reviews

There's good news this month for speed junkies, whether you're a home user on a budget or an IT manager looking to upgrade an overstressed server. **Three new processor lines** make their début in these pages: the 450MHz Pentium II and new, faster Celeron with onboard cache for desktop PCs, plus a mighty quad Pentium II Xeon server system that we preview. **LCD flatpanel displays** are really starting to make their mark, and prices are tumbling. So if you're considering taking the LCD plunge we have a mini round-up of three gorgeous 15in displays from Mitsubishi, Nokia and Taxan. On the software front, **web designers will be interested** in Macromedia's Flash version 3, as well as Herera's NetGraphics Studio 2. For the serious developers in the audience, Microsoft's vast Visual Studio 6 package gets the once-over. From this issue onwards we'll be featuring **software for PDAs and palmtops.** Money for the Psion Series 5 gets the ball rolling, and we'll have more Psion software as well as packages for Windows CE and other handheld operating systems in the coming months.

Contents

VNU European Labs

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

Ratings

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

Evesham Micros
Vale Platinum PII 450

Hold on to your hats – it's the fastest ever Pentium II.

PII 450: THE FASTEST PII SYSTEM YET, BUT WITH AN IDIOSYNCRATIC SPEC

This system from Evesham Micros contains one of the first 450MHz processors to roll off the production line. We're now almost halfway to the predicted 1GHz speeds that will be reached soon after the millennium. One GigaHertz, by the way, equals one thousand million cycles per second — a pretty mind-boggling figure. The new processor speed isn't the result of any particularly new technological developments, but stems from incremental improvements in production techniques, mixed with a little marketing strategy on Intel's part. The chip contains the Deschutes core that all Pentium IIs from 333MHz upwards utilise. This has proved to be extremely capable of high speeds to those who've risked overclocking them past their rated setting.

The system supplied to us by Evesham came in an impressively large tower case, as befits the processor's initial target market of power users who'll want to fit extra devices. Its height allows for four free front-panel 5.25in drive bays, plus three internal 3.5in cages. A 300W power supply lurks at the rear, which should give sufficient power even if all the bays are occupied.

Slightly surprising given the processor and the size of the case is the fact that the system is not SCSI based, sporting an EIDE hard drive and DVD-ROM drive. The hard drive itself — one of the most important components for good overall system performance — is the brand-new model from Maxtor, the DiamondMax Plus. The drive has a capacity of 10Gb, together with a spindle speed of 7200rpm, and is one of the first EIDE drives to run at this speed. The faster the disk rotates, the higher the sustained data transfer rate will be, which bodes well for performance. The average latency, which is the time taken for the disk to rotate to a given position under the read/write heads, is also reduced.

The system was rushed to us in a hurry, so we can forgive the fact that the hard drive was not properly secured and arrived dangling by its cables inside the case. To Maxtor's credit, though, the drive still worked perfectly, even though it must have taken a few knocks on the way to our Labs.

On the graphics front, the system's AGP slot was occupied by an 8Mb ATi Xpert@Play: a fairly middle-range card for this kind of system, but the 3D Rage Pro chipset is a good performer. A decent monitor is essential, so we were encouraged by the choice of a Taxan Ergovision 975 19in unit. Taxan has a good reputation for high-quality displays, but this unit seemed to have fallen foul of the rush to get it to us, either at the quality control stage or from a bash received in transit. It was obviously duff, with a very fuzzy image even at 1024x768 — a resolution that any 19in monitor should be able to handle with ease.

Overall, the configuration of this system probably isn't one that many people would want to buy; a high-end case and processor doesn't quite gel with an EIDE hard drive and home-orientated graphics card. But as a test bed for the new processor it's certainly interesting, and the all-important performance of the system didn't disappoint. As you'd expect, the Platinum II 450 was the fastest system that *PCW* has seen to date, coming home with a SYSMark score of 420. This compares with a score of 383 for the Evesham Platinum 400MHz system (see September's group test). A worthwhile performance increase for the money? Possibly; but as usual the release of a new fastest chip will inevitably mean price cuts for all speeds below it. So unless you're utterly desperate for that last ounce of performance, it always makes more sense for the power user to go for the next step down — in this case, 400MHz — to avoid that premium on the bleeding-edge line.

