility, much as the Macintosh OS's 680X0 emulator made it easier for Mac users to move to PowerPC-based Macs. It'll be especially valuable for the users of programs that are no longer maintained but still used.

Carbon Probably the most important of the three different software environments is Carbon, announced by Apple more than a year ago. Carbon represents an evolution – not a revolution – of the current way Mac OS applications are written. As the metaphor goes, all life is based on Carbon – and Apple thinks all future Mac apps should be, too. With Carbon, Apple made a system for creating programs that was as similar to that of the old Mac OS as possible, discarding methods that were incompatible with an operating system containing memory protection, pre-emptive multi-tasking, and other important features Apple wanted to put into Mac OS X.

What this means is that programmers shouldn't have to perform a wholesale rewrite of their applications to gain the benefits of Mac OS X. According to Apple, only about 10 to 20 per cent of a typical current Mac OS program will need to be changed to become compatible with Carbon.

So when the authors of your favourite programs decide to update them for Carbon, does that mean you'll be stuck if you're still using Mac OS 8? Not necessarily. Carbon applications can remain largely compatible with Mac OS 8.1 through 8.6 with the help of a special system file called CarbonLib. When running on Mac OS 8.1 and later, however, Carbon applications won't be able to offer any of the performance and stability features of Mac OS X.

Cocoa Formerly referred to as the *Yellow Box*, the environment called Cocoa provides an easy way for programmers to quickly create new applications. Cocoa's technology comes from NeXT's OpenStep system, which was designed to aid the rapid development of corporate applications. Cocoa enables – but doesn't require – developers to use Sun's Java language. Java is much applauded by programmers for the ease with which it lets them create complete, Mac OS X–native applications.

Unix Let's step out of the familiar Mac interface for a moment. Although Apple has said that it will hide Mac OS X's Unix underpinnings so that no regular user will ever need to look Unix in the face, Mac OS X should be perfectly capable of running Unix programs via a Unix-style command-line interface. Power users and Unix veterans alike will enjoy the fact that any software that runs on one of the flavours of BSD Unix should be portable to Mac OS X, although some compatibility issues between the Unix and Mac OS file systems may limit which Unix utilities will work on Mac disks.

Work in progress

No one has successfully managed to make Unix into a consumer-oriented operating system before, so Apple's attempts to do so with Mac OS X are quite remarkable. However, it's unclear whether the marriage of the Mac's traditional user-friendliness with Unix's gritty command-line power will be immediately successful. In all likelihood, the first release of Mac OS X in early 2000 will be just the first step in the Mac OS's transition to a modern operating system.

Those concerns aside, the good news is that continuity is important at Apple these days. The company's Mac OS strategy not only remained remarkably consistent over the past year but also emphasizes continuity between Mac OS 8 and Mac OS X through the Classic and Carbon environments.

The software transition to Mac OS X will likely mirror the 680x0-to-PowerPC transition that began five years ago and still hasn't quite finished. Those programs that most benefit from Mac OS X's new capabilities will be the first to make the move. Mac OS X will also attract many developers of high-end scientific and engineering software from the Unix world.

Deeper and deeper When we peer past 2000, things get a bit fuzzier. Mac OS X is such a remarkable departure for Apple that it could potentially change everything we think we know about the Mac in the future. Mac OS X will certainly benefit greatly when the G4 processors arrive, but persistent rumours abound that Apple is also investigating Intel's next-generation chips. Mac OS X isn't nearly as tied to the PowerPC processor as the old Mac OS is. Could Mac OS X run on an Intel processor? Certainly, if Apple wanted it to. The real mystery is, will the company want it to?

In the world of technology, experience has taught us that most products touted as revolutionary rarely are. Up to now, Apple has been remarkably restrained when it comes to Mac OS X – probably because the company knows it must deliver this new Mac OS before patting itself on the back. But Mac OS X promises to provide some far-reaching changes, not all of which may be for the better.

While the power of Unix is undeniable, so too is its user-hostility. We have no doubt that Apple intends to cover up Mac OS X's Unix heritage, but we'll have to wait and see whether the company can manage the trick. Because while extremely technical computer users will rejoice at the prospect of the Mac OS and Unix in the same box, most Macintosh users won't stand for a Mac OS that displays a command-line interface at the drop of a hat.

After January 1, 2000, will the Mac OS transform from the patchwork 20th Century Mac OS 8 into the new millennium's shiny new Mac OS X? Of course not. But for Macintosh users, the path Apple is taking with Mac OS X suggests a great future lies ahead for the Macintosh – even if there are a few bumps along that road. **MW**

A Mac OS timeline	1996	1997	1998	1999	2000
Please Welcome …	Control Strip, translucent dragging, OpenDoc, Cyberdog	QuickDraw 3D, multi-threaded PowerPC-native Finder, contextual menus, Personal Web Sharing	HFS+, QuickTime 3 Pro, Network Browser, Sherlock, favorites	Keychain, multi-user mode, Sherlock 2, Mac OS X Server, Carbon	Pre-emptive multi-tasking, memory protection, Cocoa, File Viewer
Mac OS State of the Art	7.5.5	8.0	8.5	Sonata	Mac OS X
MHz-o-Meter	250	350	366	450	?
Chips	PowerPC 603, 604		PowerPC 750 (G3)		PowerPC 7400 (G4)

down to… *the wire*

Bring your old
devices and new
Mac together with
Macworld's expert
guide to the
survival of SCSI.
**By Kristina De Nike and
Jonathan Seff**

You don't know what you've got till it's gone. It may sound trite but no one knows this better than owners of Apple's latest computers. For 14 years, every Macintosh had a SCSI – short for small computer system interface, and pronounced "scuzzy" – connector on the back. Most Macintosh users take for granted this easy and familiar means of hooking up everything from scanners to hard drives to CD writers. Or, at least, they did. Apple's decision to replace SCSI with USB on iMacs and both USB and FireWire on the Power Mac G3s means that now you need to think about how to connect your old SCSI devices to your speedy new Mac?

You might think you should buy all-new USB, or even FireWire versions of your peripherals. But for once, money won't necessarily solve your computer problems: USB is much slower than SCSI, and FireWire peripherals are still scarce. Actually, the answer may be as simple as adding what Apple has taken out – a SCSI card.

If you haven't yet bought a new Power Mac G3, there's an easy – if not perfect – way to reclaim SCSI connectivity. When you buy your computer, you can ask to have a SCSI card (Adaptec's PowerDomain 2930U) added for about an extra £50. Unfortunately, our tests revealed a software issue that can make this card very slow (see the speed chart "It's no race").

You can get something faster built into your new Mac by choosing Apple's £480 9GB SCSI hard-drive option. Along with the hard drive, you'll get a SCSI Ultra2 Wide adaptor, the £54 Adaptec PowerDomain 2940U2W.

What if you've already got a new G3 and your trusty old scanner is sitting forlornly by its side? Or what if you want a card that's faster – or of a different SCSI type – than that which you can get from the Apple Store? We rounded up 16 SCSI cards to see which of them offer the best speed and the fewest problems (see "The right card for you"). We also gathered tips to help you pick, instal, and troubleshoot the right SCSI card for your needs.

Whether to adapt?

The first thing you might ask is why you'd want to bother opening up your new G3 to fill one of its three precious PCI slots with a SCSI card when you can buy a USB-to-SCSI adaptor instead. Indeed, by the time you read this, there should be several of these adaptors on the market. All of them let you connect your old SCSI devices to your computer through the USB port. But there is a catch: if you use a USB adaptor, your devices will slow to a crawl. The maximum speed you'll get is 1.5 MBps – the top speed of the USB port. This is pretty pathetic when you're used to at least 5MBps – the speed SCSI ports on most older Macs can accommodate.

The out-of-luck iMac Slow or not, an adaptor is the only option for most iMac owners with SCSI devices, because these computers do not have expansion slots. The only exception is the original Bondi blue iMac, which contains one mezzanine slot hidden beneath the plastic case. Apple has removed the hidden mezzanine slot from the newest iMacs.

Choose the right type of SCSI

Once you've decided that you want a SCSI card, you're faced with a new question: what kind of SCSI? SCSI goes by many names: Ultra, Wide, Ultra2 Wide, Narrow, Fast, and LVD, just to name some you might have heard of. Yet there are only two basic types – Narrow and Wide – and each is tailored to a different need: compatibility or power. People who connect an external hard-drive for extra storage space, or who scan photos for a personal Web site, need an inexpensive, compatible card – a Narrow one. Those of you who have lots of devices or who use digital-video gear require power and speed – a Wide card. Different varieties of Narrow and Wide SCSI offer various speed advantages and have individual quirks.

