

# NEW PRODUCTS >> reviews



In my eyes, the Internet has finally proven itself. While this page is being laid out I will be on holiday on the other side of the world, and it was all booked from a browser in London – the hire car, the train tickets, the hotel. It seems that when you're talking about America there is very little that is not Internet friendly. And the reason for this? It's because every American business knows that if it is not on the Internet then it may as well not exist. I'm lazy. Let's face it, we all are. If there's an easy way of doing things and a difficult way then none of us is going to opt for the latter, so if we can sit back with a cup of tea and book everything from a browser then we're more likely to do that than get on the phone and call around. It's a shame the same cannot be said for the UK. I'm sure I'm opening myself to criticism if I say we're lagging behind and I am well aware that there are hundreds of prime examples of Internet-aware organisations selling their wares, if not exclusively, then at least in part through the familiar medium of a browser. But when even the average joe in the street can put their face on the Internet (see the **VideoLogic HomeC@m** on page 92) there is no excuse for those businesses not yet connected to sit back and do nothing. Nominet, the UK's domain-naming authority, has dropped its prices to just £2.50 a year, with two years paid up front. Companies can now no longer claim that they can't afford to be on the Internet. At £2.50 they can't afford not to be.

NIK RAWLINSON, REVIEWS EDITOR

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## VNU European Labs



VNU Labs tests all kinds of hardware and software, from PCs and modems to databases. All our tests simulate real-world use and for the most part are based on industry-standard applications such as Word, Excel, PageMaker and Paradox. Our current PC tests for both Windows 98 and NT are the SYSmark tests from BAPCo. In all our performance graphs, larger bars mean better scores.

## Ratings

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

# Carrera Octan Frio Super-G

It may sound like a light aircraft, but its speed alone **puts it way ahead** of anything else on the market.

It wasn't so long ago that Carrera gave us the fastest PC we had ever seen, running at a staggering 800MHz. The chip inside was a 600MHz AMD Athlon but it had been over-clocked with the help of a KryoTech vapour-phase refrigeration unit.

Now Carrera has done it again and the timing couldn't be better. As we near the new millennium we have a machine that hits the 1,000MHz mark. This latest collaboration from Carrera and KryoTech really does raise the standard. Neither company was willing to state which CPU was hiding inside the vapour-cooled capsule, saying only that it was the fastest AMD chip currently available. The BIOS reported a speed of 962MHz, but Carrera assured us that it was running in excess

of 1GHz and the BIOS was confused by the excessive speed. And with a SYSmark score of 375 we are inclined to believe it. No other PC has come close to this level of performance, beating the previous fastest machine by almost 35 per cent.

The refrigeration unit at the base of the system case is far larger than the previous KryoTech system. It's also considerably noisier, sounding like a light aircraft at times. But that's the price you pay for the fastest PC on the planet.

Performance and quality are the prime requisites of this machine and Carrera has backed up the outstanding CPU configuration with some top-notch supporting components.

The graphics card makes this system a dream come true for 3D modelling professionals. The 3Dlabs Oxygen GVX1 is a very high-powered display adaptor, with multiple processors. Two independent GLINT chips are employed – one for handling textures and the other

for hardware-accelerated geometry and lighting. This means that the majority of the load is taken away from the CPU, making OpenGL previews in applications such as LightWave a

RAM drive. This is another great inclusion, with 5.2GB removable optical discs costing less than £20. Considering that this machine is aimed at the high-end graphics user, this type of optical backup is a godsend.

There's plenty of expansion left in the case, with three 5.25in and two 3.5in bays free. Only one of the three memory sockets is vacant, but considering the system already has 256MB installed, it's unlikely to be a problem.

A basic sound card is also thrown in, but no speakers are supplied, as multimedia isn't

really where this system is aimed.

This is the most powerful personal computer we have ever seen at PCW, and as such,

it doesn't come cheap. The £4,999 (ex VAT) price may seem exorbitant at first glance, but you are buying a very special machine with a great component line-up – the graphics card alone costs £500 ex VAT. Ultimately, you get what you pay for, and if you want the fastest PC in existence, you'll need very deep pockets.

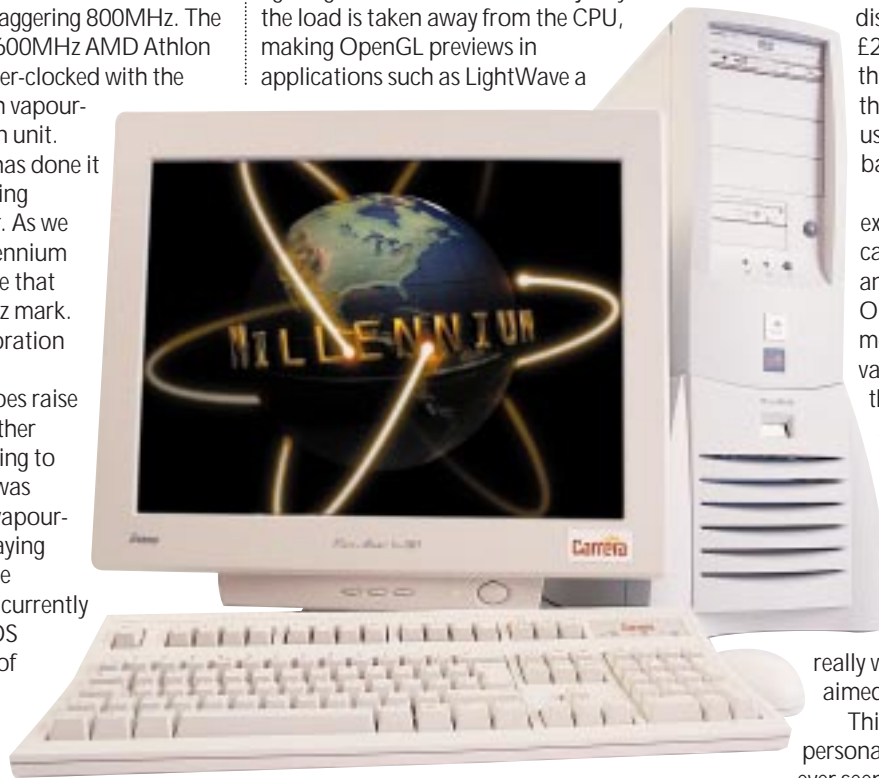
RIYAD EMERAN

**The SYSmark score of 375 beats the previous fastest by 35 per cent**

breeze. The card also has 32MB of SGRAM and both D-SUB and digital flat-panel outputs. Connected to the Oxygen is an Iiyama Vision Master Pro 510 monitor. This superb display is based on Mitsubishi's 22in Natural Flat Diamondtron tube. The result is a clear and vibrant image from a screen that suffers from no reflectivity. With a display set like this, the Super-G is ideally suited for use as a high-end graphics workstation.

The Windows NT4 operating system reinforces its professional bias.

Taking care of storage is an 18GB IBM hard disk. Maintaining the high-end nature of this beast, it's an LVD SCSI drive connected to a Symbios SCSI controller card. As well as providing lightning-fast throughput, a SCSI solution offers the kind of extended upgradability that is necessary with a workstation. Connected to the 8bit port on the SCSI card is a Panasonic DVD-



## PCW DETAILS



★★★★★

**Price** £5,873.12 (£4,999 ex VAT)

**Contact** Carrera 0181 307 2800

[www.carrera.co.uk](http://www.carrera.co.uk)

**Good points** The fastest PC bar none, fantastic specification

**Bad points** Very expensive, quite noisy

**Conclusion** If you want the fastest PC in the world, then this is it. If you're into 3D modelling or CAD work, it's a dream come true – if you can afford it

## PERFORMANCE RESULTS



EXCLUSIVE

# iMac DV Special Edition

A **noiseless wonder** which combines the Apple ease-of-use ethic with a decent specification.

I have an iMac sitting on my desk but if I close my eyes I wouldn't know it; the machine is almost completely silent. The new, much anticipated iMac has one incredibly novel feature, especially for the home user who may put such a system in their lounge or bedroom – no fan. So, what else has Apple's new baby got to offer?

**The new model** comes in three flavours: the basic iMac, iMac DV (Digital Video) and iMac DV SE (Special Edition).

Starting at the bottom, the basic model has a 350MHz G3 processor, 64MB of SDRAM, a 6GB hard drive, 24-speed, slot-loading CD-ROM, an 8MB ATI Rage 128 graphics subsystem and one colour option – blueberry.

Moving up the scale the iMac DV comes with a 400MHz G3 processor, 64MB of SDRAM, a 10GB hard drive, four-speed, slot-loading DVD-ROM, two FireWire ports and a choice of colours:

strawberry, blueberry, lime, tangerine and grape. On the top rung of the ladder is the iMac DV SE which has the same spec as the DV except it comes with 128MB of SDRAM, a 13GB hard drive and, more importantly, is

only available in super-sleek graphite. Also, all the models now feature standard PC100 SDRAM DIMMs. This is all very

Microsoft Internet Explorer 4.5 and Netscape Communicator 4.6 are installed as standard along with Outlook Express 4.5 for email (although version 5.0 for the Mac should be available when this hits the streets). The AppleWorks 5 office suite is enough to give the novice user something to play with. For those who need a bit more, Microsoft Office is available in a Mac version. The package is rounded off with a copy of Adobe's PageMill 3 web page creation software and Pangea's Bugdom game.

**The review machine** came with Mac OS 9, which features a new version of Sherlock to help you find things, not only on your own computer, but on the Internet as well. You can download plug-ins for popular search engines, such as Altavista and Excite, as well as searching online shops, news and reference sites. The list of plug-ins is expanding all the time, allowing you to create, in effect, your own personal search engine.

The DV models also come with a copy of iMovie, an easy-to-use video-editing package. You can import clips from a DV camcorder via the FireWire interface and edit them with the drag and drop interface, adding transitions, sounds and titles along the way.

On the whole, the new iMac lives up to our expectations. If you want a stylish machine that is simple to use, the iMac is definitely worth considering.

WILL HEAD

## PCW DETAILS

★★★★★

**Price** £1,199 (£1,020.43 ex VAT)

**Contact** Apple 0870 600 6010

[www.apple.co.uk](http://www.apple.co.uk)

**Good points** Silent, stylish, simple and powerful

**Bad points** Look may not suit everyone

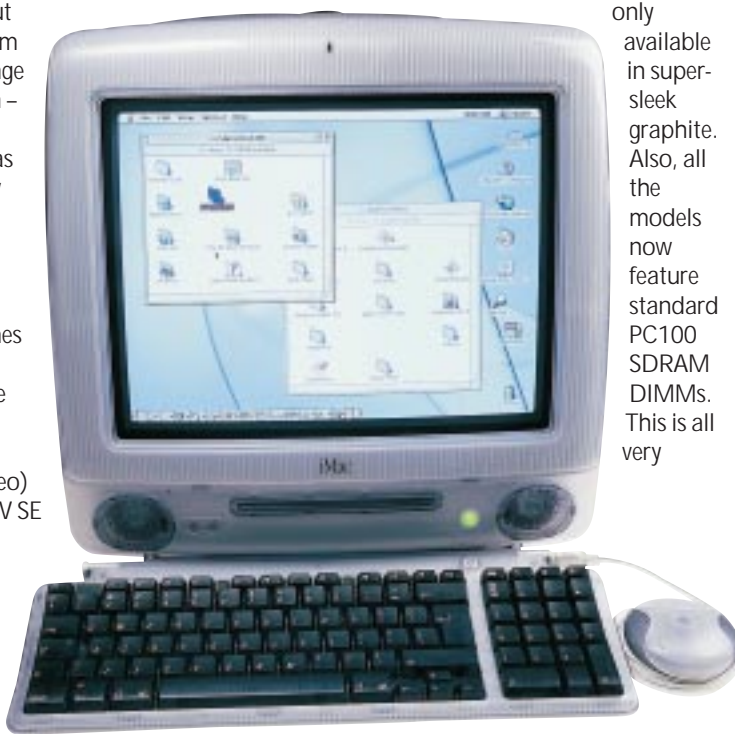
**Conclusion** The new iMac more than lives up to its promise. If you want a system that's easy to use but fast and powerful, now is the time to take the plunge



interesting, but iMacs are generally not bought on their raw specifications. What is more important is its usability.

The iMac is still incredibly easy to set up – from the box to the Internet took a little under 15 minutes. Click the 'Get me on the Internet' icon and after some 'funky' music and dancing iMacs you are taken through the steps. The setup currently offers four UK ISPs, two free (Virgin and Demon) and two subscription (Direct Connection and BT Internet). After signing up for the service of your choice, the settings are then downloaded to the machine and configured for you – all very neat.

**In terms of software**, the machine comes with pretty much everything you need to get going.



▲ THE SEE-THROUGH SKIN IS THE WINDOW TO THE SOUL OF THE MAC



# Apple iBook

An ingeniously designed portable, but with youthful looks that say 'still at school' rather than 'cool'.

**T**he iMac to go – that's how Apple is selling the iBook, its portable computer that brings its trademark colourful curves to the notebook computer market. It stands out from the crowd just as much as its desktop counterpart, although it only comes in two shades this time – tangerine and blueberry.

But while the iMac appealed to everyone who wanted a computer, but couldn't stomach the beige blandness of a traditional PC, the iBook looks a touch too childish to slot easily into an office environment. It reminds us of a slimmed-down lunch box, but carrying this computer around the streets, which is what the carrying handle seems to invite, is a bold advert to muggers.

Another thing that might put you off lugging the iBook around with you is the weight – 6.6lb to be precise. This extra weight can be accounted for in part by the iBook's 'spacious' design – the palm rest is incredibly deep, so unless you have very large hands you may find yourself straining across it to get at the keys. There is also acres of space around the 12.1in TFT screen, which might be better filled by a few more viewing inches.