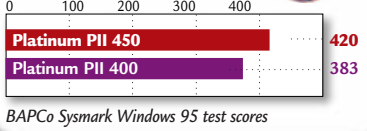
DAVID FEARON

PCW DETAILS

★★★★

Price *£2231 (£1899 ex VAT)*
Contact *Evesham 01386 769600*
www.evesham.com
Good Points *The fastest Pentium II yet.*
Bad Points *Slightly confused specification.*
Conclusion *A great showcase for the 450MHz processor, but not the right system for most people.*

PERFORMANCE RESULTS

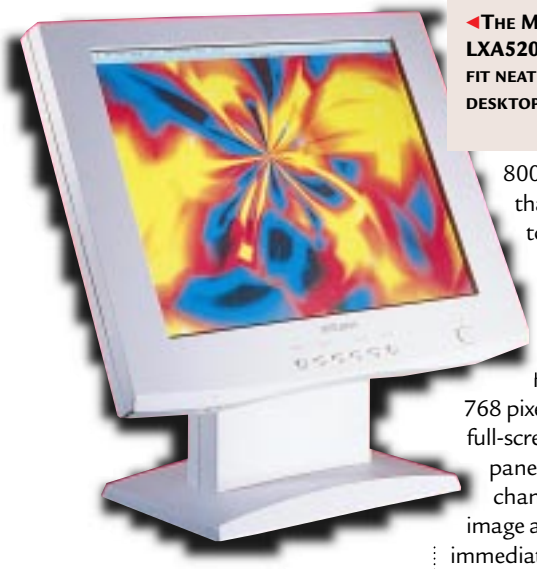


BAPCo Sysmark Windows 95 test scores

Mitsubishi/Nokia/Taxan

Good things come in threes

Who can resist flat-panel displays, with their fantastic images and cases around an inch thick? They're much cheaper than they used to be, so when Mitsubishi's 15in LXA520W, Nokia's 15.1in 500Xa and Taxan's 15.1in CrystalVision 670 all arrived at once, we just had to pitch them head to head.



◀THE MITSUBISHI LXA520W WILL FIT NEATLY ON ANY DESKTOP

The legacy of the analogue-driven display of cathode-ray tubes (CRTs) has been a major headache to the developers of flat-panel displays (FPDs). The PC's graphics circuitry, whether on a card or motherboard, converts the digital description of your operating system desktop into an analogue RGB signal. This signal, along with Horizontal and Vertical synchronising signals, is then transmitted to the FPD, whereupon the analogue data is converted back to digital in order to drive the transistors. This conversion of the signal from digital to analogue and back to digital degrades image quality unnecessarily.

The current advantage in using the RGB analogue interface lies in its established compatibility with just about every PC. However, for FPDs, this preposterous inefficiency has driven engineers to find a cheaper alternative — the Flat Panel Digital (or Display) Interface version 2 (FPDI-2), which is in its final stages of development. This is based on a system called Low Voltage Differential Signalling (LVDS), which also incorporates compression of the video data in order to make more effective use of the available bandwidth.

Of course, to make use of a display that supports LVDS you'll need a new graphics card and drivers; availability of both from major vendors is imminent. You'll then be able to enjoy the benefits of clean, crisp image displays, due to digital signals' much higher resistance to external interference, and improved brightness and contrast. However, the reduced component count stemming from the lack of DAC/ADC circuitry and reduced noise suppression circuitry, which you'd quite rightly assume would result in lower unit costs, will initially be offset by the costs needed to get to this stage of development.

Coupled with the incompatibility of this design in the current market, for now we will just have to make do with the analogue interfaces present in the three flat-panel displays on review here. The term "native resolution" refers to the group of liquid crystal elements (one each for red, green and blue) that make up each picture element, or pixel. A native resolution of 800x600 pixels would therefore have that number of groups (480,000 in total). Depending on the method employed to emulate resolutions other than the native, some distortion of image may occur. Each of the panels on review had native resolutions of 1024 x 768 pixels. Switching from Windows to a full-screen DOS shell tests how each panel copes with sudden resolution changes. The Nokia snapped the image across its whole display almost immediately with no noticeable degradation, although it did lose some of the lower edge of the image. With the Mitsubishi, the touch of a "mode" button stretches the image across the whole display, but a movie clip running under DOS with a resolution of 1024 x 768 would only stretch across the upper portion of the screen, leaving the lower portion black and unused. The Taxan coped best with this test: with no synchronisation required, it stretched the DOS shell across its whole display perfectly, aligning with the bezel at all resolutions.