Narrow SCSI These SCSI cards have 50 pins on their connectors – 25 for transmitting data and 25 for grounding. The cards are inexpensive but slow – but at between 10 to 20 MBps, still twice as fast as what came built into most old Macs.Prior to the new G3, Macs came with SCSI-1 – so sluggish by today's standards that it is no longer available on the market. Most scanners, removable drives (Zip and Jaz), tape drives, and CD-R drives use Narrow SCSI.

The most common types are Fast Narrow and Ultra Narrow. A Narrow card allows you to attach as many as seven devices together in a chain – as long as you keep your cable lengths short. If the cables get too long, the signal begins to fade and you may end up with unmountable drives and frequent crashes. You can have 3.2 to 6.5 feet of total cable on your SCSI chain. This includes both the cables used to connect external devices and the ribbons used to connect internal devices.

Wide SCSI Don't be confused by the fact that Wide SCSI connectors are actually more svelte than the so-called Narrow ones. The name comes from the number of pins – 68 in all – that are crammed into that small space and the greater amount of data that passes through them. These cards are more expensive, but they're faster, supporting speeds between 40 and 80 MBps. They can also handle a greater number of devices – 15 in all (only seven can be Narrow). The most common Wide SCSI devices are hard drives. However, anyone who wants to use Wide devices or needs to connect more than seven devices on the chain will need a Wide card. Common varieties of Wide SCSI are Ultra Wide and Ultra2 Wide. The latter is also known as low-voltage differential (LVD for short). Ultra2 Wide cards offer top speed for digital video or large graphics files and allow longer cable lengths than Narrow or Ultra Wide SCSI. Now, only a few high-end hard drives use this technology. Also, if you put a non–Ultra2 Wide device on your SCSI chain, it will mirror the speed and cable limits of Ultra Wide.

Mixing and matching So what should you do if you have several types of SCSI devices? You can't reliably hook up a Wide device to a Narrow card. However, you can

hook up a Narrow device to a Wide card. Because Wide connectors have more pins, you will need at least one new cable to connect your Narrow devices to the new, wider port. When you add Narrow devices to your chain, it won't automatically become slower, unless you're using Ultra2 Wide SCSI. But moving your Zip drive to a new Wide card won't make the drive faster, either. Devices have their own built-in speed limitations. Moving Narrow devices to a Wide card can cause problems. Wide chains are more prone to interference, so you'll need shorter, thicker cables with more shielding. Also, if you add a Narrow device and you have low-quality cables or cheap terminators, or an over-long chain that's just a little too long, your new system may freeze at start-up or crash during file transfers.

Install your card correctly
Installing a SCSI card, and indeed any card, on a blue G3 is pretty darn easy – but make sure to do it right.

Get grounded Static electricity can fry the electronics on your card, so when installing it, discharge any static electricity in your body by touching metal (if you've got a metal casing around your hard drive, try touching that). Also, keep yourself grounded by winding a grounding strap around your wrist and attaching its end to metal. None of the cards we looked at came with a strap, but you can buy one at most electronics stores. When you're sure you're not a lightning rod, pop the card into any available PCI slot.

Don't skip the software After the card is in, you'll need to install an extension in your System Folder; most of the cards we tested came with software to set up – or format – a hard drive. Use this every time you attach new hard drives to the SCSI port. Adaptec supplied software on floppies only, which is no good for computers lacking floppy drives. Adaptec says it will soon ship software on CDs. You can download it at www.adaptec.com/support/files/drivers.html. You must get Orange Micro's software from its Web site.

The right card for you

Now that you know all there is to know about SCSI, one question remains: which card should you buy? To find the answer, *Macworld* tested 16 SCSI cards. Seven of our cards were Narrow SCSI. We also tested nine Wide cards. See "SCSI cards: the big picture" below for results. We also looked at the cards' ability to boot and their compatibility with scanners.

Mostly steady speeds Speed is determined more by what category of SCSI card you choose than by what company. Within each SCSI category, the cards performed similarly. The only exception was the slow Narrow cards from Adaptec. Adaptec's cards are the only ones you can get built into a new Mac when you buy one online from the Apple Store. Adaptec has been working closely with Apple and carefully followed the company's specs to gain maximum compatibility with older SCSI devices. Unfortunately, this proves to be a disadvantage for the company's Narrow cards, at least for now.

The Narrow Adaptec cards check the driver for each connected device; if the driver doesn't clearly identify the speed of the device, the card drops to SCSI-1 speed – 5MBps. In our tests, Apple's Drive Setup installed a driver that incorrectly identified the speed of our test hard-drive; performance dropped significantly. Adaptec does plans to include updated formatting software.

Macworld's buying advice
If all you're looking for is an inexpensive means of getting your old devices on the bus, Fast Narrow SCSI will do the trick and Orange Micro's Grappler SCSI 906F will get you up and running with the least damage to your wallet. The Grappler SCSI 906F was the least-expensive card in its category and the only one that was bootable.

If speed and the ability to attach more devices are essential to you, then bump up to an Ultra Wide card, such as the Initio Miles. This card is reasonably priced, is bootable, and includes RAID software. Understand, however, that by using Ultra Wide SCSI you'll be restricted to using shorter, higher-quality cables. Our advice is to avoid Ultra2 Wide for now – very few devices can actually take advantage of its potential for blazing speed, and prices are too high. One last word of advice: most of the Fast Narrow and Ultra Wide cards offer almost identical performance, so cost played an important part in our evaluations. Think about what you can't live without, and double-check prices before you decide which card to buy. **MW**

Get up-to-date Check the company's Web site, as the software that ships with your card may very well be outdated. Updates can solve speed issues and compatibility problems. We had to update the software on the card (also known as firmware) for all three Orange Micro cards, all four Adaptec cards, and the Initio Miles Bluenote.

Tame your SCSI chain
Installing a card is easy, but SCSI is a temperamental beast. Here's how to deal with some common problems.

Missing formatters The Orange Micro cards don't come with formatters. Instead, you need to download CharisMac's popular formatter, Anubis, which you'll find on the Orange Micro Web site (www.orangemicro.com/bin/anubis.bin). Adaptec also did not include any formatters with the PowerDomain 2930U or SCSI Card 2906, but the company says it will have added them by the time you read this.

Cards that won't boot One handy thing about SCSI cards is that if you need to repair your main start-up drive, you can typically use a hard drive hooked up through your card to start, or boot, your computer – as long as that hard drive has system software installed on it. Unfortunately, not all the cards we tested were able to do this.

When new G3s look for the start-up disk, they don't necessarily see the SCSI card – and hence the drive attached to it – unless the card has the right firmware. During testing, we were able to boot up from only 12 of the 16 cards. The Adaptec SCSI Card 2906 is not a boot-able card. The AdvanSys cards were also not bootable, but a firmware update that will fix this problem should be available from the company's Web site by the time you read this.

Mistaken identity Each SCSI device on the chain must have a unique address so that your computer knows where to send the data. The address, or SCSI ID, is a number from 0 to 7 for Narrow cards and from 0 to 15 for Wide cards. Customarily, both types of cards come pre-set to 7. If two different devices have the same number, your system may freeze or only one of the devices may appear on the desktop. If you're also going to add in old SCSI internal drives, remember that you'll need to pick IDs for them as well. External devices come with dials to pick the ID. Internal drives are trickier – you'll have to muck with the jumpers, little plastic caps that fit over pairs of pins. By default, internal drives are set to 0.

Termination trouble As data travels down the SCSI chain, it needs to know when it's hit the end. Because of this, you must terminate your SCSI chain at both ends. Other-wise, your machine may hang or might not even see the drives. If you're connecting only external devices, the card itself terminates the end of the chain it's on. All you need to do is terminate the other end by inserting a termination plug into the free SCSI port of your last device. If you have internal and external devices, the card detects this and turns termination off. You then need to terminate the last internal device and the last external device.

Old-device uncertainty Older SCSI devices, notably scanners, relied on the way the Mac used to manage SCSI. We checked all these cards with the Umax PowerLook III and had no problems. But if you plan to connect an older scanner (made, say, three or more years ago), make sure the card you want supports the "old" or "classic" SCSI manager. Call the company to make sure your scanner is supported, or else it may be useful only as a paperweight.