**The keyboard is pleasant** to use, and pressing two tabs along the top lifts it up completely to reveal the innards of the iBook, with a free space to slot in one of Apple's AirPort wireless networking cards and extra RAM. The capacity to fit up to 128MB of RAM is handy, as it comes with just 32MB as standard. The rest of the spec doesn't really

make up for the memory deficit; the 300MHz G3 processor is adequate for most applications but a 3.2GB hard disk drive couldn't be considered generous.

**Where Apple may lose out** when it comes to cutting-edge specifications, it wins hands down when it comes to ingenious design touches. The iBook is housed in super-tough plastic – the same material is used to make bullet-proof vests, and uses a clever hinge method to keep the lid shut you simply snap it into place rather than using a latch.

A light around the power socket glows amber while the battery is charging, turning green when it has finished. Battery life is a claimed six hours and if the G3 PowerBook battery life is anything to go by then this is more than just an empty promise, so you'll have plenty of juice to keep the

iBook going on your travels. Another neat lighting touch is the LED that pulsates away on the back of the iBook as it slumbers.

**External expandability** is provided by a single USB port and a 10/100 BaseT Ethernet port, while wireless

networking is an option if you add the AirPort card and there's a 56K modem to get you online. As with all of Apple's new range there's no floppy drive, only a 24x CD-ROM drive. Apple says that this is

to leave the choice of external storage device to the user, but if you do need extra storage then this will represent an extra cost, too.

The software bundle includes Mac OS 8.6, AppleWorks, Outlook Express, Netscape and IE5, World Book Encyclopedia, QuickTime 4, a couple of games and fax software.

URSULA TOLAINI

## PCW DETAILS

★★★★

**Price** £1,249 (£1,063 ex VAT)

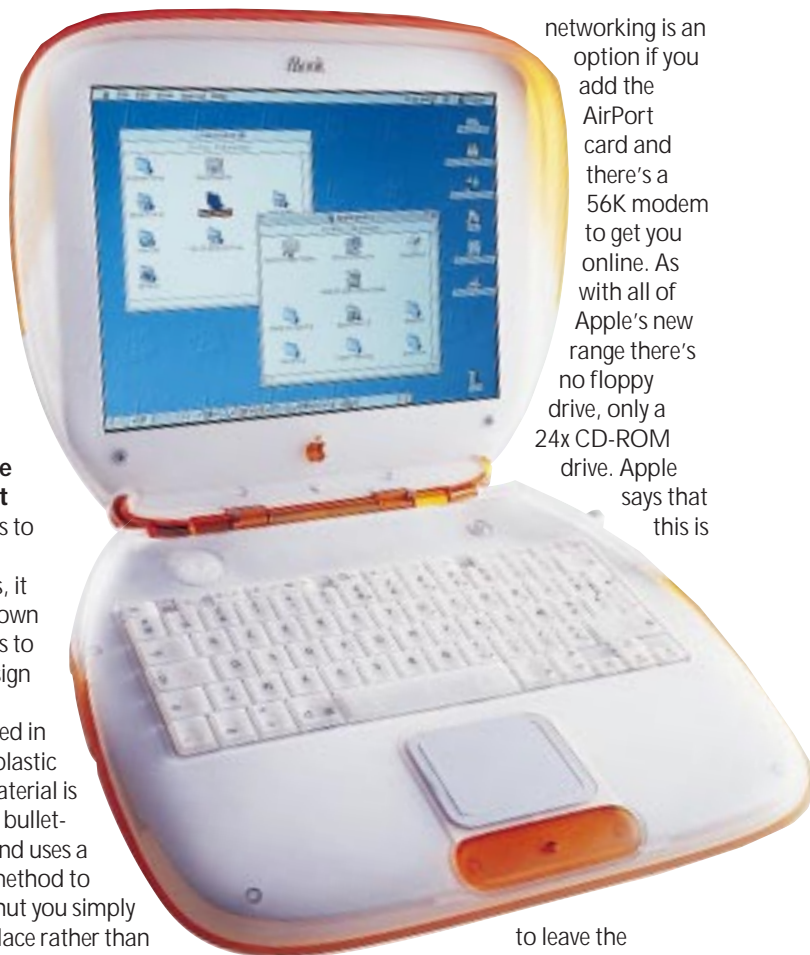
**Contact** Apple 0870 600 6010

[www.apple.co.uk](http://www.apple.co.uk)

**Good points** Innovative design, good battery life

**Bad points** Lack of memory and storage, heavy

**Conclusion** If you want a notebook that looks like no other, then the iBook certainly stands out from the crowd, but you'll pay for design in a relatively poor specification



# Armari R3 – CM733

If you like your system **up to the minute** and weighed down with heavy specs, you'll have to pay for it.

There has been a lot of talk about Intel's 0.18micron Coppermine processors, but this is the first time we've been able to get our hands on one. Now, thanks to Armari, we have the opportunity to review one first-hand. The problems relating to the i820 chipset have meant that the rollout of Coppermine Pentium IIIs has been delayed. Rather than just sit around to wait and see what happens, Armari has taken a more pro-active approach, housing the processor in an ABIT BE6 motherboard, which supports a 133MHz front-side bus (FSB) and a low 1.65 regulated processor voltage.

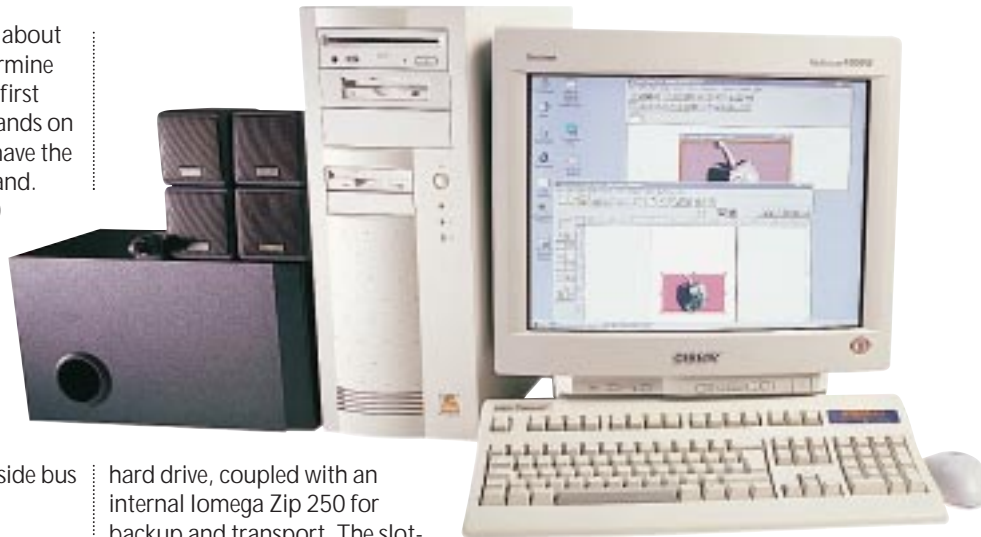
In addition to this, you can get a full refund for the motherboard and PC133 RAM against the cost of an i820/i840-based motherboard and RDRAM (RAMBUS) memory when these components become available, with free installation. This means that you can have the latest spec processor now and upgrade to a more future-proof motherboard when it's available, paying only the difference in price – an excellent idea from Armari.

To complement a processor of this speed, 256MB of PC133 SDRAM has been installed, split into two 128MB modules, leaving one vacant DIMM slot.

**The system itself is extremely fast** and it looks like AMD's Athlon may have a real contender snapping at its heels when the i820 motherboard problems have been sorted out. The SYSmark score of 301 is one of the fastest results we have ever seen, scoring very similar results to the super-cooled 800MHz Athlon we featured in our November issue.

Thankfully, the graphics performance didn't disappoint either, with the 32MB dual head Matrox Millennium G400 Max scoring 6,287 in the 3DMark test. Not as good the 800MHz Athlon equipped with a Riva TNT2 Ultra card, which came in at 7,227 3DMarks, but not bad either.

In terms of storage you get a more than adequate 27GB EIDE IBM Deskstar



hard drive, coupled with an internal Iomega Zip 250 for backup and transport. The slot-loading six-speed DVD-ROM is from Pioneer with an Aureal Vortex 2 SuperQuad PCI card – including optical digital out – being chosen for sound. The speaker system is a Creative Labs' FPS2000 setup. There are four stylish black cube satellites and a sub. Unfortunately the digital input is coaxial rather than optical.

A system of this specification demands a decent monitor, and there was no problem on this front either. The 19in Trinitron-tubed Sony Multiscan 400PS monitor could be comfortably pushed up to 1,600x1,200 at 75Hz, with a display that was crisp, clear and flat.

**Under the hood**, the case was well laid out and assembled. To combat the problem of tidiness versus upgradability, Armari has decided to use long cables, neatly tidied up to allow for the

maximum future use. In terms of free bays, there was one 5.25in bay, one external 3.5in

bay and one internal 3.5in bay. Strangely, the 3.5in internal Zip drive had been mounted in a 5.25in bay, leaving an external 3.5in bay vacant, we couldn't quite understand the logic behind this decision.

The Abit BE6 motherboard offers four PCI slots, one ISA slot and one shared slot. Two of the PCI slots were occupied – one by the sound card and the other by a Diamond Supra Express

V.90 modem.

On the whole, this Armari machine is built for power and performance and the price reflects this. Not everyone has almost £3,000 to spend on a system, but for those who do, the R3-CM733 represents the latest technology you can get today, with the added bonus that when the new motherboard chipsets are released you can upgrade and only pay the cost differential. An extremely fast and well-built machine, if you can justify the cost, buy one now.

WILL HEAD

## PCW DETAILS



★★★★★

**Price** £2,818.83 (£2,399 ex VAT)

**Contact** Armari 0181 993 4111

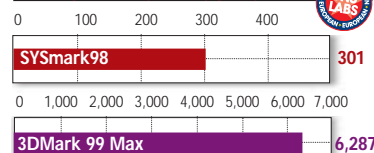
[www.armari.com](http://www.armari.com)

**Good points** *Extremely good performance, well-specified and well-built, upgrade to i820 board when it becomes available*

**Bad points** *Expensive, Zip drive mounted in 5.25in bay*

**Conclusion** *Quality always comes at a premium. When you take into account what the machine has to offer it is a good buy, however, not all of us have the spare cash to spend*

### PERFORMANCE RESULTS





# Psion Revo

A **consumer-oriented** handheld with real power.

**N**ot content just to sit back and watch sales of the Series 7 and 5mx grow, Psion has launched its third major product in as many months.

The Revo is described as the 'pocket-sized email organiser for people who need to stay in touch wherever they are'. It's a shame, then, that once again Psion has omitted any form of internal modem and the only way of collecting your email is PC synchronisation or, if your phone supports it, wireless communication with your mobile. Of course, international travellers will have to make sure they have roaming abilities, because until Psion launches its V.90 modem there's no chance of plugging it into a hotel phone.

This insistence on mobile connectivity is enhanced through the inclusion of a new piece of ROM-based software. Simply called Phone, it is a phone book organiser for synchronising your contact details with Motorola, Siemens, Ericsson and Nokia phones.

***This panel is simply the best we have seen on a monochrome handheld***

**Considering its size**, the specs are fairly impressive, even when compared to the original Series 5. It's got 8MB of RAM, although in this case it is not upgradable, and its ARM processor runs at 36MHz – matching the 5mx and doubling what you'll find in the Series 5.

It's also incredibly light, at just 200g, and slim, measuring only 18mm at the thickest point. Of course, you have to make a sacrifice to achieve this, and in this case it's the loss of the CompactFlash slots found in the Series 5 and 5mx, and the mic for voice recording.

It does still have the internal speaker, though, topping off at half a watt. The keyboard looks

unappealing, but once you've got your hands on it you'll find it surprisingly usable. There's very little travel to the keys but we suffered no duff strokes or doubled-up characters.

There is no backlight, either, but the screen is a drastic improvement over that found on the 5mx, and even that was better than the Series 5. This 480x160

pixel panel is quite simply the best we have seen on a monochrome handheld device

and it easily rivals the latest Palm offerings from 3Com. The screen doesn't suffer at all from being touch-sensitive, although the stylus is rather a let down – resembling two plastic cocktail sticks taped together.

**Connecting to the PC** is not as simple as plugging a cable into the back as you would with a Series 5 or 5mx.

Because the Revo has internal rechargeable batteries that cannot be removed, the unit must be docked. While transferring

the data the dock also takes care of the charging. A full charge gives around 14 hours worth of use, so it'll see the mobile user across the Atlantic and back with no trouble.

It uses PsiWin 2.31 to chat with your desktop

– the same as that used by the 5mx – and it uses the same EPOC 5 operating system,

too. At launch it is localised for six languages, covering English, French, German, Dutch, Spanish and Italian.

**The regular Psion applications** have been ported across, although you'll have to look to the 'Extras' bar to find the Word and Sheet applications, which have been sidelined in the interests of enhanced phone and Internet functions.

Mac connectivity options are the same as those for the Series 5, but Psion still doesn't produce a USB cable of its own for the iMac. Being geared towards a more 'lifestyle conscious' community, we feel that this omission is a shame.