▶THE NOKIA 500XA HAS GREAT AUDIO AND IMPRESSIVE VIEWING ANGLES

PCW DETAILS

Mitsubishi LXA520W

★★★★

Price *£1028 (£875 ex VAT)*
Contact *0800 731 1222*
www.meuk.mee.com/display/
Good Points *Cheap and light. Space saver.*
Bad Points *No audio capabilities. Unable to emulate 24-bit colour.*
Conclusion *A crisp, stable image, but graphic artists may miss 24-bit capabilities.*

Ever stood next to someone at a cash machine and been tempted to peak at their balance? Generally you can't, as the displays are deliberately manufactured with a restricted viewing angle so that you only see a blank screen. FPDs generate their image by polarising a fluorescent backlight through different angular twists of the liquid crystals. To view the display from an off-centre position, image-enhancement films slightly scatter the light transmitted through them. The effectiveness of the technology adopted is a key factor in choosing a display and tends to vary between manufacturers. The Taxan claimed viewing angles of ±80° horizontal and ±60° vertical, but we felt there was a loss in luminescence at much lower viewing angles. The Mitsubishi claimed ±70° horizontal and -60° to +40° vertical, but from our own perception you did begin to lose some of the display quality as you moved away. The Nokia achieved the full quality of its display through to the more modest claims of ±50° horizontal and ±60° vertical, and was still readable through to almost ±85° in either direction.

You can expect flicker-free, clean, crisp displays from all three models

FPD colour is produced by accurately twisting each liquid crystal to 64 levels (or six bits) of polarisation of the white backlight through either a red, green or blue filter. This only produces a total of 18 bits, or 262,144 colours. To produce the 16.7 million colours of a true 24-bit display, intensity modulation is used to vary the intensity of pixels, emulating the full colour range. Mitsubishi, however, did not adopt any method of intensity modulation for its display, so it could only support 18-bit colour.

All of the displays had onscreen display controls (OSDs), clearly laid out and very responsive. The Nokia and Taxan both came with an option to automatically configure the display using supplied LCD test cards. The Nokia would not always adjust itself correctly and the best we could achieve through manual adjustments took almost 10 minutes. The Taxan's auto button provided a display we couldn't improve upon and was the fastest to set up, taking less than two minutes. The Mitsubishi's lack of automatic optimisation was replaced with a stripped-down OSD, a test card and straightforward manual instructions. We achieved an optimised display in less than four minutes.

Some 17in CRTs with actual viewable diagonals of around 15.7in take up a good square metre of desk space, taking into account the need to swivel their huge bottoms around. Your average 15in FPD takes up less than half of this, and weighs maybe a tenth of the CRT; and remember, you get to use all of the image, so 15.1in really means 15.1in. The Taxan comes out on top here, having the smallest footprint, while the Mitsubishi runs a close second although it was slightly lighter. The Nokia weighed two kilograms more with an additional seven centimetres of depth.

The Mitsubishi and the Nokia could be tilted back by up to 35 degrees and forward by five, whereas the Taxan's back tilt was limited to thirty degrees and couldn't be tilted forward. The audio capabilities of the Taxan were limited by the omission of a microphone. The Nokia had superior audio capabilities with all the basics present and built-in speakers capable of providing a full spectrum of tones. The Mitsubishi was not an audio model. And finally, the Taxan was able to raise its head above the others with the unique display-switching button for flipping between two analogue signals, enabling the connection of two computers. For overall quality of display you can expect flicker-free, clean, crisp displays from all three models. However, the Nokia had mild instability that appeared as a wobbling effect, occasionally noticeable on highly-defined characters but not frequent enough to cause major concern. The Mitsubishi appeared flawless until compared to the Taxan with its sharper, brighter image. The TFT panels themselves were all manufactured elsewhere, with the Nokia panel and image-enhancement film manufactured by a joint effort between Philips and Hosidan, Nokia then taking responsibility for final assembly. Taxan's and Mitsubishi's panels are manufactured by Sharp, but their image enhancement films and optical filters, as well as the final assembly, is all down to Mitsubishi.