The final word
You don't have to shun the new Power Mac G3 just because you've sunk a lot of cash into SCSI-based scanners and hard drives. And you certainly don't need to buy USB versions of all your devices. With a modest budget, some common sense, and this guide in hand, you can bring your old SCSI devices and new Mac together and have the best of both worlds. **MW**

SCSI cards: the big picture

COMPANY	PRODUCT	STAR RATING	PRICE	BOOTABLE	EXTERNAL CONNECTOR	COMMENTS	CONTACT	TELEPHONE
FAST NARROW								
Adaptec	SCSI Card 2906	★★★/6.4	£32	no	DB 25-pin	Driver problems may affect performance.	Computer 2000	01256 463 344
AdvanSys	ABP3925	★★★★/6.7	$69	no	High-density 50	Good performance.	Advansys	www.advansys.com
Orange Micro	Grappler SCSI 906F	★★★★/7.6	£49	yes	DB 25-pin	Inexpensive basic card; fastest in class.	AM Micro	01392 426 473
ULTRA NARROW								
Adaptec	PowerDomain 2930U	★★★/6.3	£54	yes	50-pin Centronics	Driver problems may affect performance.	Computer 2000	01256 463 344
AdvanSys	ASB3940UA	★★★/6.8	£49	no	High-density 50	Fastest in class; more expensive.	Worldspan	0181 288 8555
Initio	Miles Bluenote	★★★★/7.4	£69	yes	High-density 50	Inexpensive; good performance.	Channel Dynamics	0870 6070 540
Orange Micro	Grappler SCSI 930U	★★★★/7.4	£79	yes	High-density 50	Inexpensive; good performance.	AM Micro	01392 426 473
ULTRA WIDE								
Adaptec	PowerDomain 2940UW	★★★★/7.2	£181	yes	Wide 68-pin	Pricey; variety of cables; good performance; RAID.	Computer 2000	01256 463 344
AdvanSys	ASB3940UW	★★★/6.9	£99	no	Wide 68-pin	Good performance.	Worldspan	0181 288 8555
Atto	ExpressPCI PSC	★★★/6.9	£155	yes	Wide 68-pin	Good performance.	Formac	0181 533 4040
Formac	PowerRAID I	★★★★/7.3	£59	yes	Wide 68-pin	Good price and performance; RAID; no cables.	Formac	0181 533 4040
Initio	Miles	★★★★/7.7	£139	yes	Wide 68-pin	Fastest in class; good price; RAID.	Channel Dynamics	0870 6070 540
Orange Micro	Grappler SCSI 940UW	★★★★/7.6	£129	yes	Wide 68-pin	Good price and performance; RAID.	AM Micro	01392 426 473
ULTRA2 WIDE								
Adaptec	PowerDomain 2940U2W	★★★★/7.8	£206	Yes	Wide 68-pin	Fastest in class; internal connectors and cables.	Computer 2000	01256 463 344
Atto	ExpressPCI UL2S	★★★/6.5	$399	yes	High-density Wide	Good performance; no cables included.	Atto	www.attotech.com
Initio	Miles U2W	★★★★/7.6	£199	yes	Wide 68-pin	Good price and performance; RAID.	Channel Dynamics	0870 6070 540

It's no race

What makes one SCSI card faster than another? Usually the answer is the SCSI category, rather than the card manufacturer. In each category, these cards achieved almost identical speeds, generally determined by the test drives to which we connected them. The use of generic device drivers tripped up Adaptec's Narrow cards. Our Editors' Choice winners offer a balance of price, compatibility, and speed.

☐ Best results in red. Longer bars are better. Reference product in italics. MacBench 5.0 scores are relative to those of a first-generation Power Mac G3/300, which is assigned a score of 1,000 in each test.

MACBENCH 5.0

Disk

Fast Narrow
Adaptec SCSI Card 2906	683
AdvanSys ABP3925	982
Orange Micro Grappler SCSI 906F	985

Ultra Narrow
Adaptec PowerDomain 2930U	675
AdvanSys ASB3940UA	1,092
Initio Miles Bluenote	1,030
Orange Micro Grappler SCSI 930U	1,030

Ultra Wide
Adaptec PowerDomain 2940UW	1,120
AdvanSys ASB3940UW	1,123
Atto ExpressPCI PSC	1,118
Formac PowerRAID I	1,153
Initio Miles	1,227
Orange Micro Grappler SCSI 940UW	1,118

Ultra2 Wide
Adaptec PowerDomain 2940U2W	1,381
Atto ExpressPCI UL2S	1,369
Initio Miles U2W	1,374
Apple external bus	692

Behind our tests
We evaluated the SCSI cards in a Power Macintosh G3/350 running Mac OS 8.5.1 with 64MB of RAM. We used a Narrow Seagate 4GB drive to test the Fast Narrow and Ultra Narrow cards, an Ultra Wide 6GB Seagate drive to test the Ultra Wide cards, and an Ultra2 Wide 17GB Seagate drive to test the Ultra2 Wide cards. We also attached the Narrow Seagate drive to the external SCSI port of a first-generation Power Macintosh G3/300. – Macworld Lab testing supervised by Kristina De Nike

Narrow SCSI
DB 25-pin
connector

Very High-Density
Wide SCSI
Wide connector

Wide SCSI
Wide 68-pin
connector

Narrow SCSI
High-Density
50 connector

Narrow SCSI
50-pin Centronics
connector

Graphic effect

A guide to Adobe's latest special-effects package. **By Jim Heid**

Adobe After Effects is arguably the most popular motion-graphics program in the personal computer world. Broadcasters use After Effects to create commercials and other TV graphics and film producers use it to create special effects. Multimedia producers use it when creating CD-ROM game titles, spicing up QuickTime video with special effects such as lens flare.

Now this favoured eye-candy store has been remodelled. After Effects 4.0 brings improvements in performance, tighter ties to Photoshop and other Adobe programs, more special effects, and interface enhancements both major and minor (see Reviews, April 1999).

Here's a guide to taking advantage of some of the best new features. Unless I note otherwise, everything here applies to both the £500 base-version and the £1,000 Production bundle.

Harness new, better effects

This program is about effects, and version 4.0 ups the ante in several ways. Besides including numerous new effects, it now provides more control over how and where you can apply effects.

But browse the After Effects manual, and you'll find little information on the specific settings of After Effects' built-in effects. Adobe yanked the details from the manual and put them in After Effects' new online help system.

Also, check out the Read Me file that After Effects installs on your hard drive. It's different from the one on the After Effects CD-ROM, containing last-minute details and useful tips. Here's a look at some of the most compelling new effects features.

More Masking Masks, which control what's visible or hidden in an image layer, have always been essential to After Effects. Want to have an image visible within a piece of text? Use masks. Need to put an image on a TV set that was shut off when the footage was shot? Again, use masks.

In After Effects 4.0, masking is greatly improved. You can have up to 128 masks per layer instead of just one, you can scale

and modify masks with more accuracy than in earlier versions, and you can copy and paste masks from Photoshop and Illustrator.

Text paths With the new Text Path effect, you can attach text to a mask or to a path that you've drawn or imported. Use keyframes to change the text's margins over time, and you can have text race along the most complex of paths. You can also animate the text's spacing, colour, and other characteristics. See "Get your text on the run" for a tour and some tips.

Adjustment layers In previous After Effects versions, if you wanted to apply the same set of effects or transformations to numerous layers, you had to laboriously copy and paste them into each layer.

No more. Now, simply choose New Adjustment Layer from the Layer menu and apply the effects to the adjustment layer. After Effects applies the modifications to all the layers that appear below it in the Time Layout window.
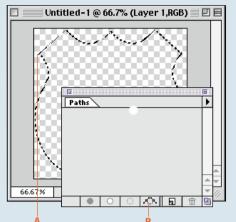
Motion sketching After Effects' Motion Sketch is a huge time-saver – it enables you to create a complex motion

Get your text on the run

After Effects 4.0's new path-text effect pairs up nicely with its improved masking features. In this example, the text "Get your kicks on Route 66" attaches itself to the shape of a US motorway sign and then takes a spin around the sign's contours. You can see a QuickTime movie of this affect at (**www.macworld.com/1999/07/create/**)
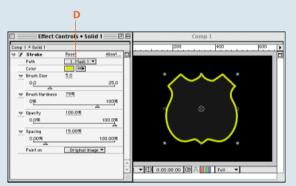

Part I: Create the path in Photoshop
First you need to create the original path in Photoshop. Here I used a simple road-sign outline that I imported from Adobe Illustrator.

1 Create a selection whose shape matches that of the mask. For this example, I just selected the road-sign shape (**A**) with the magic-wand tool.

2 In the Paths palette, click on the Make Work Path button (**B**).

3 In Photoshop's Tools palette, activate the Direct Selection tool (**C**).

4 In the document window, option-click on the path you just created. Pressing option tells Photoshop to select the entire path, not just the point you click on.