NIK RAWLINSON

## PCW DETAILS



★★★★★

**Price** £299 (£254.47 ex VAT)

**Contact** Psion 0990 143050

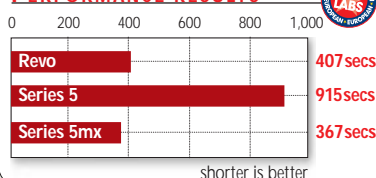
[www.psimon.com](http://www.psimon.com)

**Good points** Great screen, great price, EPOC

**Bad points** Still no modem

**Conclusion** If you're after a cheap alternative to the 5mx, you've just found it

### PERFORMANCE RESULTS



# Packard Bell Spirit

Sleek, slight, **sexy and terribly expensive** – a PC for the self-conscious with money to burn.

**P**ackard Bell is a big name in the consumer PC market and anyone who has ever shopped in a PC store will surely have seen its beige boxes lined up on the shelves, but now with the Spirit it's attempting to stand out from the computer crowd.

The computer itself is housed in a slim-line, silver box, which stands on its side, rather than flat on its bottom like a normal desktop system. A 15in digital flatpanel serves as the display and this pretty picture is completed by two slinky silver and grey speakers, plus a dark-grey keyboard and scroll mouse. Packard Bell's leap into the 'concept' PC league is based on a design from NEC in Japan, which has been offering business customers compact systems that are similar to the Spirit for quite some time.

**The Spirit comes with** a 500MHz Pentium III processor, 128MB of RAM, 10.8GB hard disk drive, 8MB Savage4 graphics card, six-speed DVD-ROM drive and a 56K modem built in. This specification isn't bad, but with a price tag of nearly £2,000 this line-up is far from impressive. If you can forgo the Spirit's good looks you will be able to equip yourself with a far more powerful PC for much less.

Looking on the bright side we liked the 15in digital flat panel, which provides bright, clear images. But again, if you can spare the desk space you can get more screen inches for your money from a CRT monitor, which we think would be a better option if you plan to use the DVD-ROM drive to watch movies.

The speakers are probably the prettiest piece of kit – they are silver and tiny; smaller and slimmer than a paperback book, with their own little grey plastic stands. However, they are far from sturdy and feel as if a puff of wind would knock them over. Sound quality is equally weak – they are fine if all you want is a little restrained background noise, but forget blasting out your favourite tunes, these speakers can't take

high volumes, they just descend into distortion.

The decision to stand the system case on its side brings with it an interesting problem. When you're ejecting both CDs or DVDs and floppy disks, the angle of the machine leaves them hanging precariously out of their drives. The eject button for the DVD-ROM drive takes some finding as the sleek design has hidden it too effectively.

**The keyboard and mouse** are both finished in dark grey-toned plastic. The keyboard is a Packard Bell multimedia model, which has extra buttons to take you direct to common functions such as email and the Internet. The mouse is a scrolling unit, which is always a bonus.

To keep the Spirit as tiny as possible, Packard Bell has opted for

a 'sealed box' approach, which essentially means upgrade options are severely limited. There are just two PCI and one DIMM slot free for extra cards or RAM – so this is not the PC for you if you like to add new technology to your machine as it comes onto the market. External expansion is simpler as there are two USB ports free, one of which is conveniently situated on the front of the PC, to make plugging in devices simpler.

**The Spirit's 500MHz PIII** processor helped it to score 194 in our SYSmark



performance test, which isn't too bad, but it falls behind the current top-of-the-range processors, which are hitting the 700MHz mark for the same price as the Spirit. Its graphics test result was 2,374 3DMarks, which is impressive when you consider the chipset is onboard.

The software bundle is generous, but you don't get a full office suite, only Microsoft's budget Works suite, plus Word 2000. There are also several handy packages, including Encarta 99, Money 99 and Auto Route Express, plus all the software you need to play DVD movies.

URSULA TOLAINI

***This spec isn't bad, but with a price tag of £2,000 it is far from impressive***

## PCW DETAILS



**Price** £1,999 (£1,700 ex VAT)

**Contact** Packard Bell 01628 508200

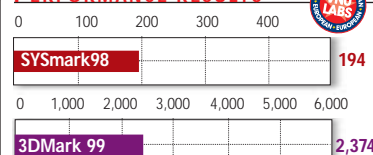
[www.packardbell-europe.com](http://www.packardbell-europe.com)

**Good Points** Sleek, silver design, small footprint

**Bad Points** Poor price/performance ratio, lack of upgrade potential

**Conclusion** If you don't mind paying through the nose for a sexy design, Packard Bell could have the PC for you, but if you want value for money look elsewhere

### PERFORMANCE RESULTS





# Sony Vaio 505X

Beautiful design and functionality, **the Sony ethic is at work again** in this ultra-desirable notebook.

**T**he 505X is the latest evolution of Sony's ultra-portable range of mobile computers and it's a very important landmark. Up until now the Vaio 505 range had been stuck using Pentium MMX processors, because the Pentium II CPUs were not viable in such a svelte form factor.

However, this problem has been solved with the introduction of the mobile Celeron CPUs and the 505X sports a 333MHz variation. This provides more than enough power for a unit of this kind. The attraction of the 505 was never raw power, it was always its form factor and appearance. Sony is a master at making a product both small and desirable, and its range of notebooks almost sell themselves regardless of the technical specification.

That said, few users will be disappointed with the specification of this model. Supporting the Celeron

The touch-pad looks huge compared to the overall dimensions of the 505X, but it's recessed enough so that it isn't accidentally activated when you hit the space bar. It's also a joy to use, making pointer manipulation the simplest of tasks rather than a frustrating chore.

**The screen is where the big change** has taken place. The display is a 10.4in

will be able to connect it to the 505X via this port to transfer video for editing. There are also standard mini jack ports for a microphone and speakers next to the USB connector.

The right-hand side is a little more sparse, with only a single Type II PC Card slot, an IR port and the power switch.

**Inside the box** you'll also find a floppy drive that connects to the USB port. There used to be a dedicated floppy connector, but Sony has wisely dropped this feature, since USB is more than able to cope with the job.

The external CD-ROM drive comes complete with a PC Card interface. Of course, this means that you won't be able to use the CD-ROM and another PC card at the same time, but it's a small compromise.



hard disk. Obviously, these specifications are somewhat poor by desktop standards, but the 505X is a true mobile computer and factors such as masses of storage and memory capacity are of less consequence.

**What has always been amazing** about Sony's ultra-portable range is the ergonomic quality, and the 505X continues this tradition and even manages to improve on it.

Even though the system casing is incredibly thin, the keyboard is amazingly responsive. The keys have a decent amount of travel and a solid enough break to achieve a fast typing rate without suffering any discomfort. Thankfully, both the Enter and Backspace keys are large enough for easy access, and the cursor keys are in their correct configuration – unlike some of the rival units.

TFT affair, with excellent lighting and contrast, but the resolution has been pushed up a notch. The previous models only ran at a resolution of 800x600, but the 505X manages 1,024x768.

On paper you might well think that the physical dimensions of the display are simply too small to accommodate such a high resolution, but you'd be wrong. Once you have worked with the 505X for a while, you will wonder how

you could have coped with an 800x600 screen.

On the left of the system case is an I/O

connector for the bundled port replicator along with ports for power USB and IEEE1394 (FireWire). The latter is something that Sony has pioneered in its notebooks. It's a much faster standard than USB but the product support is low.

Unsurprisingly, one company that does support IEEE1394 is Sony and if you own one of its DV camcorders you

▲IT'S ALL TOO BEAUTIFUL. HERE'S A RESOLUTION YOU'LL WANT TO STICK WITH

The 56K PC Card modem which used to

be bundled is now an optional extra and the stylus that used to pop out of the side of the screen has also disappeared.

All in all, the 505X is a great evolution of an already irresistible product. If you're looking for the best ultra-portable notebook, this is it.

RIYAD EMERAN

***The 505X is a great evolution of an already irresistible product***

## PCW DETAILS

★★★★★

**Price** £1,702.57 (£1,449 ex VAT)

**Contact** Sony 0990 424 424

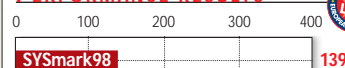
[www.sony.co.uk](http://www.sony.co.uk)

**Good points** Ultra slim, ultra stylish, ultra desirable

**Bad points** None

**Conclusion** The best super slim notebook money can buy, bar none

### PERFORMANCE RESULTS





# Dell Inspiron 3700

Weighing in between 2.8kg and 3kg, this lightweight notebook **hasn't skimped** on features.

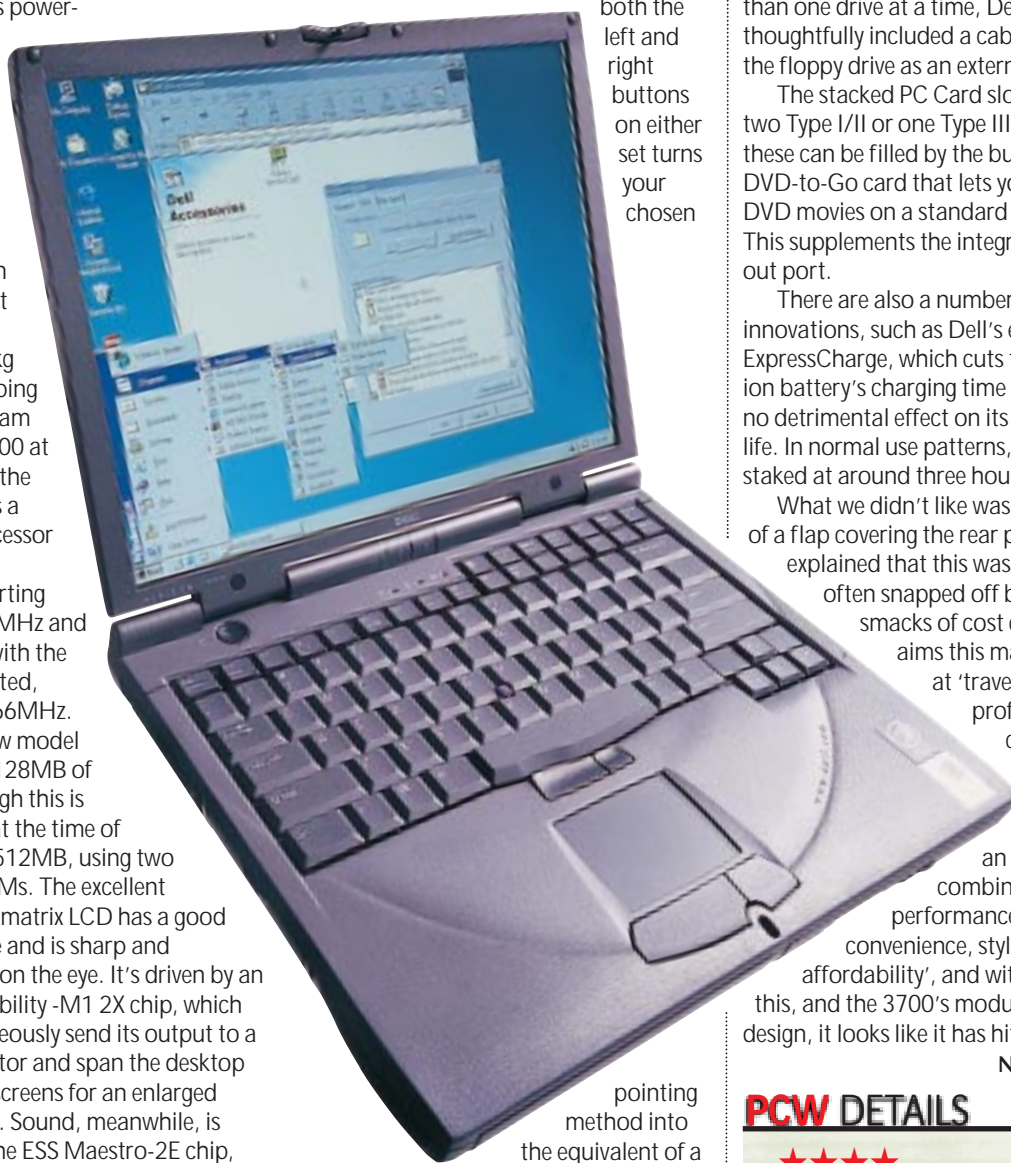
**T**hinner and lighter than Dell's Inspiron 7500 (*PCW*, December 1999), the 3700 is designed to

appeal to less power-hungry users, or to those who need to compute on the move. Depending on the configuration you choose, it weighs in at between 2.8kg and 3kg, keeping it a full kilogram below the 7500 at either end of the scale. There's a range of processor options, all Celerons, starting with the 400MHz and topping off with the model we tested, running at 466MHz.

Our review model arrived with 128MB of RAM, although this is upgradable at the time of purchase to 512MB, using two 256MB DIMMs. The excellent 14.1in active matrix LCD has a good viewing angle and is sharp and comfortable on the eye. It's driven by an ATi Rage Mobility -M1 2X chip, which can simultaneously send its output to a second monitor and span the desktop across both screens for an enlarged working area. Sound, meanwhile, is handled by the ESS Maestro-2E chip, which supports Sensaura's Positional 3D, and drives its output to the side-mounted stereo speakers.

The thing that sets this machine apart from the usual Dell fare is the styling. It is gently curved, and has a woven finish to the wrist areas. Dell's URL is stamped just below the keyboard and the unit is available in two colours: storm grey or Tahoe blue. The keyboard is excellent – it feels fairly slack and is comfortable to type on for extended periods. The touch pad is also smooth and responsive, but if it's not your thing then you'll be pleased

to see the supplementary pointing nib in the middle of the keyboard. Each device has its own set of buttons, and pressing both the left and right buttons on either set turns your chosen



pointing method into the equivalent of a scroll-wheeled mouse,

moving the contents of your active window up and down.