▼ THE TAXAN CRYSTALVISION 670

It's interesting that Mitsubishi has ended up manufacturing and assembling a superior, albeit more expensive product for one of its competitors. Still, Taxan being on the receiving end has supplied us with a product worthy of our highest recommendation.

IAN ROBSON

PCW DETAILS

Nokia 500Xa

★★★★

Price *£1086(£925 ex VAT)*
Contact *01793 512809*
www.nokia.com
Good Points *Superior audio, impressive viewing angles, reasonable price.*
Bad Points *Very minor image instability*
Conclusion *Very impressive sub-£1000 display with superior audio capabilities.*

PCW DETAILS

Taxan CrystalVision 670

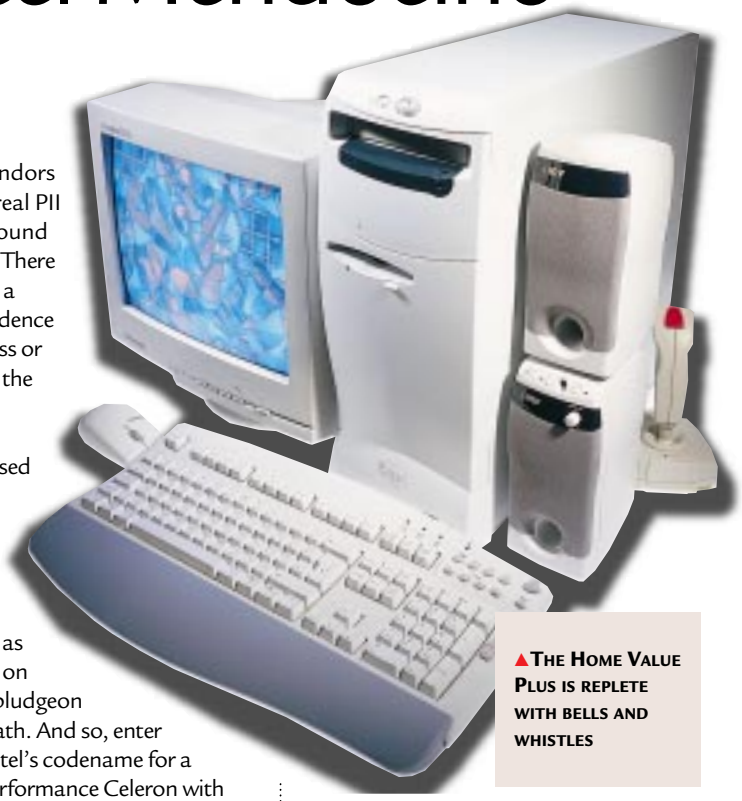
★★★★★

Price *£1526 (£1299 ex VAT)*
Contact *01344 484646*
www.taxan.co.uk/lcd.html
Good Points *Best image, capable of switching between two inputs.*
Bad Points *Speakers but no microphone. Pricier than the others.*
Conclusion *The higher price gets you superb quality with design and build to match.*

Tiny Home Value Plus

First look at Intel Mendocino

A Tiny PC with a big chip inside: Intel comes up with the cache this time.



▲THE HOME VALUE PLUS IS REPLETE WITH BELLS AND WHISTLES

When Intel launched the Pentium II in May last year, there was a great deal of debate about the reasons behind abandoning Socket 7 in favour of the Slot 1 form factor. A considerable body of opinion said that Intel was abusing its massive marketing clout to shift the production goalposts and cause mass take-up of Slot 1, consequently leaving rival CPU manufacturers and their Socket 7 designs at a dead end.