5 Choose Copy from the Edit menu, and then switch to After Effects.

Part II: Paste the path into After Effects
Now you're ready to paste the path into After Effects, creating a mask. In these steps, you'll paste the path into a new layer, stroke it, and apply an effect to it – all capabilities new to After Effects 4.0.
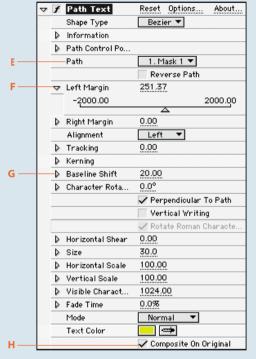
1 Open the composition that will hold the mask.

2 From the Layer menu, choose New Solid.

3 Choose Paste from the Edit menu. After Effects then pastes the mask into the solid.

4 In the Effect menu, choose Stroke from the Render sub-menu.

5 Specify the stroke settings in the Effect Controls window, choosing the name of the mask to be stroked here (**D**).

Part III: Add the text
Now you're ready to add the path text.

1 In the Effect menu, choose Path Text from the Text sub-menu. Type the text in the dialogue box that appears, and choose the desired font.

2 There are a variety of ways to make text race along a path, but the easiest is to change the text's margins over time. In the Time Layout windo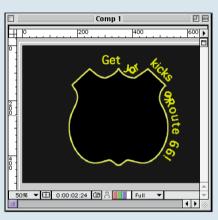w, expand the Path Text effect and add some new keyframes for the Left Margin attribute, using the Effect Controls window to change the left-margin setting for each, as shown (**F**).

Animating the margin with keyframes moves the text along the path. Select the path to which the text should be attached here (**E**).

Baseline shift (**G**) puts some space between the text and the stroked path. Check Composite on Original (**H**) to display the path to which the text is attached.

3 When you're done, just render out the effect and watch the text race along the path!

Get your kicks
When you render out the effect as created here, your text will smoothly zip around the path.

---

path by simply drawing it in real time. Motion Sketch used to be included only with the high-end Production bundle – now it's included in the base version.

If you're an After Effects veteran, though, you may have trouble locating Motion Sketch: it no longer appears in the Layer menu's Keyframe Assistant sub-menu. Its new home is the Window menu's Plug-in Palettes sub-menu.

Audio additions Finally, audio is no longer a second-class citizen in After Effects. Version 4.0 includes several new effects for adjusting stereo-panning, tweaking bass and treble, and creating echo-like delay effects.

The Production bundle goes much further, providing an excellent reverb plug-in, a tone generator, and more. Best of all, you can animate these effects over time – simulate a room expanding from closet-size to concert hall-size.

After Effects now supports audio scrubbing – the ability to hear audio in real time as you move the Time Layout window's current-time indicator. To scrub, press ⌘ while dragging the current-time indicator.

Adobe also touts After Effects 4.0's ability to use Premiere-compatible audio

plug-ins – but read the small print: you'll see that After Effects needs plug-ins written specifically for Premiere 5 – of which there are precious few.

Work faster
Creating effects is a chore filled with enough calculations to choke Einstein. Here are five steps you can take to lighten the load on your computer.

Preview smarter The new RAM preview feature displays speedy previews, by loading content into memory and then playing it back in real time – complete with audio. But how much gets loaded into memory depends on the nature of your composition and on how much RAM you've allocated to After Effects.

Two factors that influence the RAM preview's duration are your composition's frame size and its render resolution. If you're working with a 640-x-480-pixel frame size, a full-resolution RAM preview will devour close to 1MB per frame. To get longer RAM preview times, lower the comp's resolution, using the Composition Settings dialogue box. Dropping to 320-x-240 pixels will enable you to preview four times as many frames.

Another way to get more out of RAM

previews is to hold down the shift key while clicking on the RAM preview button (or pressing its shortcut key, 0 on the numeric keypad). Pressing shift tells After Effects to load only every other frame into RAM. The resulting preview's motion isn't as smooth, but the preview can be twice as long using the same amount of RAM.

Audio can also affect the maximum duration of RAM previews. Normally, After Effects processes audio at full resolution: 44kHz, 16-bit stereo. For RAM previews, that's usually overkill. The solution: choose Preferences from the File menu, and in the General Preferences dialogue box choose a lower sample rate – such as 22kHz or 11kHz – 8-bit audio, and mono, if you don't need to preview stereo.

At the opposite end of the quality spectrum, say you do a RAM preview at full resolution and with all quality settings (motion blur, and so forth) turned on. If you then use the Make Movie command to render a final movie, After Effects will take the RAM-based frames that it created for the preview and write them to disk. This will dramatically speed up the final render.

As for memory, the more you allocate to After Effects, the better – not just for RAM previews but for all your tasks.

Use the Finder's Get Info command to boost After Effects' allocation. And turn off virtual memory – RAM preview works best with real RAM. (On Windows, these steps aren't applicable. To make as much RAM as possible available to After Effects, simply quit any other programs you're running).

Render right Video producers commonly render multiple versions of a final project: a full-screen version for videotape output, a quarter-screen version for a CD-ROM, and an animated GIF for a Web site. But many After Effects users make the mistake of duplicating the composition in the Render Queue window and then changing the settings for each duplicate. This makes After Effects recalculate each and every effect, dramatically increasing render times.

Here's the right way to do multiple versions. In the Render Queue window, select the comp and choose Add Output Module from the Composition menu. You'll see a second output module appear in the Render Queue window. Double-click on the new module, and a dialogue box for changing its settings appears. This way, After Effects performs some of its hardest calculations just once and uses them for each version you create. And if you
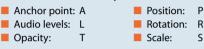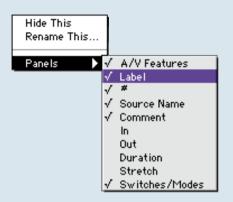
Time-saving shortcuts

After Effects is replete with keyboard and mouse shortcuts, and version 4.0 introduces new interface-customizing opportunities. Here's a quick roundup of some of the most useful ones.

See the animation
You've opened a project created by a colleague – or one that you created six months ago – and all of the settings in the Time Layout window are collapsed. How do you quickly find out which layers have animation keyframes assigned to them? Easy: in the Time Layout window, click on the layer and then press the U key. After Effects expands the layer to show animation values. To collapse the layer, press U again. Here are some other useful show/hide keyboard shortcuts for the Time Layout window:

- Anchor point: A
- Audio levels: L
- Opacity: T
- Position: P
- Rotation: R
- Scale: S

Customize window labels and columns
After Effects enables you to customize its Time Layout and Project windows to show as much or as little information as you want to see. You can change the order of many columns by dragging their headers.

To hide a column, point to it and press control. From the pop-up menu, choose Hide This. While the pop-up menu is visible, check out its other Panels options.

You can now create a Comment column that enables you to annotate a tricky animation – handy for documenting a cool effect so you can re-create it.

interrupt rendering to check your results, you'll have partial versions of each setting.

When rendering, you'll get faster results if you close all windows except for the Render Queue window. Or at the very least, close the Composition window, so After Effects doesn't have to display a preview for each frame it's rendering.

Use layout aids After Effects 4.0 introduces features that streamline layout. When you see rulers in the Composition window, you can create PageMaker-like alignment guides: click within a ruler and then drag down – for a horizontal guide – or to the right – for a vertical one. To align elements quickly, use the Align & Distribute palette in the Window menu's Plug-in Palettes sub-menu. This new palette works similarly to the one in Adobe Illustrator.

Don't neglect caps lock Normally, After Effects updates the Composition window every time you tweak an effect or other setting. If you're going to make several tweaks, press the caps lock key first – this defers updates and thus saves time. When you're ready to see your handiwork, press caps lock again. This shortcut existed in previous versions, but it's important enough to warrant repeated mention.

Master the interface The preceding tips will make After Effects run faster. To make yourself run faster, master After Effects' keyboard and mouse shortcuts. Many of them, such as context-sensitive menus that appear when you control-click on something, are new to After Effects 4.0 (see "Time-saving shortcuts").

Benefit from family ties After Effects 4.0 improves on the tighter Adobe family integration that began with version 3.0. This makes life even easier for you when you use multiple apps to create your final video product. Here are the highlights:
- After Effects 4.0 can import Adobe Premiere projects as compositions. This enables you to use Premiere for the tasks

it excels at – and for which After Effects can be cumbersome. Say you're creating a music video, in which rapid-fire cuts must be synchronized to a tune. Premiere's time-based design makes this a cinch, so create the cuts in Premiere and bring the project into After Effects to apply the visual icing. After Effects imports transitions you create in Premiere, but only as placeholders. However, it doesn't import transparency, motion, and filter settings, so resist the urge to apply effects in Premiere. After all, that's what After Effects is for.

After Effects 4.0 not only imports Photoshop images and retains layers but also retains adjustment layers, transfer modes, layer effects, and paths. Say you've used the Outer Glow layer effect in a Photoshop file. Bring that file into After Effects, and you not only retain the glow but can also animate it so that its colour, blur, and intensity change over time.