Dell is fast getting itself a reputation for building highly-versatile machines, and the 3700 does nothing to diminish this. A front-mounted media bay gives you a choice of drives, including floppy, CD-ROM, DVD-ROM, Zip, LS-120 or extra hard drives. It can also house a second battery for extended use away from power points, or be emptied altogether and protected by the bundled cover for the ultimate in portability.

Softex Bay Manager has been pre-installed to enable hot-swapping, and should you find yourself in need of more than one drive at a time, Dell has thoughtfully included a cable for using the floppy drive as an external unit.

The stacked PC Card slots support two Type I/II or one Type III card. One of these can be filled by the bundled Margi DVD-to-Go card that lets you watch DVD movies on a standard television. This supplements the integrated S-Video out port.

There are also a number of other innovations, such as Dell's exclusive ExpressCharge, which cuts the lithium ion battery's charging time in half – with no detrimental effect on its operational life. In normal use patterns, battery life is staked at around three hours.

What we didn't like was the absence of a flap covering the rear ports. Dell explained that this was because it often snapped off but we feel it smacks of cost cutting. Dell aims this machine at 'travelling professionals, consumers and students who want an ideal combination of performance, mobility, convenience, style, quality and affordability', and with specs like this, and the 3700's modular, versatile design, it looks like it has hit the mark.

NIK RAWLINSON

## PCW DETAILS

★★★★★

**Price** Around £1,399 (£1,154.18 ex VAT) at launch

**Contact** Dell 0870 152 4699  
[www.dell.co.uk](http://www.dell.co.uk)

**Good points** Modular design, light

**Bad points** No protection for rear ports

**Conclusion** If you want value and you're looking for 'Intel Inside' then you won't get much better than this

### PERFORMANCE RESULTS



# ACi Concept

An attractive-looking laptop with an **eye on the future**, which packs in a lot of features.

The notebook market is splitting into two camps. While one half seems proud to remain chunky and boast the benefits of 'desktop-replacement' technology, the other would rather look good and cram as many features as it can into the smallest possible space. The Concept falls into the latter category.

The Concept looks as good in real life as it sounds on the page. The slim, silver casing houses 128MB of RAM and a mobile Pentium II clocked at 366MHz. Standard configuration for this machine, which has been bought and rebadged by this and various other

RAM. Further upgrades can hike up the total memory to a maximum of 192MB. The floppy drive is an external unit but a small media bay houses an internal CD-ROM. This lets you install software and access reference titles while on the move, and with today's capacities you are unlikely to miss the floppy.

The screen is a 12.1in TFT, with a native resolution of 800x600. A monitor port on the back of the machine will let you drive a higher resolution on an external unit. The graphics processor is a Trident Cyber9525DVD with 2.5MB of RAM. This has no 3D support but is fine for regular business applications,

and it's highly unlikely you'll be wanting to play games on the

Concept

in the first place. Although the panel has 23 levels of brightness, set on the keyboard, we found it to have slight luminance problems along its left and right-hand edges. At lower intensity settings it also had a fairly unimpressive viewing angle, although this improved dramatically when the brightness was increased.

Drives come in the shape of a 24x Toshiba CD-ROM and a 6.4GB

Toshiba hard drive, which should meet your needs for some years to come. If you find CD-ROM

rather passé now, then perhaps you ought to consider the

DVD-ROM upgrade option. Built-in speakers are driven by an onboard ESS Solo chip, and there's also a built-in mic. Although nothing to shout about, they are adequate for everyday use and for anything more demanding you can use the line out and mic jacks on the front panel.

External connectivity is catered for by

means of an internal V.90 PCI modem. There's no network card so if you want it to talk to your server when you return to the office you'll have to install a NIC in the single PC Card slot. This is an upgrade option offered by ACi at the time of purchase. Along the back panel you'll find external monitor, parallel and nine-pin serial ports, all covered neatly by a dust flap. There's also a PS/2 keyboard and mouse combo port. If you want to use both input devices at once you'd be advised to switch one for the USB alternative and use that port instead. The touch pad is well implemented, being smooth to use and responding well

to firm taps – so unless you really can't get on with one of these or have a specific application in mind, then it's

***You get a lot for your money, it's fairly fast and easy to upgrade***

unlikely you'll need to switch to an external mouse. Using wireless peripherals through the IrDA port should also pose no problems.

All in all, the Concept impressed us. You get a lot for your money, it looks good, it's fairly fast and with a modular design it's very easy to upgrade your hard drive, CD-ROM/DVD-ROM drive and memory. If you're looking for something to use on a plane or train and don't need a replacement for your desktop machine then the Concept is one option you should certainly consider.

NIK RAWLINSON



manufacturers, is 64MB, so we were pleased to see that ACi has kept an eye to the future and doubled it. It has done so without hiking the price, either: Twinhead sells an identical model for an extra £100, but with only 64MB of

## PCW DETAILS



**Price** £1,761 (£1,449 ex VAT)

**Contact** ACi 0181 357 1116

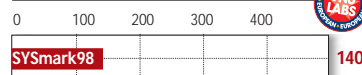
[www.aciweb.co.uk](http://www.aciweb.co.uk)

**Good points** Internal CD-R OM, generous with the memory, attractive

**Bad points** Slightly disappointing screen, but nothing major

**Conclusion** Puts much of the competition in the shade

## PERFORMANCE RESULTS





# ADi MicroScan G710 vs CTX PR711F

Two monitors which **take advantage** of Sony's technology.

Until now Sony had a policy of keeping its FD pure flat Trinitron screens to itself, while Mitsubishi licensed its Natural Flat technology to many different manufacturers. However, we're finally seeing Sony's latest tubes in third-party boxes – in the shape of these two monitors from ADi and CTX.

**The ADi MicroScan G710** replaces the GT56, which used a standard Trinitron tube. The look is new and the tilt and swivel stand has a cut-out to insert the optional USB hub. Making the hub an option is a good idea, since many users

At the rear is a captive D-SUB cable, so you won't be able to connect more than one PC to the display. It also means that if a problem occurs with the signal cable, the whole monitor will have to be replaced. Also at the rear is the output for the microphone, mounted at the top of the screen.

Image quality is very impressive, with the screen

appearing completely flat.

Geometry was spot on, as was horizontal colour registration. Vertical colour registration was a little out even after adjustment, but not noticeably so.

**The CTX PR711F** shares the same Sony tube as the ADi, but the styling is very different. The bezel surrounding the screen is much slimmer, making the display look larger, while the front fascia has four adjustment buttons and a

power button. Navigating the OSD is simple and fairly intuitive, but wheel adjustments for brightness and contrast like the ADi would have been good. The base has a USB hub built in, but the ports are closer to the rear than to the front, making connection a little awkward. Like the ADi the CTX also has a captive video cable. This is obviously a cost-cutting measure that seems to have become the norm in the 17in monitor market.

Image quality is superb, with the CTX producing some of the best results ever in the resolution tests of Display Mate. Geometry was also impressive, although power regulation proved to be a slight problem.

As with all of Sony's FD Trinitron tubes, the screen is almost completely



► **ADi's MicroScan G710 HAS A USB HUB AS AN OPTION, SO YOU DON'T PAY FOR IT IF YOU DON'T WANT IT**

flat. Aperture grille tubes provide very bright and vibrant displays and both of these

monitors are fine examples of the breed. Of course, they both have the damping wires that are synonymous with the technology. Some people find these annoying, but in our experience you don't even notice them when working.

Deciding which monitor is better isn't easy, as they both have excellent image quality and anyone looking for a good 17in unit would be happy with either. However, when push comes to shove the CTX just has an edge. Its design is a bit more stylish, but most importantly it's a little bit cheaper and comes with a USB hub as standard. But if this test has proved anything, it's that you can get a cutting-edge 17in monitor without breaking the bank.

RIYAD EMERAN



► **THE CTX PR711F WAS OUTSTANDING IN OUR DISPLAY MATE TESTS**

might not want USB and don't want to pay

for its inclusion. The bezel surrounding the screen is large and rounded – so large in fact that the screen itself is slightly dwarfed by it. On the front fascia are three adjustment buttons and the power button. This is a serious departure from previous models, where masses of adjustment controls were present, although cutting it down to only three could be taking things too far. That said, the OSD is laid out in such a way that it's easy to navigate with the limited controls. Underneath the fascia are two analog dials for contrast and brightness. This is a good idea, allowing quick and accurate adjustment of the most commonly-used functions.

## PCW DETAILS

★★★★★

**ADi MICROSCAN 710**

Price £292.57 (£249 ex VAT)

Contact ADi 0181 327 1900

[www.adimicroscan.com](http://www.adimicroscan.com)

★★★★★

**CTX PR711F**

Price £276.12 (£235 ex VAT)

Contact CTX 01923 810800

[www.ctxeurope.com](http://www.ctxeurope.com)



# VideoLogic DigiTheatre vs Altec Lansing ADA880

Get that Dolby Digital surround sound on your PC.

**W**ith DVD movie watching becoming more common on PCs, users are starting to crave more from the experience. As well as superb picture quality, DVD movies offer excellent sound performance in the form of Dolby Digital 5.1 channel soundtracks. To cope with this demand, many manufacturers are producing speaker sets that can decode and play back the Dolby Digital soundtrack. We've looked at two such speaker sets from VideoLogic and Altec Lansing.

**The DigiTheatre system** from VideoLogic is a true Dolby Digital solution for your PC. In the box you'll find two front speakers, two surround speakers, a centre channel and a subwoofer. You'll also find the Dolby Digital processor complete with LCD display and corresponding infra red remote control. We've never been great fans of PC surround-sound setups, but this offering from VideoLogic has altered our opinion. For a start there is more than enough speaker wire supplied to position the rear speakers in their correct positions, and since the speakers use standard wire clips you could use different speaker cable if you preferred.

The overall sound quality was surprisingly good. A fair bit of experimentation is necessary with subwoofer and speaker volumes, but once you've got it right

you're treated to an impressive sound stage. Watching the big shoot-out scene in *The Matrix* left no channel unused, with gun fire and ricochets emanating from every speaker. The system is easy to control while you're watching a film, using the remote and the display on the processor. Although some people might find the black speakers too stark a contrast to their beige PC, we liked them.

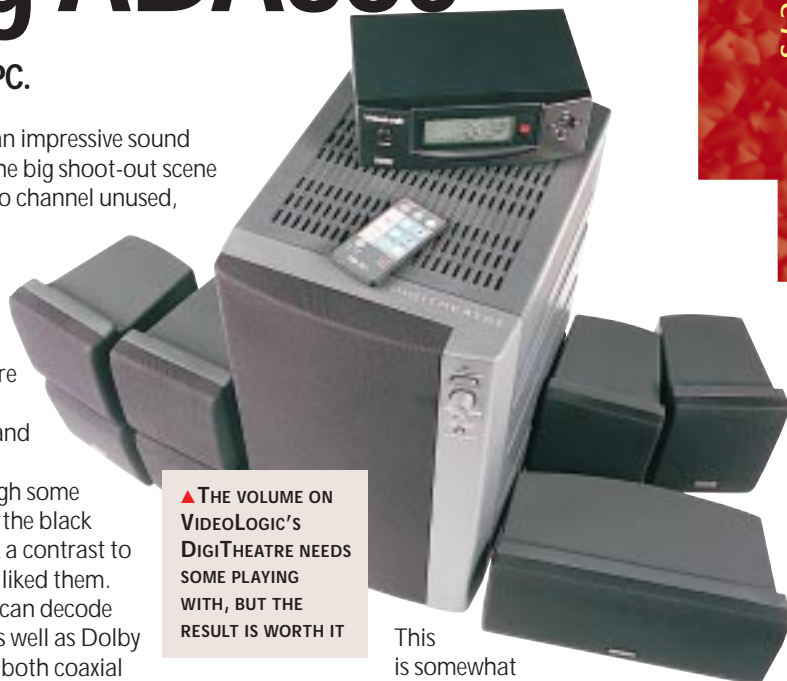
The processor can decode Dolby Pro Logic as well as Dolby Digital, and it has both coaxial and optical digital inputs.

**The Altec Lansing ADA880** speakers, on the other hand, are a different story completely. For a start there's no centre channel, so you don't really have a full Dolby Digital setup. A phantom centre effect is created by the two front speakers, but this is a poor substitute to a dedicated speaker. Also, the speaker cable is hard-wired into each channel terminating with a mini jack. This means that you can't choose your own speaker cable and if you want to extend it you'll have to buy a mini jack extension cable.

There's no processor unit as with the VideoLogic set, so all the Dolby Digital processing is handled within the subwoofer.

Thankfully a lengthy cable is supplied to connect your sound card or MPEG2 decoder to the subwoofer's SP/DIF-in connector. There is an infra red remote control, but it's not as slim as the credit card-sized VideoLogic device.

The overall sound quality is disappointing, with the subwoofer tending to distort terribly when the volume is increased.



▲ THE VOLUME ON VIDEOLOGIC'S DIGITHEATRE NEEDS SOME PLAYING WITH, BUT THE RESULT IS WORTH IT

This is somewhat

surprising, since the subwoofer is so large and the casing is very heavy and solid. Also, the centre volume has to be turned up to maximum to hear any dialogue, at which point it tends to bleed into the front channels. Watching any action scenes resulted in loud distortion, with subtle directional effects completely lost. Altec Lansing has a pretty strong reputation in the PC speaker market, so this latest surround sound set comes as quite a surprise. But with the omission of a centre channel, Altec Lansing was never really serious about Dolby Digital.

If you're looking for a full Dolby Digital setup for your PC, the VideoLogic DigiTheatre is the definitive choice. It may cost £50 more than the Altec Lansing set, but it's money well spent.