At the time, though, the PII was extremely expensive, leaving a gap into which the likes of AMD and Cyrix could move to market their high-performance but cheaper Socket 7 devices. But the situation didn't last long: within three or four months, at least in the UK, first and second-tier vendors were shifting Pentium II systems at ridiculously low prices. Intel didn't seem to pick up on this, and launched the Celeron, a cheap Pentium II without onboard Level 2 cache. The cache is a small amount of very fast RAM used to store frequently used instructions and data, as well as loading data speculatively in case it's needed, considerably speeding up most operations. Celeron was aimed at sub-$1000 PCs, but by the time it came to market, UK vendors were offering real PII systems for around £800 anyway. There has never been a surfeit of confidence among the press or vendors about the worth of the Celeron. Most pundits dismissed the thing as being far too slow without ever setting eyes on one, condemning it as a cynical move on Intel's part to bludgeon Socket 7 to death. And so, enter Mendocino, Intel's codename for a new, higher-performance Celeron with 128Kb of onboard Level 2 cache. There is a big difference between this and the Level 2 cache on a normal Pentium II. The 512Kb cache on a standard PII is on a separate piece of silicon within that black module, running at only half the speed of the processor. The Mendocino's Level 2 cache is situated on the processor core (called the die) itself, and runs at the same clock speed. This makes the cache very much more effective.

The first Mendocino system to make it into *PCW* is from Tiny Computers. It's a 333MHz system housed in a rather large box designed with alluring curves. The case size means easy future upgrades with no structural inhibitions or messy cabling limiting access to the two spare DIMM slots or three spare PCI slots. The system has 64Mb of SDRAM, and the generous 8Gb hard disk will be equally useful for gamers requiring faster data access through full installations, or home workers' needs. The inclusion of a Rockwell chip-based modem is welcome, as is the Yamaha PCI sound card. Tiny scores points with its bundle of extras — a Microsoft Intellimouse, large speakers, reasonable-quality Quickshot joystick, tie-pin microphone, a large software bundle of games, reference and business titles, and the EasyTouch keyboard. Ergonomically slanted with a detachable wrist-rest, the keyboard's star feature is the hotkeys which allow control of the audio functions of the CD-ROM drive and the sound card's volume level.

With all those added extras, no doubt aimed at the first-time buyer seeing the system in one of Tiny's shop windows, it's good to see that one of the least glamorous but most important areas hasn't been overlooked: the 15in Panasonic monitor gives a crisp, stable picture at 800x600 resolution. With the 8Mb ATI Xpert98 graphics card, a 17in unit would have been ideal; but at this price, something has to give.

Compared with Tiny's Celeron 300MHz system (*reviewed last month*) there was a marked relative increase in 3D performance. But the Home Value Plus came into its own on the 2D application benchmark, the dramatic leap in performance proving the worth of the Level 2 cache beyond doubt.

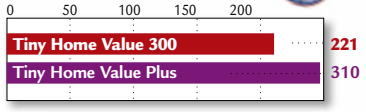
IAN ROBSON

PCW DETAILS

★★★

Price *£1056.32 (£899 ex VAT)*
Contact *Tiny Computers 0990 133097*
www.tinycomp.com
Good Points *Very good performance from the Mendocino processor.*
Bad Points *Could do with a larger monitor.*
Conclusion *It looks as if Intel has redeemed itself with the Mendocino Celeron.*

PERFORMANCE RESULTS



BAPCo Sysmark Windows 95 test scores

Intel Pentium II Xeon

New high-end processor

Intel serves up its server wonder-chip — a fast processor at a gourmet price.

Intel's Xeon, bridges the gap between Intel's current server workhorse, the Pentium Pro, and the much-vaunted/delayed 64-bit Merced. Xeon is designed both for high-end workstations and for servers running four or eight processors. The first chips in the Xeon family are two 400MHz versions, one with 512Kb of Level 2 cache and the other with 1Mb.

Underneath the covers, the Xeon is a version of the Pentium II optimised for running server applications and symmetric multi-processing where two or more processors are linked under Windows NT. The CPU core is the familiar Deschutes, used in the Pentium II as well as the Celeron processor (*see the Mendocino review on page 84*). Its big secret is that its large Level 2 cache runs at the same clock speed as the core; in previous generations, this ran at half the processor's speed. The cache comprises Intel-fabricated CSRAM (Custom Static RAM) chips, each CSRAM chip holding 512Kb, so the 1Mb version has a pair and a future 2Mb version will have four.