To retain effects, remember to import Photoshop images using the Photoshop As Comp command in the Import sub-menu. If you import using the Footage File command, you'll lose these goodies. Import Illustrator images using the Illustrator As Comp command, and After Effects preserves all of the image's layers, enabling you to animate them independently.

Want more?
A great way to learn more is by swapping ideas with other users. Two online resources are good for this: Postforum (**www.postforum.com/**) and Adobe's own user forum (**www.adobe.com**). After Effects is also a common topic on several Usenet newsgroups, including **rec.video.production** and **comp.graphics.animation**. And don't forget to play. Set aside some time to experiment with After Effects – that's the best way to realize the potential of the world's most popular eye-candy store. **MW**
Jim Heid lectures on digital-media.

Changing sites

Make your Web site stand out with JavaScript. **By Dori Smith**

The Internet has become a competitive place these days. You have to vie with more people than ever for the attention of potential clients – and guess what? Yours isn't the only site that has animated images and plug-in detection. What can you do to make your site stand out?

One way is to use effects that make your site dynamic. Rather than presenting static information, which is what you get with HTML alone, you can bring your Web pages to life by adding some JavaScript – an easy-to-learn scripting language.

It's not enough to use the same JavaScript effects already prevalent on the Internet. For instance, image rollovers – images that change when a user moves the cursor over a button or link – make a site interactive, but you see them everywhere. And that annoyance, the scrolling status bar (another JavaScript effect), is better off dying its long-deserved death. What really breathes new life into a Web site is some original use of JavaScript.

This article demonstrates a new way you can use JavaScript to show off your work or products. You can add a slide show to your Web site even if you've never written a speck of JavaScript – just follow the step-by-step example in this article and use the actual scripts with minor modifications (you can download them from Macworld Online at **www.macworld.com/1999/07/ create/**).

The example shows how to write a script that shows off your entire portfolio on your site (see "Create a JavaScript slide show"). With this script, you can let users view your images one at a time at their own pace. Once you set up the Web page with the new script, all the user has to do to see the slide show is simply to click on a button on the page.

I have also posted another step-by-step example, on Macworld Online, of a second JavaScript technique that can set your Web page apart. This technique lets you put random images on a Web page.

Every time a Web surfer loads the page, a JavaScript randomly displays one of the images from your portfolio. With this script, and enough images in your portfolio, your page can look different every time the surfer sees it.

What is JavaScript, anyway?

A common – and confusing – misconception about JavaScript is that it's related to Java. There is no connection between these two programming languages. Netscape invented JavaScript – originally called LiveScript – as an add-on to Netscape Navigator 2. Netscape changed the name of LiveScript to JavaScript, probably hoping that some of the hype about Sun's Java programming language would rub off. The change did indeed attract attention, but it also confused the relationship between Java and JavaScript. Here's the true story: these two languages have no relationship at all.

JavaScript is a scripting language that's much simpler to learn than Java. To put JavaScript effects on your Web pages, you just add a little bit of code to your HTML inside a new tag: **<SCRIPT>** (see "The slide

Create a JavaScript slide show

Before you get started with the scripting, put all your images in order. Give consecutive names to the images that will go in your slide show. I use the naming scheme slide1.jpg, slide2.jpg, and so on. If you choose a different naming scheme, be sure to modify the script appropriately. I then put the images in a folder called "images", which you should also do unless you prefer to make changes to the script.

All of your images must have exactly the same dimensions. If they don't, as in the images shown at the right (see "Get in order"), you need to make the necessary adjustments – for example, changing the image size in Adobe Photoshop.

Before you begin, you should create the graphics for the buttons users to click on to move forward and backward in your slide show. I label the buttons on my example Web page "next" and "prev". Put those files in the images folder as well.

Once you prepare your images, it's time to jump in and start writing the script. Each of the following steps explains how to do that.

Some portions of the code that I describe are difficult to see in the sample script, so they are highlighted in bold text to make them easy to find.

Get in order
To make your slide show work, give your images consecutive names so that all the images have the same dimensions.

1 Start the script by naming the image object – the part of the code that reserves a spot on your Web page for your slide-show images. In this case, it's called slider.

2 Here's where the JavaScript actually starts. Set the variable imgCt to the number of images you plan to use.
In my example slide show, I have nine images – two of which appear left. You also need to set up a second variable, thisImg, so that it keeps track of which image a visitor's browser is displaying. Since the Web page starts off by displaying the first image, set thisImg to 1.

What you need

- ■ Text editor
- ■ JavaScriptable browser Netscape Navigator 3 or later; Microsoft Internet Explorer: Mac 3.1 or later, Windows 4 or later

Learn more

Web Sites
The joy of JavaScript
www.chalcedony.com/javascript/
JavaScript developer central
http://developer.netscape.com/tech/javascript/
ZDNet's DevHead JavaScript area
www.devhead.com/filters/javascript/

Books
JavaScript for the World Wide Web: Visual QuickStart guide, third edition (Peachpit Press, 1999), by Tom Negrino and Dori Smith

Designing with JavaScript (O'Reilly & Associates, 1997), by Nick Heinle

JavaScript Bible, third edition (IDG Books, 1998), by Danny Goodman.

show script" for an example).

One of the advantages to using JavaScript is that it lets you manipulate images. To understand how image manipulation works, let's look at the example of image rollovers. When you create a rollover, the HTML on your page starts off looking as it always has, with one change: the addition of a NAME attribute to the IMG tag. Giving a name to an image object – the part of a JavaScript that reserves a spot on your Web page for changing images – empowers JavaScript to manipulate images.

An image object can display many different images, one at a time. For instance, your page can have two images, homeOn.jpg and homeOff.jpg, that are both associated with one image object called home. Which of the images the browser displays depends on whether the user's cursor is on or off the home image object. These two images, combined with a single image object, produce the rollover effect. The JavaScript for creating a slide show also requires an image object – in "The slide show script" it's called slider. Just as with the rollover effect, this image object displays multiple images – those in the slide show. Instead of rolling over a button to change images, the user clicks on a button on your page.

JavaScript tools

All you need to write JavaScript code is a text editor. Any old text editor will do. I use Bare Bones Software's BBEdit. But you can use Adobe GoLive 4, Macromedia Dreamweaver 2, or SoftPress Freeway 2 if you like.

In fact, you can even use something as basic as Apple's SimpleText. And to test your JavaScript code, you just need a collection of browsers.

Not every browser lets users view JavaScript effects (see "What you need" for a list of JavaScriptable browsers). Be sure to test your pages with a variety of old and new browsers and with JavaScript turned on and off. That way, anyone can navigate your site, even if they can't see all your innovative techniques. **MW**

Dori Smith is co-author of *JavaScript for the World Wide Web: Visual QuickStart Guide*, **third edition (Peachpit Press, 1999).**

Lights, JavaScript, Action!
All you need is the right JavaScript to let viewers click through your portfolio one image at a time.

3 Next, build into your script the function newSlide( ), which lets users click on screen to see your slide-show images one by one. By using this function in conjunction with the direction parameter, you allow users to go forward and backward in the show. Here's where all the heavy lifting happens, so I'll explain in detail how to write this part of the code.

Start off by having the script check the user's browser for the object document.images to see whether the browser is JavaScriptable. Next, add the direction parameter to thisImg. In most cases this parameter tells the script which image to display. It does so by passing the value 1 to the script if a user clicks on the Next button, or –1 if the user clicks on the Prev button.

However, if users click on a button so many times that they pass the beginning or end of the slide show, the script needs to adjust the current image number so that the number isn't too high or low. The next few lines of code make the slide show start again at the other end. If thisImg is less than 1, the script resets it to the highest image number (imgCt). If thisImg is greater than the number of slides available, the script resets it to 1.

Now that the script has an image number that's within the proper range, it's time to reset the image. In order to do so, set document.slider .src to the location of the new image. Linking the parts of the image name, as I have done in my sample script, makes your script calculate the location on the fly.

4 To tell the newSlide( ) function that users want to move forward when they click on the next button, pass newSlide( ) a parameter of 1.

5 Similarly, pass the newSlide( ) function a parameter of -1 to tell the function that the users want to view the previous image in the sequence when they click on the preview button.