RIYAD EMERAN



◀ THE SUBWOOFER ON THE ALTEC LANSING ADA880 SYSTEM TENDED TO DISTORT AT HIGH VOLUMES

## PCW DETAILS

★★★★★

**VIDEOLOGIC DIGITHEATRE**

Price £250 (£206.25ex VAT)

Contact VideoLogic 01923 277 488

[www.videologic.co.uk](http://www.videologic.co.uk)

★★★★

**ALTEC LANSING ADA880**

Price £200 (£165ex VAT)

Contact Altec Lansing 01603 660985

[www.alteclansing.com](http://www.alteclansing.com)





# Lexmark Z31 Jetprinter

A mid-range colour printer for the home that is **easy to set up** and use, and is good value for money.

The Z31 completes Lexmark's new range of inkjet printers, slotting neatly between the high-end Z51 and budget Z11 models. In common with the others, it boasts a resolution of 1,200x1,200dpi, which for a few days made it the highest-resolution printer on the market – before the launch of HP's DeskJet 970Cxi.

A lot of thought has gone into the Z31's usability: the printer driver features Lexmark's characteristic ink-level monitor and spoken warnings about paper reserves, and installation is a one-click operation.

In tests it was fast, producing five standard-quality pages of a business letter in

just two minutes and 17 seconds. On photocopy paper this had crisp edges – and even characters written in four-point type were easily legible. However, the white background of an embedded greyscale signature was spattered with cyan dots in all print-quality settings.

Business graphics reproduced well, with a well-presented white hairline running through a solid black area – traditionally difficult to achieve.

Colours were vibrant and realistic, and it printed our A4 photograph at

'high' quality on Lexmark's photo paper in 9min 8sec. This was a little dark, particularly on skin tones, and

remained tacky for over 20 minutes after printing had finished. Drops were clearly visible in lighter yellow areas but we were pleased to see that there was no bleeding of ink where darker and lighter colours shared a common border.

Overall, the Z31 performed well, with slight imperfections, but at less than £150 all-in it's good value for money.

NIK RAWLINSON



## PCW DETAILS



**Price** £149 (£126.80 ex VAT)

**Contact** Lexmark 01628 481500

[www.lexmark.co.uk](http://www.lexmark.co.uk)

**Good points** Competitive price, good text quality

**Bad points** Photo reproduction is slightly dark and grainy

**Conclusion** Good for home users who are predominantly printing text

# Samsung ML6100

A **capable printer** that is fast and accurate enough to earn a place in the home or small office.

Samsung's ML6100 would sit well in any home, but is also capable enough to cope with most of the tasks in an office environment. In our tests it consistently produced 10 pages of text at five per cent coverage, making it ideal for this sort of use.

Solid blocks of black text were deep and well produced, with very even toner coverage. Curves and

45-degree

diagonal lines were also well rendered, with smooth edges and no undesirable jagged rasterisation. This is important when it comes to printing large characters, and it paid off, as the interior edges of oversized letters were smooth and well rounded. At the same time, text that was written as small as two-point remained well defined and was clearly readable.

The ML6100 managed to print 13 shades of grey between five per cent and 100 per cent intensity to a standard at which the naked eye could detect differences between eight of the shades, which is not bad, although it could be better.

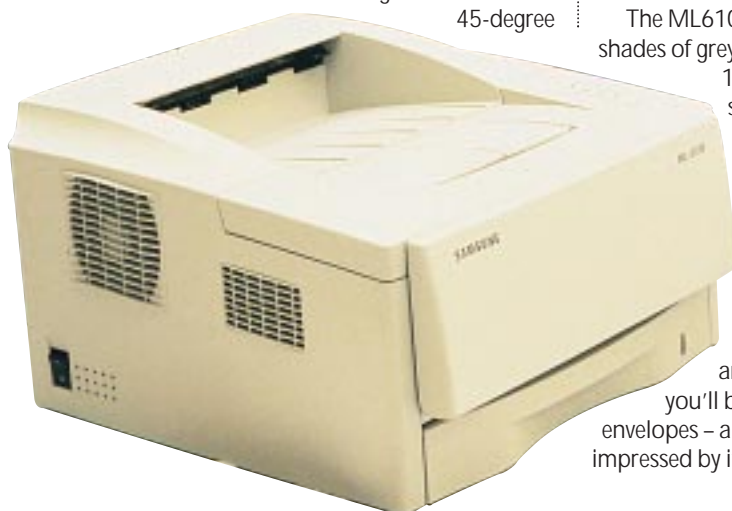
There was some evidence of toner cracking when we creased a printed area – so bear this in mind if

you'll be folding letters for envelopes – and while we were impressed by its textual performance

there was a lack of definition in images. Hair and grass were poorly rendered and rather than being characterised by clear dark/light contrasts they had an overall grey appearance.

The ML6100 has excellent paper-handling abilities. We passed the same sheet through twice and on each occasion printed the same test pattern. By the end of the second run the two were an almost perfect match – an impressive feat for any printer.

NIK RAWLINSON



## PCW DETAILS



**Price** £645.08 (£549 ex VAT)

**Contact** Samsung 0181 391 0168

[www.samsungelectronics.co.uk](http://www.samsungelectronics.co.uk)

**Good points** Text reproduction, speedy performance

**Bad points** Disappointing graphics

**Conclusion** A worthy buy for the home or small office

# Kyocera FS-1200

A laser printer offering **fast results** at a price home users can afford.

Entry-level laser printers are difficult to target at a specific market. Home users are attracted to cheaper inkjet printers that provide colour output, while offices usually opt for more expensive printers with higher page-per-minute (ppm) speeds. Kyocera's FS-1200 aims to bridge this gap, promising 12ppm printing at a price that home users can contemplate.

It offers a maximum print resolution of 600dpi and we were impressed by the print quality. It produced rich, sharp black lines and text, though when we set it loose on greyscale images it didn't fare as well, but these aren't really what you buy a laser printer for. There was also some minor banding visible on an all-black page, and when the paper was folded the ink cracked easily.

Print speeds came close to the claimed 12ppm at 9.23ppm, but home users who only print a couple of pages at

a time should note that the claimed time to first page is 15 seconds, which is quite a while to wait for a single page. Speeds for graphics are significantly slower at 4.71ppm.

The FS-1200 comes with 4MB of RAM as standard, but you have the option to expand this up to 68MB for improved spooling. Other optional extras include: a 10/100BaseT Ethernet card to allow you to network the FS-1200; various additional paper trays, to up the capacity from an already large 350 pages and a duplexing unit to enable double-sided printing.

The key selling point for the FS-1200 is the ECOSYS cartridge-free technology used to print pages. This helps to keep printing costs to a minimum with each page setting you back less than a third of a penny – a real bonus in both the home and office.

URSULA TOLAINI



## PCW DETAILS

★★★★★

**Price** £599 (£510 ex VAT)

**Contact** Kyocera 0118 931 1500

[www.kyocera.co.uk](http://www.kyocera.co.uk)

**System requirements** Windows 95/98/NT, free parallel port

**Good points** Low running costs, fast print speed

**Bad points** Slow time to print first page, some cracking and banding on all-black printouts

**Conclusion** The FS-1200 is a good value option if you print out lots of black and white pages, and the costs don't rise when you look at the price of keeping it running

# Lexmark Optra T614n

A revamped machine for SMEs and workgroups that retains its **good looks** and is fast to boot.

Lexmark is currently updating its entire Optra range, and we took a first look at a model aimed at SMEs and the workgroup environment, the Optra T614n. Maintaining the unusual design of the previous machines, this printer comes with a 10/100BaseT Ethernet port for your network and 16MB of RAM as standard.

The monochrome laser performed fairly well in our tests, managing a time to first page of 11 seconds. As you would expect, it was strongest when printing text rather than graphics and it managed to churn out a healthy 22 pages per minute. It supports both PCL 6 and PostScript Level 3. It also comes

with a 500-page tray as standard, and Lexmark has a large range of paper-management options which can be chosen as extras, such as additional trays, paper stackers and sorters.

We found the printer easy to set up: you can assign an IP address manually or use DHCP to do it automatically. Management options are also solid – you can either point your web browser at the printer's IP address or use Lexmark's MarkVision software. The advantage of using a browser is that you can use any computer that has one installed to manage the printer. However, this method is not as powerful or easy to use as the MarkVision software, which automatically searches for printers across your network – although we

encountered a few problems and ended up installing our printer manually. You can restrict the various options on the control panel, assign IP addresses and even lock people out entirely. The software will also issue warnings when toner is low, if you choose.

Overall, this is a good package, combining speed and quality with decent management.

JASON JENKINS



## PCW DETAILS

★★★★★

**Price** £2,231.33 (£1,899 ex VAT), 10,000-page cartridge £167.25 (£142.34 ex VAT)

**Contact** Lexmark 01628 481500

[www.lexmark.co.uk](http://www.lexmark.co.uk)

**Good points** Fast print speed, good quality for text

**Bad points** Slight problem using management software

**Conclusion** A good all-round printer that would make a great buy for the office



# HP Scanjet 6390C

A high-end scanner that is **lightning-fast**, with a huge selection of bundled software.

**T**his high-end scanner from Hewlett-Packard has an optical resolution of 1,200dpi, and most of the extras that you could ever want. It comes with a 25-page document feeder and a 127x127mm transparency adaptor, which is activated by changing a setting in the supplied TWAIN software.

Both USB and SCSI interfaces are situated on the back and a PCI SCSI card is also included if you can't or don't want to use the USB port.

In our tests, the 6390C performed reasonably well, and it was up there with

the best from the scanner group test in our November issue. It's fast, too, managing to scan an A4 target in 34 seconds, and a photo measuring 255x178mm in 27 seconds.

Colour accuracy was good, as was text and picture quality, but it didn't quite match the top three in our last group test. This was a little disappointing as, although it did perform well, we expected the higher price to hint at higher performance.

Having said that, the system was very easy to set up, with both the drivers and the software being installed through a single program that included a video

guide on how to set up your scanner.

A five-button front panel – including scan, copy, email, fax, and file functions – allows you to send images and documents electronically. There's also plenty of bundled software, including Adobe Photoshop 5.0, Adobe PhotoDeluxe Business edition 1.1 and Caere PageKeeper Standard 3.0.

JASON JENKINS



## PCW DETAILS

★★★★★

**Price** £649 (£552.34 ex VAT)

**Contact** HP 0990 47 47 47

[www.hp.com](http://www.hp.com)

**Good points** High optical resolution, transparency adaptor, document feeder

**Bad points** High cost, performance could be slightly better

**Conclusion** If you want Photoshop and a scanner this is a good deal. If you just want a scanner, there are cheaper options

# lomega ZipCD

A CD-RW that's practical **not sexy**.

**L**omega has a reputation for producing innovative, sleek, sexy devices that scream 'Buy me, buy me now!' and to be honest an internal CD-RW is never going to have that appeal. The technology has been around for long enough that there is little to differentiate the drives on the market, other than price. If it were an external model (or blue) then lomega could have made it stand out from the crowd, but as it is, it just blends in quietly. Unfortunately for lomega, we expect more from it than just following the market. That said, it is a good product that performs well.

The drive offers four-speed record and rewrite and 24-speed read. In the box you'll find a large selection of bundled software, including a copy of Adaptec's EasyCD Creator mastering software, as well as DirectCD, which turns a CD-RW into a 'big floppy'. Also included is lomega's nifty QuikSync automatic backup software, Avery CD labeller software and a copy of Adobe Photoshop LE.

There is little to set this drive apart from other CD-RWs in terms of performance – at the end of the day they all write CDs. However, the software bundle is good and, more importantly, appropriate.

lomega has decided to make its move into the CD-RW market by dipping its toe gingerly into the water. If the internal ZipCD is a success, hopefully the company will take the plunge and add some of its inimitable style. Curiously, in the setup program there is a picture of a stylish little purple device that looks like it could be an external model. Whether this is just a teaser or not, only time will tell.

WILL HEAD



## PCW DETAILS

★★★★★

**Price** £189 (£160.85 ex VAT)

**Contact** lomega 0800 973194

[www.lomega.com](http://www.lomega.com)

**Good points** Good software bundle, good value for money

**Bad points** Looks a little conservative alongside its brothers and sisters

**Conclusion** We can't really fault it, but we did expect more from lomega

# Drumbeat 2000

Macromedia's website design package gets you right inside the pages **without the code crunching.**

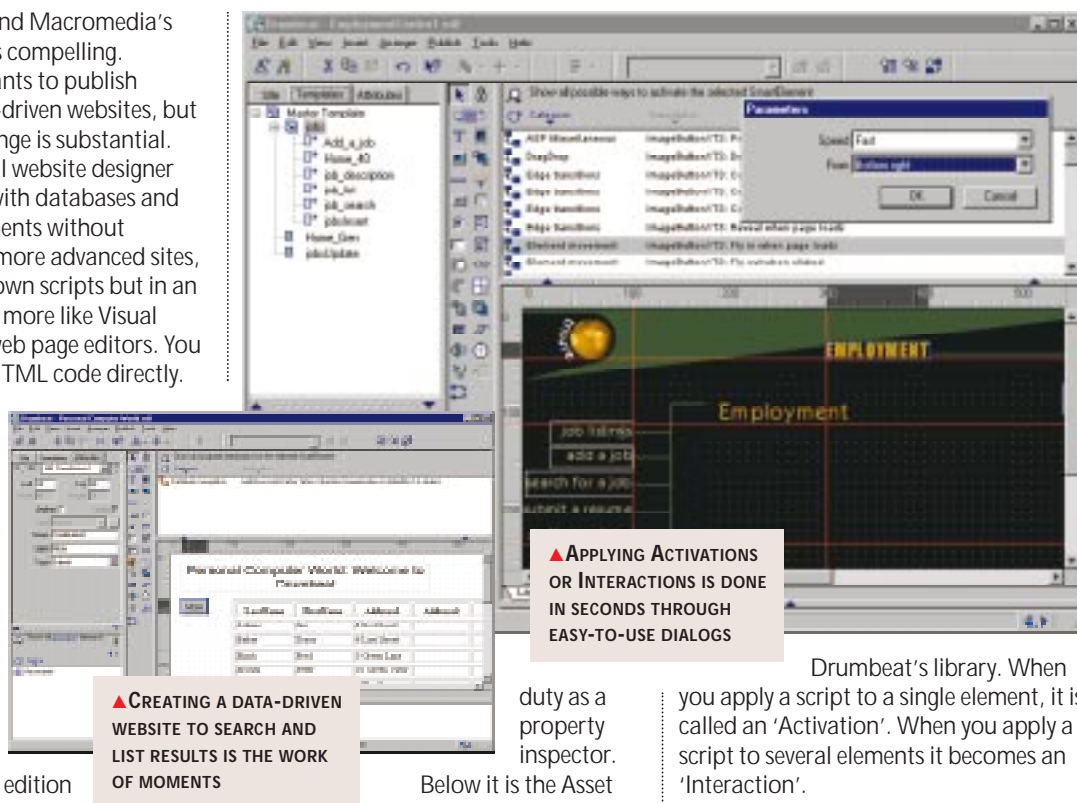
The idea behind Macromedia's Drumbeat is compelling. Everyone wants to publish dynamic, database-driven websites, but the technical challenge is substantial. Drumbeat is a visual website designer that lets you work with databases and other dynamic elements without programming. For more advanced sites, you can write your own scripts but in an environment that is more like Visual Basic than typical web page editors. You never have to edit HTML code directly.