Intel has also introduced new Xeon-specific chipsets. The 440GX AGPset is for single- and dual-processor servers and workstations, while the 450NX PCIset is for systems based on four or more processors. The 440GX AGPset supports up to 2Gb physical RAM and AGP video. The 450NX PCIset supports up to 8Gb physical RAM and multiple 32-bit and 64-bit PCI buses. Unannounced Xeon-based chipsets will support next-generation Direct Rambus DRAM chips sometime in 1999, according to Intel.

▲ XEON IS FOR WORKSTATIONS AND HIGH-END SERVERS — AND HIGH-END WALLETS

The Xeon will command a price premium, as did its predecessor, the Pentium Pro. In volumes of 1000 units, the 512Kb cache version costs $1124 (around £700); the 1Mb cache version costs $2836 (around £1800). And as with the Pentium Pro, the prices are likely to stay artficially high in order to differentiate it from the standard Pentium II. In short, this processor is no Pentium II replacement, so don't worry that your new 400MHz desktop system has been made obsolete by the Xeon: the two product lines are quite separate.

The Xeon processor cartridge itself is large, roughly double the size of a standard Pentium II SEC cartridge. Its Slot 2 edge connector is about 10mm longer than the Pentium II/Slot 1, with an extra "keying" slot to prevent accidental insertion of a Pentium II. The cache RAM gives off as much heat as the CPU core, so the heat sink covers the entire cartridge. The file server Intel supplied to *PCW* isn't one that's available to buy *per se*: it's a preview and evaluation system that Intel supplies to its OEM clients. A fully-fledged floor-standing server, the case is around five or six times the volume of a normal full-tower case, with three lockable doors that give access to the storage, a central backlit LCD status display and a selection of error-condition LEDs. The system has 12 hot-swappable drive bays in all, so with a full deck of 18Gb drives you could easily have well over 200Gb of storage.

The ACPI-compliant motherboard is in two halves, mounted either side of a central spine wall of the server chassis. The left side holds the CPUs and RAM; the right side the I/O and expansion slots. The CPU side bristles with a formidable-looking matrix of four 400MHz Xeon processors mounted in a set of rails: jumper labels indicate that clock speeds as high as 500MHz are supported. Under the CPU array is 512Mb of ECC SDRAM, occupying eight of the 16 DIMM slots. No less than six 80mm fans cool this array of silicon, aided by a Styrofoam shroud, with a further three fans cooling the motherboard itself.

Look out for full reviews of publicly-available Xeon systems soon.

ROGER GANN

PCW DETAILS

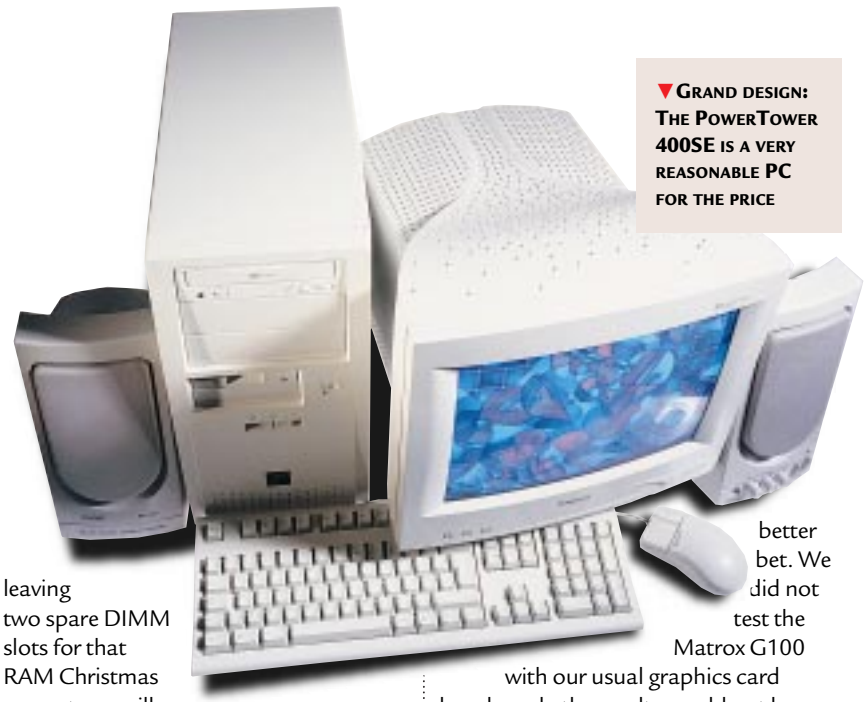
★★★★

Price *n/a*
Contact *Intel* www.intel.com
Good Points *The fastest Intel server processor.*
Bad Points *Hugely expensive.*
Conclusion *For high-end enterprise setups only.*

Dotlink PowerTower 400SE

Mid-priced 400MHz Pentium II

It's a grand life — or at least, it is with this 400MHz PII PC that breaks the price barrier.