The slide show script

The JavaScript below will make your Web page stand-out by adding a slide show. Visitors to the site using new browsers will be able to view the effect, but those using an old browser will still be able to navigate the site – even if they can't fully appeciate it.

```
<HTML>
<HEAD>
    <TITLE>slide show</TITLE>
    <SCRIPT>
    <!— Hide script from older browsers

2       thisImg = 1
        imgCt = 9

3       function newSlide(direction) {
            if (document.images) {
                thisImg = thisImg + direction
                if (thisImg < 1) {
                    thisImg = imgCt
                }
                if (thisImg > imgCt) {
                    thisImg = 1
                }
1               document.slider.src =
                    "images/slide"
                    + thisImg + ".jpg"
            }
        }
    // stop hiding script -->
    </SCRIPT>
</HEAD>
<BODY BGCOLOR=WHITE>
<CENTER>
    <TABLE BORDER=0 CELLPADDING=0
        CELLSPACING=0>
        <TR>
            <TD VALIGN=BOTTOM>
                <IMG HEIGHT=56 WIDTH=57
                    SRC="images/prev.jpg">
            </TD>
            <TD>
4               <A HREF="javascript:newSlide(1)">
                    <IMG HEIGHT=75 WIDTH=104
                        SRC="images/nextbutton.jpg"
                        ALIGN=LEFT BORDER=0></A>
                <IMG HEIGHT=70 WIDTH=170
                        SRC="images/slideshowtext.jpg"
                        ALIGN=RIGHT><BR CLEAR=ALL>
                <IMG HEIGHT=314 WIDTH=300
                        SRC="images/slide1.jpg"
                        NAME="slider"><BR>
5               <A HREF="javascript:newSlide(-1)">
                    <IMG HEIGHT=56 WIDTH=35
                        SRC="images/prevbutton.jpg"
                        BORDER=0></A>
            </TD>
        </TR>
    </TABLE>
</CENTER>
</BODY>
</HTML>
```
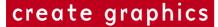
Layered together

Blending Photoshop layers can give your work character. **By Brooke Wheeler**

Creating layered images in Adobe Photoshop can be risky. It's all too easy to end up with art that looks like a disparate collection of flat parts. But you don't have to settle for such a look if you use Photoshop's layer-blending tools.

They let you change the way pixels in different layers interact, so that in the resulting work the separate pieces don't look separate – they look interwoven.

When attributed with one of these blending effects, all of the opacity altering and grouping capabilities of that layer can be changed – as with any "normal" layer. This offers complete control of the mix of the independant parts and the harmonious whole.

For years, artist Javier Roca has been tackling the challenge of creating compositions that have a multitude of separate components.

To create the artwork shown here – The Spine – he started by gathering images from many sources, such as old books, stock-image collections, and libraries of 2D and 3D art that he created himself.

Natural depth

Once he assembled the elements, he gave this piece that organic look by using Photoshop's layer-blending modes: Multiply; Darken; and Lighten in conjunction with assorted filters.
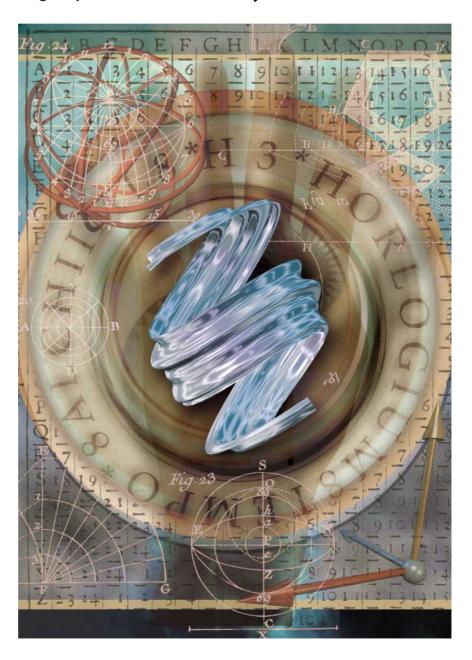
He also used duplicate layers and varied resolution to give the illusion of depth of field.

The Spine is the fourth in a five-part series of images inspired by the medieval notion that alchemists could turn lead into gold – in short, the work deals with expectation, frustration, and futility. To view the entire series, see the online version of this story at **www.macworld.com/1999/07/create/**.

To create The Spine, Roca used Adobe Illustrator 5, Photoshop 4 and MetaCreations Infini-D 4 on a Power Macintosh 8500/120 with an external 4GB hard drive and a 300dpi scanner. **MW**

Brooke Wheeler is an associate editor at *Macworld*.

JAVIER ROCA

1 Roca first gathered all his elements. He scanned the alphabet/number grid and geometric figures from old books. He created the 3D gyroscope, shiny metallic spiral, and three vectors in Infini-D and exported them as PICTs. He used Illustrator to create a lettered sundial and then rasterized it. He culled a hand outline and a photo of an X-ray from CDs of stock imagery.

2 Roca's next step was to create the background. Since his background is made up of many images, he used filters and layer-blending modes to get interesting interplay among the elements.
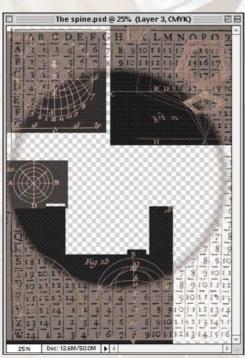
He imported the sundial image into its own layer in Photoshop, applied the Noise filter, and made a duplicate of that layer. He applied the Radial Blur filter to one of the layers and then applied the Clouds filter to the whole image. Then he imported the X-ray image at low resolution and used the Multiply mode at various percentages in each layer. This created darker colours with the blended pixels.

4 Many times during the process, Roca used the Adjust Hue/Saturation command in separate layers to get colours that worked together in the whole composition. He also used the Adjust Selective Colour command to modify groups of colours.
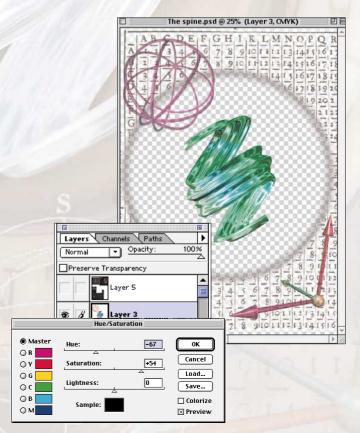
3 Next, he imported the number/alphabet grid into its own layer; cut out a circle for the sundial shape, using the circle selection tool and the delete key; and applied the Darken mode. The next images he imported were the geometric sketches (which were first scanned in and then turned into negatives with the Invert command). After importing the sketches, he used the Colorize command to give them a sepia tone and applied the Lighten mode to that layer.

Colour revolution

How to get the most out of your colour printer. **By Joseph Schoor**

The colour-printing revolution is here. Print quality from consumer-level ink-jet printers has soared over the past couple of years, while prices have plummeted. For less than £200, you can buy a colour printer that cranks out gorgeous full-colour glossy photographs.

But even with high-quality, affordable colour printers from Epson, Hewlett-Packard, and Canon available, printing is often a disappointment for newcomers to the world of digital photography.

Images look bright and crisp on screen, but when you try to print them on paper, the results look washed-out and crude. It's easy to assume that your printer is simply not good enough to do the job. That's because creating dazzling digital prints takes more than using the correct printer; it requires a little printing know-how.

Don't skimp on paper quality

In the world of colour ink-jets, the type of paper you use has a huge impact on print quality. Plain copy-paper may be inexpensive, but it doesn't make for the best printed digital photos. Plain paper tends to be too absorbent for most ink-jets, causing blurred images and damp printouts.

Generally, there are three grades of paper available for most printers: plain paper – the kind you use in most photocopiers and laser printers; a "premium" ink-jet paper that has a whiter, smoother finish on one side; and a photo-quality paper, with a glossy surface for printing photos.

Some companies, such as Epson, also offer an even more expensive glossy film – a polyethylene material rather than paper – that lets you print photos that have more of the look-and-feel of traditional photographs.

For the best results at the lowest cost, try using plain ink-jet paper to create preliminary test prints. Then break out the good stuff – which can cost up to one pound per sheet – to print glossy photos. To get great-looking photos, you simply can't skimp on the paper – no matter the cost.

Pick the optimal resolution

One of the most common printing mistakes results from using the wrong resolution. For best results, make sure the pictures you print have a resolution of at least 300 dots per inch (dpi). Lower-resolution images, such as those you may see on a Web page, may look fine on screen, because most computer monitors display images at a considerably lower resolution (usually between 72 and 96 dpi). However, they
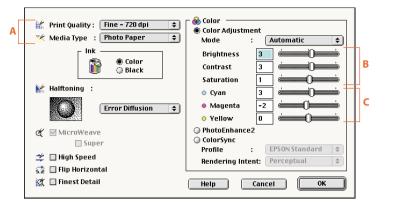
The cost of colour

Colour printers are more affordable than ever, but the cost involves more than just the printer – there's also the cost of ink and paper, which can really add up. Canon's high-gloss photo film, for example, lets you print pictures with the look-and-feel of photographic glossies, but it costs £16.50 for 20 sheets – or about 83p per sheet.