Drumbeat also handles the task of browser compatibility, making it easy to specify which browsers you want to support and to create alternative pages for browsers that lack certain features.

The eCommerce edition offers a simple route to creating sites for online shopping. It sounds great, but the danger with this tool is that hiding the code makes it difficult for developers to fix problems or get the functionality they want.

**Drumbeat was originally developed** by Elemental Software as a tool for Netscape's Livewire, server-side Javascript on Netscape web servers. Elemental was acquired by Macromedia, and Drumbeat is now offered in two versions. One is for ASP (Active Server Pages), a feature of Microsoft's Internet Information Server and Personal Web Server, while the other is for Java Server Pages running on IBM's WebSphere and accessing DB2 data. We reviewed the ASP version.

The Drumbeat development environment is built around a visual page designer with layout and preview tabs. Surrounding the page are several other tools. The Site Management area lets you navigate the pages and templates in the site and, via an Attributes tab, also does



***Drumbeat makes it easy to specify browsers you want to support***

Below it is the Asset Center: a toolbox which lists all the available elements such as images, database queries and code snippets, most of which can be inserted on a page via drag-and-drop. Sandwiched between these areas and the page itself is the SmartElement toolbar, not really a toolbar but a palette of selected items from the Asset Center.

Finally there are Attic and Basement, areas above and below the page. The attic is where you find the script editor, with drag-and-drop scripting assistance. The attic also lets you view content

duty as a property inspector.

tables such as database query results. The Basement is used to show the presence of

non-visual components such as database recordsets.

**Drumbeat is full of jargon** and it pays to learn it quickly. A 'SmartElement' is any self-contained element that you can place on a web page, from basic HTML text and images to Java applets, plug-in content and ActiveX controls. A 'Contract' is a pre-written script from

Drumbeat's library. When you apply a script to a single element, it is called an 'Activation'. When you apply a script to several elements it becomes an 'Interaction'.

For example, imagine you have a list box and a button on a page. When the button is clicked, you want to go to the URL represented by the current item in the list box. If you select both elements, right-click and choose Possible Interactions, Drumbeat shows 'Go to list value' as one of them and you can apply it with a double-click. What happens is that Drumbeat applies a pre-written script to the button's onClick event and by choosing Edit contract you can see and modify the detail of what happens.

**Database work begins** with an ODBC data source. Once set up, you can use Drumbeat's Query Manager to define a query, based on the chosen source.

From the query you create a content table, which becomes the data source for a Drumbeat Recordset object. You can then bind elements such as HTML tables and edit boxes to the Recordset.

Drumbeat's AutoTable is a handy element for displaying a grid of query results and you can define how many rows are presented at a time. Adding buttons to display the next or previous set of results is a simple Drumbeat interaction. Searches are easily



implemented using queries that take parameters. To get you started, there is a DataForm wizard that sets up a database connection and creates pages for searching, viewing results, and updating a specified database.

The database facilities in Drumbeat are extensive, well beyond the database wizards in packages such as FrontPage or FileMaker Pro. For example, Drumbeat understands the need for validation before updating data, and there are numerous Drumbeat contracts available to meet typical requirements.

For recordsets, you can specify the cursor type and location, and choose between different locking options. There is support for Microsoft Transaction Server, but a major irritation is the lack of

The system is not perfect as, for some reason, Drumbeat is happy to have ActiveX controls on pages targeting Netscape Navigator, but it takes some of the pain of cross-browser support away.

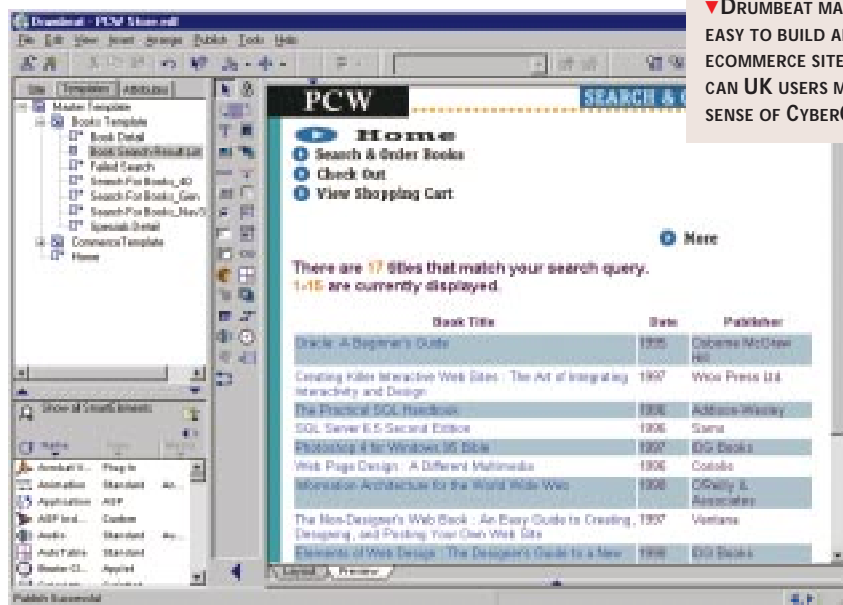
**The eCommerce edition** of Drumbeat offers an example site together with an extensive library of interactions useful for building web-shopping sites. If you are happy with the Drumbeat model, you could quickly be up and running with an online store. Note that you are likely to run into problems with the payment processing aspect, as the documentation and scripts assume you are based in the US and want to link with CyberCash. If this doesn't apply to you, these scripts will need modifying

template from one Drumbeat installation to another.

However, there are some partial solutions. You can include external pages in a Drumbeat project, which are left alone, and you can insert HTML snippets that Drumbeat will not touch. It is not ideal though, and will put off developers who like to fine-tune their web pages.

A related problem is that debugging Drumbeat scripts is hard. To achieve code re-use, most of Drumbeat's code is in Javascript libraries, so at runtime, if an error occurs, it is reported as being in the library code. The real error, though, is usually in the parameters passed to that library, but there's no quick way to discover what these parameters are, or which page they're from.

Drumbeat has no debugging facilities. It is standard ASP and Javascript though, so you can use other tools to trace through what is going wrong on the generated site, and return to Drumbeat to fix it.



support for native OLEDB drivers, particularly as Microsoft has produced good ones for both SQL Server and Access. Drumbeat always uses ODBC.

**Most people will look at Drumbeat** solely for its database features, but its cross-browser support and template use is also worth investigating. Drumbeat templates are powerful because they support inheritance. You can put your company logo on the master template, and it appears on every page in the site. If you later revise the logo, every page is automatically updated.

For cross-browser support, right-click a page and choose 'Convert to SmartPage'. A 'SmartPage' behaves as a single page in the site structure, but lets you create custom versions for different browsers. At runtime browsers are redirected accordingly. In the layout, incompatible elements are highlighted in red.

accordingly. Macromedia should repackage the eCommerce edition with scripts customised for the UK if it really wants to offer something useful.

#### ■ Drumbeat internals

Although it looks like a web page designer, Drumbeat projects are not stored as HTML or ASP pages. Sites are stored in Drumbeat databases with a .edf extension. When you publish the site, Drumbeat processes the data and outputs HTML, ASP and Javascript for publishing. This is code generation, and the classic problem with it is that you cannot easily edit the output.

If you modify a Drumbeat ASP page, the changes will get overwritten next time the code is generated. So it is difficult to integrate Drumbeat with other ASP tools such as Microsoft's Visual Interdev. Team development is not supported, and there is no facility to export a

#### ■ Evaluating Drumbeat

Drumbeat gives you a clever IDE and an extensive library of re-usable scripts which you can assemble together with point-and-click techniques. If you can get the result you want quickly, it's a great tool and easier to use than rival products.

The downside is that getting inside the black box isn't as easy as it should be. The development environment was slow – background code generation ate processor time, even on a well-specified PC.

TIM ANDERSON

## PCW DETAILS



**Price** Drumbeat 2000 ASP or JSP  
£410.01 (£349 ex VAT)  
eCommerce edition £468.83  
(£399 ex VAT)

**Contact** Macromedia 0181 358 5857  
[www.macromedia.com](http://www.macromedia.com)

**System requirements** 200MHz  
Pentium with Windows 95, 98 or NT,  
64MB RAM (128MB for deployment),  
60MB hard disk space, ASP-compatible  
web server

**Good points** Rapid development, strong  
database integration, cross-browser  
support, extensive script library, template  
system

**Bad points** Sluggish IDE, confusing  
jargon, no debugging features, no support  
for native OLEDB drivers, no UK-specific  
customisation in eCommerce product

**Conclusion** Full of good ideas but not yet  
a mature product. It's being difficult for  
the non-technical and frustrating for  
programmers

# IBM Microdrive

Removable media with a tiny form factor, **immense storage capacity**, oh, and it's fast too. Interested?

**T**here it is, IBM's Microdrive, nestled in the palm of your hand, about the same dimensions as a book of matches and weighing all of 16g. This is no ordinary disk drive; it engenders in those seeing it for the first time a sense of unreality, disbelief almost.

It is truly a mechanical hard disk, 5mm thick, constructed on exactly the same principles as the one in your PC, with a capacity of 340MB and a platter that spins at 4,500rpm. We have seen inside one (don't try this at home!) and the engineering is reminiscent of a Rolex.

IBM has built the Microdrive to conform to the CF+ Type II standard (42.8x36.4x5mm) which specifies a slightly deeper slot than the Type I. This provides the extra elbow room required by the IBM designers to squeeze the Microdrive into life.

The drive is typically supplied with a PC Card caddy, so it will fit into a host of different devices. We tested it in a variety of digital cameras and palm-held devices, including HP's Jornada, the Casio E10, Psion's Series 7, a digital camera and a couple of IBM ThinkPads.

In all of them it

actually set to increase some time in the near future.

**The data density** of the Microdrive is 5.04Gbit/square inch. However, IBM already sells drives that store data at a higher density, so it is clear that the electro-magnetic part of this extraordinary drive is, in fact, very conservative.

In turn this makes us sure that Microdrives with capacities of 600MB and/or 1GB should be arriving very soon. That these will sell is in no doubt. Rather bizarrely, IBM released a 170MB version of the Microdrive at the same time as the 340 which is selling like stale bagels. Early adopters are always gadget freaks who go for the most impressive toy and hang the cost.

**So this drive is a great piece of engineering** and it fits into lots of hardware, but is it a truly ground-breaking device, or just another toy?

We think it really is a significant

well under way for these disks to start appearing embedded into other devices. IBM is being cagey, but mobile phones, video phones and televisions all spring to mind. Or imagine a GPS (Global Positioning System) unit stuffed full of OS quality maps.

On the subject of speed, our tests showed that the transfer rate of the Microdrive is actually better than Flash

RAM. Using an IBM 770 running NT, we dragged and dropped a variety of files to the

***We think it is a significant device that will have a huge range of applications***

Microdrive.

130 files totalling 12.8MB transferred to the Microdrive in just 11 seconds, compared with the 12 seconds it took to put them onto a 32MB Flash RAM module. A single 12MB file, meanwhile, transferred to the Microdrive in eight seconds and the same Flash RAM in 10 seconds.

**IBM claims that the drive's** very strict compliance with the CF+ standard is forcing it to perform artificially slowly: with the drive incorporated into commodity items, it will be faster – around 3MB/sec read and 2MB/sec write.

Unfortunately, at the time of writing, the Microdrive is only available in the US. However, it is scheduled to appear in digital photography retail outlets in Europe by mid-December at around £300. This is just in time for Christmas, so now's the time to start dropping hints.