The small ink cartridges found in most ink-jet printers don't last long, either. A photo-ink cartridge for one Canon printer, for example, costs £29.99, the company claims it can print as many as 90 pages – but that's assuming that the ink covers only about 15 per cent of the page. In reality, when printing full-blown colour photos most photo-ink cartridges have the capacity for only a fraction of their official page yield. If you print full-page images using your printer's highest resolution settings, you may find yourself replacing ink cartridges after only 20 pages – or fewer.

Just follow a few rules of conservation: always proof your work on plain paper rather than on the high-priced film stock; and try proofing your earlier versions by printing at a lower resolution – printing at 720 dpi uses less ink than printing at 1,440dpi.

GEORGINA WATSON

A
B
C

Fine tunning
Within the Epson Stylus Photo Printer driver – as well as other printer drivers – are software controls that let you tweak the printer's output. For the best possible output, you may have to adjust these settings. (A) Check these settings; the defaults may not be configured for optimal print quality. (B) If a print looks washed out, you could try varying these settings. (C) Play with these settings if you experience a colour shift in a printout.

Q&A

&Tips   speed up Web access • magnify your screen

out of focus printed on a high-resolution printer. Even a 1,440dpi printer will do a terrible job on 72dpi images. Don't forget to take scaling into account, too. If you start with a 300dpi image but scale it by 200 per cent to make it fit nicely into a page, you'll reduce its effective resolution to 150 dpi and the image quality will be lower in the final printout.

On the other hand, there's no benefit to using pictures that have too high a resolution. Saving a photo at 1,200dpi when you have a 720dpi printer won't make the finished picture look any better; it will just take longer to open and edit the image. The image will also waste space by taking up more room on your hard disk.

Tweak your pictures
Virtually every digital camera and scanner comes with an image-editing program, such as Adobe PhotoDeluxe, that lets you change the brightness, contrast, and colour balance of your pictures. Consider such image-editing a necessary step. Many ink-jet printers tend to render images a bit darker than they look on screen. Use your software to compensate for this by brightening images slightly before you print them. Once you get to know your printer, you'll be able to make the right adjustments, so that the printed image look more like the original.

Use optional photo-inks
Some printers, such as the Epson Stylus Photo Printer, come ready to produce photos out of the box, but others – some Canon models, for example – require a special six- or seven-ink photo cartridge that has to be swapped in for the standard cartridge.

Because printers equipped with such cartridges work with a broader palette of ink colours – usually a light cyan, light magenta, and light yellow in addition to the standard CMYK – they can render the tones of a photograph with much greater accuracy. Check to see if a photo-ink cartridge is available for your printer. Swapping cartridges can be a hassle, but it is worth your while.

Use the right printer settings
Ink-jet printers generally aren't equipped with many switches, levers, or buttons. Instead, most of the controls are found in the printer's software – the driver – that gets installed on your computer. The printer driver provides the options you see when you use the Print command from within a software program (see "Fine tuning").

Understanding this software is vital if you want to get the most out of your printer. For example, you usually have to use the printer-driver software to set the printer's output quality – such as normal, best, and photo quality – and tell the printer what kind of paper you intend to feed through it. Changes in these settings affect how much ink the printer will spray on the page. Using the wrong settings can yield terrible results. The printer driver also lets you calibrate your printer's overall colour balance, dialling up more cyan, for example, or turning down the magenta. If you're ignoring this software – and simply hitting Print without adjusting any settings – you may not be tapping into some of your printer's best features.

Some of this takes trial-and-error experimentation, but with the right combination of printer settings, paper type, and image tweaks, you can truly do justice to your pictures and make your work look as good on paper as it does on screen. **MW**
Joseph Schorr is a co-author of Macworld Mac Secrets, fifth edition (IDG Books Worldwide, 1998).

Tip How cool would it be to surf the Internet with your voice? Kham Vo found a way to do it with Apple's speech-recognition software, which works with most Power Macs. The software is included with Mac OS 8.5 and later but isn't installed by default, so you need to run the Mac OS Install program and do a custom installation of the Speech Recognition module. The software is also available from Apple's Software Updates site at **http://asu.info.apple.com/swupdates.nsf/artnum/n11288**. After installation, turn on the Speakable Items option in the Speech control panel and leave the Listening option set to Listen Only While Key(s) Are Pressed.

Now create some Internet location files. You can do this in Mac OS 8.5, by typing a complete URL, such as **http://www.macworld.co.uk**, in Stickies or the Note Pad; selecting the URL; and dragging it to the desktop or a folder. The Finder recognizes that you're dragging a URL and makes it a location file. You can also drag bookmarks from Netscape Navigator or Communicator and drag Favorites from Internet Explorer.

Now select the location files; hold down the escape key to get the attention of the speech-recognition software; and say into your Mac microphone, "Make this speakable." This puts aliases of the selected files into the Speakable Items folder. Open this folder (found under the Apple menu), and rename the new aliases to something easy to remember and say, such as *Macworld* home page. Or you could just rename the original location files and drag them into the Speakable Items folder.

Now while surfing the Net, you can visit any location that has a file in the Speakable Items folder by pressing the escape key and saying the file's name into your Mac's microphone.

Automate DOS suffixes
Q At work, I share files created on my Mac with PC users. When I forget to add a three-letter DOS suffix to the name of a document, the PC users can't read the file. How can I automate the addition of DOS suffixes to my file names and make it easier on everyone? *David Loury*

A You can use Sig Software's $20 shareware NameCleaner to quickly add the correct DOS suffixes to names of files you've already saved on your Mac. A more automatic approach would be to write an AppleScript that re-names files based on their type and creator codes.

Speak volumes on the Web with OS 8.5

Tip Applying the same format to alternate rows of a Microsoft Excel 98 spreadsheet doesn't require formatting each row individually. Try using Excel 98's conditional formats. With this method, you can even sort the rows without affecting the formatting. To apply this technique, select the first cell you want to format (cell A1 in this example) and follow these steps.

1. Choose Conditional Formatting from the Format menu to display the Conditional Formatting dialogue box (top).

2. Select Formula Is from the pop-up menu, and enter the formula =MOD(ROW(A1),2)=1 in thebox to the right of the pop-up menu.

3. Click the Format button, and in the dialogue box that appears, click the Patterns tab, pick a colour, and click OK.

4. Go back to the Conditional Formatting dialogue box, click Add and repeat step 2 for Condition 2, this time around entering the formula =MOD(ROW(A1),2)=0 in the box to the right of the second pop-up menu.

5. Repeat step 3, picking a different colour. Click OK in the Conditional Formatting dialogue box.

6. Now use Excel's Format Painter tool to copy the format in cell A1 to the entire range you want formatted. The example here is two colours (bottom), but you can extend this concept to three colours with:
=MOD(ROW(A1),3)=1
=MOD(ROW(A1),3)=2
=MOD(ROW(A1),3)=0

Easy formatting
With conditional formatting in Microsoft Excel 98, you avoid labor-intensive row-by-row formatting.

You can have four colours by substituting a 4 for the 3 in the above formulas. In this case, every fourth row is not coloured by the conditional formatting. You can choose to let these rows remain uncoloured or select the entire range and change its colour. Because conditional formatting overrides regular formatting, you'll have a four-colour scheme.

In Mac OS 8.5 and later, you could make this a folder-action script that automatically analyzes and renames files as you add them to a folder to which you've attached the script.

Alternatively, you could ask your PC cohorts to install software that enables their computers to recognize a variety of Mac disks and Mac files – with or without suffixes. This PC software automatically supplies missing file-name suffixes based on each Mac file's hidden codes for file type and creator application. Such software includes Software Architects' £70 Here & Now (Softline, 01372 726 333), Media4's $70 MacDrive 98 (**www.media4.com**), and DataViz's £52 MacOpener for Windows (Principal, 01756 704 444).

See the big picture
Q A friend who is legally blind needs his screen magnified. His old Mac had something called CloseView, but it does not work with Mac OS 8 on the Performa 6118 that I gave him. What can we do? *Rick Larimore*

A Setting a 17-inch or larger multiscan monitor to 640-x-480-pixel resolution provides 1.5+ to 2+ magnification. If your friend needs more magnification, he should try CloseView 7.2.1 – it works with Mac OS 7.6 and later but is not installed automatically. To get CloseView 7.2.1, run the Mac OS Install program and do a custom installation of the Mac OS module – for detailed instructions, click the Help button in the last step of the installation program. In the dialogue box, where you select Mac OS features to be installed, expand the Universal Access item to see and select CloseView.

Banish modal Internet connections
Tip Tired of staring at a modal dialogue box while your Mac dials your ISP to make an automatic Internet connection? Next time you want to browse the Web, connect instead by opening the Remote Access control panel (Mac OS 8.5) or the PPP control panel (Mac OS 7.6 through 8.1) and clicking the Connect button. Now while it's dialling, you can hide the control panel and do other tasks on your Mac as you like. When it's time to sign off the Internet, just click Disconnect in the control panel. Again, no modal dialogue box gets in your way. *Jonathan Kurtzman*

Visit your local host
Tip Although you can copy your IP address from the Web Sharing control panel to your browser when you want to view your own Web site, an easier way of going to your Web page, if you're using Internet Explorer 4.X, is to type "localhost" in the address bar. Alas, this trick doesn't work in Netscape Navigator. *Alexander Savage*

Find the bottleneck
Tip It's not always the number of telephones or other devices plugged into a phone line that impedes modem speed (as reported in May 1999's Quick Tips), nor is your permanent phone wiring usually at fault. Chances are, it's just one device on the line that's not within phone-company specs. You can easily isolate it by connecting your phones and other devices one at a time and testing the modem speed. The connecting cord between a suspect device and the wall can also be a troublemaker, so try a replacement cord before dispatching the device to the dump. *Harron Appleman*
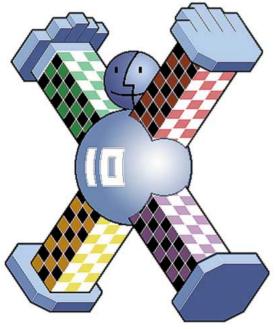
Macworld

When it comes to the Mac OS X Finder, Apple should give its customers a choice

'Face off

News Item: When Mac OS X arrives early next year, the venerable and familiar Finder will be replaced with a new file-management interface derived from the NeXT OS's file browser. (See "The Millennium Mac", page 67.)

When I first sat down to write this column, I fully expected to flame Apple for this decision. The Finder is the result of over 15 years of careful evolution. Cycle after cycle of customer input and resulting refinement have created a user experience that is inextricably linked with the Macintosh.

But just as I began to write a carefully worded critique of the strategy, I asked myself: "What if I was faced with the task of improving a user interface that was invented before there was networking?"

'Faced with a dilemma

I use a Mac not because I feel a sense of loyalty toward Apple or have some powerful religious fervour about the Macintosh. I use a Mac because I believe the Mac OS provides the best way for people to interact with their computers. I started using a Mac back in 1984 because I recognized what a leap forward the Mac interface was, and I continue to use it to this day for the very same reason. And I like to think that if someone other than Apple came along with a better way for me to interact with a computer, that I would stop using a Mac and start using this amazing new computer and its amazing new interface.

A computer is just a tool – incredibly adaptable and powerful, but a tool nonetheless. We must always be open to the possibility that no matter how accustomed we are to a particular tool, there might be a superior tool for performing the same tasks.

So I'm open to the idea that there might be a better way to manipulate files and work with resources on a network than the Finder. In May, Apple CEO Steve Jobs said that a better way is a side-scrolling File Viewer that allows users to follow a hierarchical path to whatever files they're looking for. The advantage to this approach is clear: a single window can display all the folders and files at each level, without interceding windows obscuring the user's view. I can see this approach being especially helpful for new users, who constantly misplace files behind windows or lose track of where they are in the hierarchy of their hard drive while using the Finder.

But more sophisticated users, who might want to work with files in different branches of the hierarchy, would need to open multiple windows in order to perform tasks. The clean, straight-line approach of the scrolling viewer would quickly lose its clarity, as users struggled with multiple views displaying directories that might overlap in some places but not in others.

Two 'faced

While a NeXT-style viewer would be simpler and offer more flexibility, it could also confuse and complicate aspects of the user experience, compared to what the Finder offers. My solution? Offer both. Just as the Finder today offers several ways to view files – sorted lists, big icons, little icons, single-clickable buttons – the new Finder could offer both viewer windows and old-style Finder windows.

Users could choose either the new interface or the classic one, and might even mix both. A viewer window could be open for viewing files on a remote server, while application icons are displayed in a Finder-like window, allowing users to drag-&-drop between the two. More than offering users choice, the two views could work together in an interface that's more powerful and more flexible than the sum of its parts.

Apple has had a lot of success lately in limiting user choice. Replacing standard serial and ADB with USB proved to be the only way to get USB accepted by the mainstream.

Some would argue that the only way to get users to change is to remove all other options. But I think you're just as likely to alienate users as you are to enlighten them by forcing a new metaphor on them. Others would no doubt observe that mixing metaphors is never a good thing to do, whether you're a writer or an interface designer. To them, I say: "Fine – then give the people both and let the user decide which is better."

I have no doubt that by changing the Finder, Apple is trying to develop a better way for users to interact with their computer. So why not provide both and let Macintosh users decide over time which view works best for them? **MW**

Peter Worlock

Buying a new display should be
straightforward. Irritatingly, it's not.

Monitor wizard

When I occupied the lofty heights of the editor's chair at Macworld almost everyone voiced their belief that the editor should get the best of everything – fastest Mac, more memory, biggest monitor, all the software. And I would protest, "No, no – it's just not true." And it wasn't. The fastest Mac (and the speediest graphics-accelerator card and the best monitor) always went to the art director, because she was the one massaging 60MB Photoshop files into shape.

But while as editor, I did enjoy a succession of very-nice-thank-you 19-inch monitors from the likes of Radius, Hitachi, Sony and others. And when I went freelance, I could never afford anything similar (no, please – it's OK, really). Instead, I learned to live with high-quality but more modest imaging, via pair of 15-inch displays: a Sony on the Mac, and an NEC on the PC.

The price of monitors has fallen even more dramatically than that of computers in the last five years – can anyone else remember when a 19-inch display would set you back £2,000 or more? But my 15-inch models were always good enough to make it hard to justify buying anything bigger.

But what's even more interesting about monitor evolution over the years, is the way our attitudes have changed. Once monitor size in inches, and monitor size in resolution, were directly linked. We talked about VGA (640-x-480) and SVGA (800-x-600) as though a 15- or 17-inch monitor could display nothing else. It was understood that if you wanted 1,024-x-768 you needed a 19-inch model.

It turned out to be untrue. Necessity being the mother of invention, when I needed to do page layout in XPress on my 15-inch Sony I cranked up the resolution to 1,024-x-768 – and it worked fine. Of course, the type is a little small, but it's perfectly readable to me (after 20 years as a journalist, my eyesight is not what it was; I can barely recognise a double-decker bus at a hundred yards – but I can read a column of 6pt type at arm's length with no difficulty).

Nevertheless, when I found myself in the unusual position recently of having a bit of spare cash, my buried yearnings for a bigger monitor returned with a vengeance. I quickly ruled out a 19-inch model, as I didn't have quite that much money and settled on the idea of a 17-inch.

With credit card in hand I set upon the magazine ads and e-commerce Web sites voraciously, looking to buy a slice of high-tech happiness. Boy, was it difficult; trying to get the right technical information proved to be all-but impossible.

Unlike gadgetry, monitors are easy to figure. You need to know about resolution, you need to know about frequency. Critically, you need to know what frequency at what resolution. And this last point is something a lot of dealers either don't know, or don't want you to know.

Frequency matters because of flicker, which can give you horrible headaches and ruin your eyesight. Since I don't have much eyesight left, I'm rather partial to the idea of protecting what I've got. The concept of "flicker-free" displays is hard to pin down, but generally, you want the frequency to be higher than 70Hz, and better than 80Hz if you can get it.

Rather like pixels and image size in Photoshop, monitor frequency and resolution are directly linked: as you increase screen resolution, you decrease available frequency. It is perfectly useless to know that a monitor has a maximum frequency of 120Hz and a maximum resolution of 1,600-x-1,200. The devil, as they say, is in the details.

Since there was little point in buying a bigger monitor and keeping the same resolution (you just get fatter pixels) I wanted one to handle 1,280-x-1,024 pixels at better than 75Hz, or 80Hz if I could get it.

Magazine ads don't tell you these things, so making direct comparisons was impossible and calling sales lines was a joke. But the great disappointment was the Web: you can understand magazine ads lacking detail because space is at a premium, but there's no excuse for omitting this information on a Web site. Dabs Direct used to include the necessary information in its ads and on the Web but to its shame, it no longer does so.

In the end, I had to visit the Web sites of manufacturers, pore over their spec sheets, draw up a shortlist, and comparison-shopped on price. There *are* plenty of suitable monitors out there – as well as some displays that fall surprisingly short. I bought an Iiyama S702GT that does exactly what I want, excellent image, rock solid display, plenty of change out of £300 – it's wonderful. But it should have been easier. **MW**