MARK WHITEHORN

## PCW DETAILS



★★★★★

**Price** TBC, but expected to retail for around £300 on release.

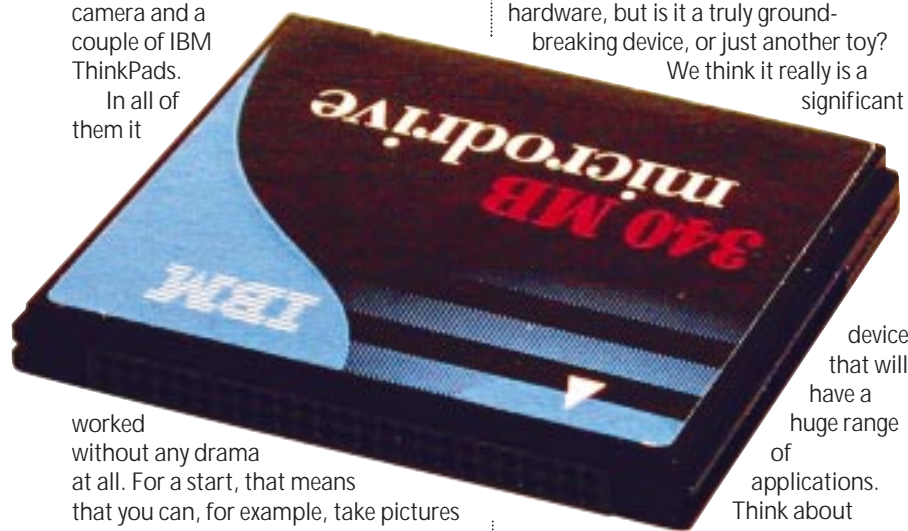
**Contact** IBM 0990 426 426

[www.storage.ibm.com](http://www.storage.ibm.com)

**Good points** A tiny device that worked perfectly in every device we tried

**Bad points** Can you make it even cheaper please, IBM?

**Conclusion** IBM's Microdrive is the new must-have for your computing armoury



worked without any drama at all. For a start, that means that you can, for example, take pictures with a digital camera, pop the Microdrive into a laptop, browse the disk from Explorer and one double-click will show the image on-screen.

And while you can do this with a Flash RAM CF+ card, what you cannot do is get 610 large, high-quality JPEG images onto it. That is the equivalent of about 17 rolls of film onto something not much bigger than an over-sized after-dinner mint. Oh, and that number is

computers for a moment. They can now have fast processors and great screens.

Companies such as IBM and Oracle have already developed serious relational database engines to run on them. The only thing that has been stopping your company's complete field-engineer's handbook from appearing on a handheld has been lack of storage space.

And it isn't just computers. Plans are

device that will have a huge range of applications. Think about hand-held



# HP SureStore DAT40

If you're **serious about protecting data** this grey box won't let you down. Back me up, Scotty!

As hard disk sizes are increasing dramatically, it's good to see backup tape drives keeping up. The DAT40 uses the latest DAT DDS-4 technology and offers a native 20GB capacity, plus a data transfer rate (DTR) of 180MB per minute.

The external DAT40 uses the same solid HP SureStore chassis as its predecessors and the SCSI interface is now the Ultra Wide LVD (low voltage differential) variety. Along with SCSI and power cables, HP also includes a single-server version of Stac Replica backup software.

The drive still uses helical scanning technology to write data in diagonal stripes across the tape and it's fully

backward compatible with all DDS formats. The 4mm tapes have been increased in length from 125m to 150m and offer low storage costs of only 0.12 pence per megabyte.

With the DAT40 connected to a dual PIII 450MHz Dell PowerEdge 1300 server we saw an impressive performance.

Using Computer Associates' ARCserveIT and Veritas Backup Exec software under Windows NT, the drive secured a 6GB mixture of data at an average of 186MB/sec and 196MB/sec respectively. Verification and restoration were equally impressive as the average DTR never dropped below 180MB/sec.



Teamed up with Stac Replica, the DAT40 offers a unique disaster recovery option as it can emulate a bootable CD-ROM drive. With a Replica tape image loaded, you can boot the server from the tape drive and recover the entire hard disk in one simple operation.

DAVE MITCHELL

## PCW DETAILS



★★★★★

**Price** £1,246 (£1,061 ex VAT)

**Contact** Hewlett-Packard 0990 474747 [www.hp.com](http://www.hp.com)

**Good points** Fast with good back-up capacity plus unique disaster recovery

**Bad points** Costs more than the hard disks it will be protecting

**Conclusion** The DAT40 is a top backup choice for small to medium-sized servers. It offers a vast improvement over DAT-DDS3 technology with fast transfer rates, high storage capacity and excellent disaster recovery features

# VideoLogic HomeC@m

Put yourself in the picture and onto the web with this stylish cam that won't clutter your desk.

With a maximum resolution of 640x480, the HomeC@m is perfect for Internet video-conferencing or setting up a webcam on your home page. Its sleek good looks also mean it will fit well in most environments – even the home.

Installation should cause no problems. It's a USB device, so as long as you've got a free port and Windows 95 OSR2 or above you'll be on your way in minutes. The USB port also provides its power requirements, so you won't end up with a power brick on your desk. However, a supplied extra lead is a necessary addition that plugs

into your sound card – the HomeC@m provides sound as well as pictures, eliminating the need for a separate mic. The leads are 1.8m long, so there's no need to have the camera in its traditional monitor-top location if somewhere else would be more convenient.



The bundled SpyCam software makes setting up a web cam easy. Simple configuration screens let you specify FTP locations for your uploaded files and preview what your

viewers will see. Using the webcam over a dial-up connection is just as easy as a LAN, and the SpyCam software includes a 'keep alive' feature so that your line is not dropped between each still being uploaded. You can also append a customised caption so your site visitors know what they are looking at and when the image was last updated.

All in all, the HomeC@m is a tidy little product that will competently serve both the first timer or more experienced web broadcaster.

NIK RAWLINSON

## PCW DETAILS

★★★★★

**Price** £69.99 (£59.57 ex VAT)

**Contact** VideoLogic 01923 260511 [www.videologic.co.uk](http://www.videologic.co.uk)

**Good points** Integrates sound capture, USB connection for easy installation

**Bad points** Higher resolutions are just around the corner

**Conclusion** A good all-round buy

# Adobe Photoshop 5.0 LE

Powerful, **industry-standard**, image-manipulation software for the price of a few games.



▲ PHOTOSHOP'S BEEN STRIPPED DOWN, BUT HARDLY TO THE BARE ESSENTIALS. IT STILL HAS SOME POWERFUL TOOLS

Photoshop is well established as the premium photo and image-manipulation package in use today. Its flexible handling of layers and plug ins ensured its wide acceptance for use with printed media. The latest revision, version 5.5 takes this one step further, with the integration of Image Ready 2.0, Adobe's web graphics optimisation tool.

Not everyone needs such powerful features, though, and it's for that reason that Adobe has been shipping a stripped-down version, Photoshop LE, for some years now. Version 5.0, the latest, was bundled with GoLive but this is the first time it has been available as a standalone product.

***It's familiar look and feel means it also sits well within the Adobe fold***

Photoshop LE is designed to sit between Photoshop 5.5 and PhotoDeluxe. We've already taken an in-depth look at 5.5, so what has Adobe stripped out for LE? Well, for a start, Image Ready 2.0 is out, but with so many image-optimisation and JavaScript tools available, either for free or as shareware, this should not put you off. It has also lost its support for colour separations, but again these would only really be of relevance to a high-end user. There is only one level of 'undo' and no batch processing, but apart from that it

contains everything a home or office user could need. Its familiar look and feel means it also sits well within the Adobe fold, and it should feel familiar to those who have had some experience of Illustrator, PageMaker or InDesign.

It can handle all of the regular Photoshop plug-ins, so if you invest in something like Kai's Power Tools you can take it with you if you choose to upgrade. It also works as a layers-based system, just like the full product. Up to 99 individual layers can be manipulated

independently for maximum flexibility.

By using layers rather than dumping every picture

element in the same place, you'll find your working time is cut dramatically as each element can be dragged around without moving the rest of the image, and the stacking order can be changed so that they appear in front of or behind the other items. Each layer also has an independently-adjustable opacity setting, which is useful for creating watermark effects.

Photoshop can help deliver impressive effects for websites – how about creating a mask with your site name or URL and dropping a texture or

image behind it for the title banner? Achieving this is a simple matter of typing the characters you want, selecting the texture you're after, dragging one onto the other and linking the layers. The only parts of the texture now visible will be those peeping through the letters of your text. In the past this could have taken a lot of time, but with Photoshop LE the same effect is achieved with just half a dozen clicks of the mouse.

While Photoshop LE is undoubtedly powerful, and is probably the most powerful package you're going to find at this price, it is also fairly simple to use. A reference card is supplied and can be kept close at hand to save you turning to the manual, and LE itself includes some neat touches such as a variation tool. Found in many similar packages, this allows you to adjust the

saturation, colour or hues of your images simply by clicking on similar, but slightly-altered duplicates of your original. The more you click, the more pronounced your changes will be.

What you won't find in many competing packages, though, is the magnetic selection tool that lets you trace your mouse around the edge of an object that sharply contrasts against the background and trust Photoshop to define the clipping path on your behalf.

In all, this is an excellent package, worthy of bearing the Photoshop name. For users who either cannot afford or don't think they'll use every feature of Photoshop 5.5 it is a worthy purchase.

NIK RAWLINSON

## PCW DETAILS



★★★★★

Price £76.38 (£65 ex VAT)

Contact Adobe Systems

0181 606 4001

[www.adobe.co.uk](http://www.adobe.co.uk)

**System requirements:** Pentium PC, Windows 95/NT4, 16MB of RAM (32MB of RAM for NT), 40MB hard-drive space, 256-colour graphics card and monitor, CD-ROM drive

**Good points** Feels like the original, very powerful

**Bad points** Only one level of undo

**Conclusion** Unbeatable at this price



# Novell NDS NT

A network product that **saves time and administration** while making it easier for users to access data.

**Y**ears before Microsoft had created large amounts of hype around its Active Directory, Novell had already introduced its NDS (Novell Directory Services) inside NetWare 4.

The idea is simple, but amazingly flexible; create a single storage area – a directory – for all of your management, whether this be users or hardware. Then using this directory you can manage everything from wherever you are and everything on your network references this common store.

While NDS is undoubtedly brilliant, in its base state it only allows you to manage NetWare servers and not NT. Novell rectified this by releasing NDS for NT, the latest version of which we have on review here.

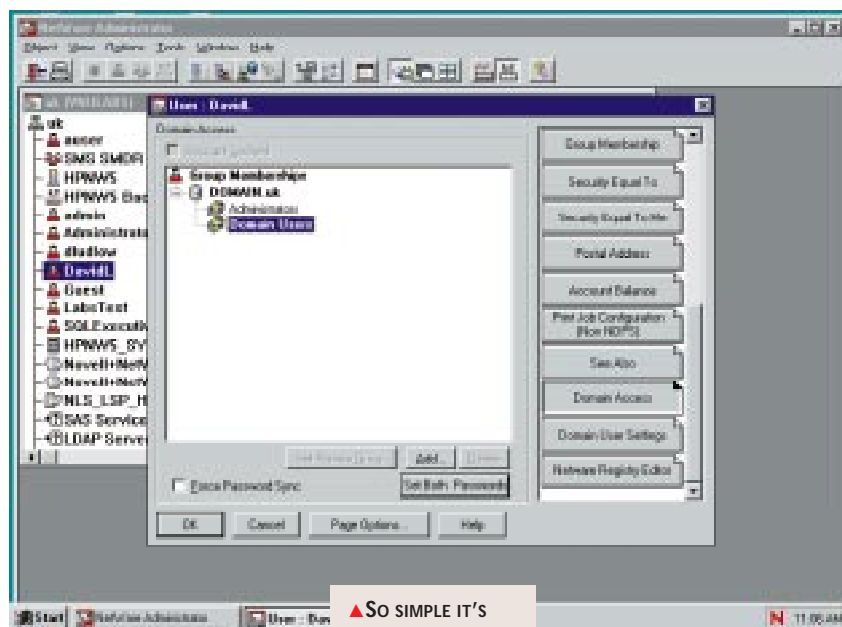
**The first thing to be aware of** is that NDS for NT is not a free-standing product. It simply adds to what NDS can offer and thus requires that you have a NetWare server – version 4.11 or higher – sitting on your network as well. Once you meet this requirement you are ready to begin the installation proper. For this to work you need to have logged on using the Admin account so that you extend the NDS schema and add the Domain objects into an NDS tree.

Starting from your Primary Domain Controller (PDC), and moving onto the Backup Domain Controllers (BDC), the installation procedure then creates all of the Domain objects, such as users, in NDS and it's as simple as that.

From this point on you are free to manage the Domain using just the NetWare administrator, from wherever you may be. It really is an impressive piece of software.

As part of our tests, we created a new user inside the NetWare administrator which, as you would expect, gives that user rights to access certain NetWare servers. Normally, should you want to then allow this user access to an NT Domain, you would have to walk over to your PDC and then create yet another new user.

Now, thanks to NDS all you need do is use the NetWare administrator, select



▲ SO SIMPLE IT'S  
OBVIOUS –  
EVERYONE USES THE  
SAME DIRECTORY

a Domain, and add any existing NetWare user into it. You can even administer Domain user groups.

Immediately you've cut down the amount of administration you have to do, and the number of accounts people have to have in order to get access to all of the relevant network resources.

**The clever thing about** the way the system works is that you don't even need to learn how to use the NetWare tools. Creating a new user, using the NT User Manager, creates that user as an NDS object, transparently to the operator.

If you thought that this was it, then think again. NDS for NT will also allow you to easily create new network shares at the touch of a button, and to run such programs as server manager.

**It's very hard to say anything bad** about the product. After all it cuts down the amount of administration that needs to be done, making everything a lot easier in the process.

Using Windows NT without NDS means that you simply can't get an overall picture of all the resources to which a user has access. Install NDS and

you're laughing; each user has just the one account, which you can look at to see

which resources they can access. From the users' point of view it's great, as they then need only the one user name/password combination to get at anything on the network.

If you have a NetWare server sitting on your NT network, then take our advice and rush out to buy this product. If you're not running NetWare, then the benefits gained from this product may make it worth your while getting hold of one.

DAVID LUDLOW

## PCW DETAILS



★★★★★

**Price** Server £510.39  
(£510.39 ex VAT) Clients  
from £95.47 (£81.25 ex VAT)  
**Contact** Novell (01344) 724100  
[www.novell.co.uk](http://www.novell.co.uk)

**System requirements** NT Server 4.0  
with Service Pack 3 or NT 3.51 with  
Service Pack 5, 32MB of RAM (64MB  
recommended), 90MB of available disk  
space, NetWare 4.11 server or higher

**Good points** Simplifies overall network  
management, makes NT Domains easier  
to control

**Bad points** Needs a NetWare server to  
work

**Conclusion** A great product that takes  
managing an NT network to the next level



# Sealed cases vs upgradability

With the advent of the **potentially ubiquitous USB** should the public get what the public want?

**T**his may sound a strange subject for a *Head to Head*, but surely everyone knows that a PC should have a case you can open and poke around inside, right? Wrong. The way things are going, many manufacturers are looking at ways of keeping your fingers out of their precious boxes. Some would claim this is just so they can charge you to upgrade it themselves, but it's actually part of an industry push that is just a logical step on from the 'PCxx' standard. The latest – PC99 – sets out to eliminate ISA cards, leaving PCI as the only option for internal expansion, but in years to come we can expect the changes to be far more radical.

Abolishing ISA may seem a drastic step. After all, what are you going to do with all those ISA cards you still use? Unfortunately, the answer would be that you're going to have to get rid of them,

but then very few cards come in an ISA format any more. Even modems and sound cards, traditionally the mainstay of the ISA market, are now almost entirely PCI devices.

The chances are, if you're still using the ISA alternative your card is ready for an upgrade anyway. Increasingly, the only card you'll find in an ISA format these days is a network card, and even these are disappearing as network connectivity is integrated onto the motherboard. Many home networking products still arrive in an ISA format, but for this growing market to continue to expand, manufacturers are going to have to change tack or risk losing out.

**Sealed cases** are nothing new. Chances are even if you don't own a laptop yourself you'll at least know someone who does. Try asking them when they

last opened it up to fiddle with the insides. We'd give you good odds the answer is 'never'. Of course, it's possible to swap out the processor and boost the memory of a notebook, but this is usually done at the time of purchase and, in the unlikely event you'll want to change it after that, you'll either be sending it back or getting a professional to do it for you.

What makes this a practical possibility is the way a notebook is built. Around the edges and sides you'll find a plethora of ports and slots for network connection, USB devices and PC Cards. In short, there's very little need to open it up. Want to upgrade your notebook's hard drive? Simple – just plug in a Calluna PC Card hard drive. Not on the network and need to be? Just slip in a PC Card NIC, or a PC Card modem if you need to use Internet email. Although it is



possible to get PC Card adaptors for vacant drive bays, the form factor has never quite taken off in the desktop PC, which is a shame as it is one of the most versatile, easy-to-use and widely accepted device forms.

So if we've put up with it for years on our laps, what makes you think we can't do the same on our desks? The die-hard techies are unlikely to welcome the prospect, but for the vast

majority of new users it will make PCs less daunting, easier to use and, even more attractive.

This process of removing legacy components from computers has been dubbed the Easy PC Initiative.

Although we have yet to see the first commercially available Easy PC computer, peripheral manufacturers are already thinking about how they will fit into this brave new world. Canon, Epson and Hewlett-Packard are already making a few USB-only devices, most notably scanners, and many printer manufacturers are adapting their range to talk to PCs through either the standard parallel interface or USB.

**One system manufacturer**, though, has proved that the Easy PC Initiative is a viable proposition. With the launch of the iMac, Apple proved you don't need a case that your users can poke around inside. Nor do you need legacy components. Removable storage was, well... removed. Connectivity was built in, and the only way of connecting a printer was through the USB port. Apple also made it look more attractive by dumping the putty colour of regular computers and adopting the now familiar, but then radical, fruity colour scheme.

Apple must be applauded. In doing this it has done far more than any PC vendor to drive forward the adoption of new technologies. USB was becoming something of a joke before the iMac, but now peripheral manufacturers are realising that if they want to sell to the widest audience possible they are going to have to make USB variants of their regular product lines.

The advantage of this over the old way of working is the simplified installation. It's no longer necessary to open the case and slot things in, or to work out which port you should be using for which device – everything plugs into the same place and can be daisy-chained

one after the other. This would never have happened if we had stuck with standard designs.

**But what is the one upgrade** you perform more than any other? It's one you do so often you probably don't even realise you're doing. In fact, in the past

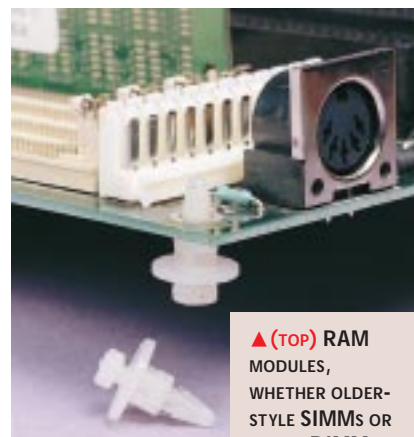
month you've probably done it a dozen times already: You've upgraded your storage. Every time you use a

floppy disk you are upgrading your storage by almost 1.5MB. Use a Zip disk and it's a minimum of 100MB. Easy PC-compliant machines will not have removable drives, so in this area the upgradable putty-coloured box wins one point back. The idea is that the way we work will be so Internet-centric we will no longer need removable storage. Files will be sent from one person to another by email and archiving and storage will be onto remote servers or USB or FireWire-connected devices. Again, this is nothing new. The super-waif notebooks popping up everywhere don't have floppy drives simply because there is no room for them, and very few people are complaining.

Many notebooks make use of a form of swappable drive bay whereby the floppy and CD-ROM drives can be interchanged, sharing a common bay in the system case. Microsoft, Compaq and Intel banded together to map out the Device Bay standard. This was designed to make it easy to slot drives, satellite decoders and so forth into a regular-sized bay. Adoption of the format has been slow to say the least, but again it is something we are well used to in the world of notebooks. Once more the theory of the sealed case wins a point over regular upgradability.

**The biggest difference** has to be in looks. Ask a novice user what puts them off PCs and, after first mentioning their perceived complexity, the chances are the one thing that stops them putting one in the corner of their lounge is the way it looks. In terms of aesthetics, PCs are not consumer-friendly devices. Putty-coloured and boxy, they are ugly and bulky. In this area, Easy PC sealed boxes again have the upper hand on upgradable PCs.

***The super-waif notebooks popping up everywhere don't have floppy drives***



▲ (TOP) RAM MODULES, WHETHER OLDER-STYLE SIMMs OR NEWER DIMMs, SHOULD BE EASY TO SLIP IN (ABOVE) SUPPORTS FOR THE MOTHERBOARD. MAKE SURE NOTHING IN THE CASE WILL OBSTRUCT THE UNDERNEATH OF THE BOARD

By removing legacy components such as the ISA bus, manufacturers are able to save on power and install more compact power supply units and smaller cooling fans. Compressing all the ports into just four USB and a handful of FireWire ports saves on space on the back panel. The MicroATX motherboard is superseded by the FlexATX, cutting its area from 9.6in square to just 7.5in by 9in. Combine these shrinkages and you have a

considerably smaller form factor that gives manufacturers the freedom to be far more

adventurous with their designs.

Anderson Design, Palo Alto Products – which played a large part in the design of the 3Com Palm devices – and Stratos which has carried out design work for Nike, Nintendo and the Apple PowerBook have all produced computer designs based on the Easy PC Initiative.

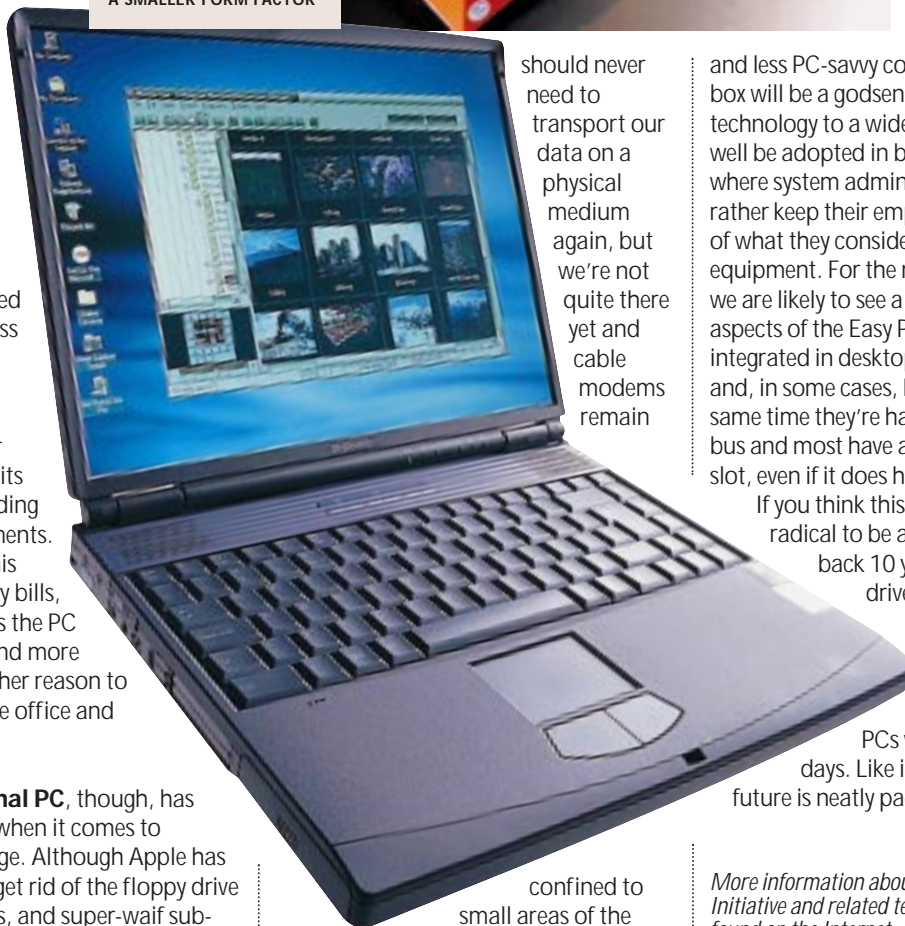
These bear more resemblance to a Teletubbie than a PC and are expected to gain wide acceptance in the home or front-of-office locations if they are released as consumer products. Conventional putty boxes are only seen in such places because there is little in the way of an alternative. Already, though, we are seeing iMacs in trendy design company receptions, on TV shows and even in pop videos.

If all this has left you wondering who really comes out on top in the sealed box versus upgradable PC battle, let's take a look at the facts. Regular PCs are built with accessibility in mind. More technical users actively look for upgrade room and how easy it is to get the back off and poke around inside. Sealed boxes, on the other hand, will appeal more to the PC novice and could help drive new technology into more homes. Each technology, therefore, has its benefits.

By shrinking the motherboard and doing away with legacy components such as the ISA bus and removable storage, the sealed box consumes less power. This, in turn, lets manufacturers integrate smaller power supply units with less demanding cooling requirements. Not only does this save on electricity bills, but it also means the PC can be smaller and more attractive – another reason to bring it out of the office and into the home.

**The conventional PC**, though, has the upper hand when it comes to removable storage. Although Apple has proved you can get rid of the floppy drive and still sell units, and super-waif sub-notebook manufacturers have followed a similar tack, many users see the loss of a floppy or other drive as a major thumbs down. Of course, the idea is that with the adoption of home networking and always-on Internet connections we

► LIQUORICE ALLSORT ANYONE? EASY PCs LOOK GOOD ENOUGH TO EAT  
▼ NOTEBOOK USERS ARE HAPPY TO SACRIFICE REMOVABLE STORAGE FOR A SMALLER FORM FACTOR



should never need to transport our data on a physical medium again, but we're not quite there yet and cable modems remain

and less PC-savvy consumer, the sealed box will be a godsend. It will open the technology to a wider market and could well be adopted in business environments where system administrators would rather keep their employees' fingers out of what they consider to be their personal equipment. For the more technical user we are likely to see a halfway house. Some aspects of the Easy PC have already been integrated in desktop PCs, such as USB and, in some cases, FireWire. But at the same time they're hanging on to the PCI bus and most have at least one free ISA slot, even if it does happen to be shared.

If you think this sounds all too radical to be accepted, then look back 10 years. Every floppy drive then took 5.25in disks, but where are they now? You'd be hard pressed to find anyone building PCs with such drives these days. Like it or lump it, the future is neatly packaged in sealed PCs.

NIK RAWLINSON

confined to small areas of the country.

The sealed box fights back with USB and FireWire. Of course, USB can be found on most desktop PCs, too, but the sealed box manufacturers claim this negates the need for a myriad of ports and

More information about the Easy PC Initiative and related technologies can be found on the Internet:

Easy PC information: [www.easypc.org](http://www.easypc.org)

Device Bay information: [www.devicebay.org](http://www.devicebay.org)

USB information: [www.usb.org](http://www.usb.org)

Anderson Design: [www.andersondesign.com](http://www.andersondesign.com)

Palo Alto Products: [www.paloaltoproducts.com](http://www.paloaltoproducts.com)

Stratos: [www.stratos.com](http://www.stratos.com)