▼ GRAND DESIGN: THE POWERTOWER 400SE IS A VERY REASONABLE PC FOR THE PRICE

You don't get masses of software or an impressive performance with this budget PC, but it gets on with the job. What more can you expect for just over a grand? Budget PCs are big business and much has been made of the sub-$1000 systems on sale in the US. Compaq claims its best-selling consumer PCs are those costing less than $1000. It's not surprising, really: most people don't really need an all-singing all-dancing PC, and, more to the point, can't afford it.

Dotlink has broken a barrier with this PC too. The Power Tower 400SE costs under £1000, excluding VAT. With the emergence of machines like this, no-one can say that high-end systems are not affordable. The 400SE packs an economic punch; but is it up to the job? For the price, the specifications are undoubtedly impressive. At the hub of the midi tower is a motherboard sporting Intel's 440BX chipset, a Pentium II 400MHz processor, 64Mb SDRAM and a 5Gb UDMA EIDE hard drive. 64Mb is now the standard in a decently-specified PC. In this case, the 64Mb is on one DIMM (dual in-line memory module), leaving two spare DIMM slots for that RAM Christmas present you will probably require in a year's time. The EIDE hard drive is standard fare too, but it would be a bit too much to ask to be supplied with a SCSI model at this price. As far as upgradability in other areas is concerned, there's enough space to be getting on with. With one free 3.5in and two free 5.25in front-loading bays you have the standard midi-tower room for reinforcements, and there's the standard two USB ports for your digital camera, scanner or other peripherals.

Inside the midi tower are three spare PCI slots and one spare ISA slot, plus a free shared slot. Looking around, the cabling is clipped together so you don't have to hack through it with a machete, although it is a little untidy. The build quality is fine, and the design is best described as standard. As for graphics, the Power Tower 400SE comes with an AGP Matrox Productiva G100 card. While it has 8Mb of onboard RAM, it is a 2D card only, so you will need a 3D accelerator if you want to play the games of today, or indeed if you want to deal with more cerebral graphics applications. There are plenty of 2D/3D cards out there at roughly the same price but with less memory, which may have been a better bet. We did not test the Matrox G100 with our usual graphics card benchmark: the results would not have done the 2D card justice. Performance testing was as usual performed using BAPCo, and the results showed that the 400SE was neither hare nor snail. Desktop graphics scored impressively, but the overall SYSmark score was a little low for a 400MHz system.

The monitor is a Hansol Mazellan 501P 15in, with a 13.8in viewable diagonal. At its recommended resolution of 1024x768, the refresh rate is a steady 85Hz. The sound card is a basic SoundBlaster 16-compatible affair. These cards are still pretty much standard, but they are no longer the cards you would choose to buy if you were putting together an optimum system for yourself. Also included is a 56Kbps data/fax/voice modem, a vital component for a home-orientated PC.

On the software side, the Dotlink comes armed only with Windows 95 and Lotus SmartSuite 97. The three-year warranty is generous: one year parts and labour, two years labour only.

Overall, there's very little to criticise in the Power Tower 400SE. A 400MHz Pentium II for just over a grand is not to be sniffed at, even though the rest of the spec is a little basic.

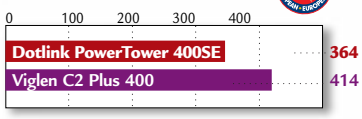
JIM HARYOTT

PCW DETAILS

★★★★

Price *£1174 (£999 ex VAT)*
Contact *Dotlink 0181 902 5802*
No URL
Good Points *Fantastic price for a PII 400MHz machine which offers reasonable all-round specifications and a three-year warranty.*
Bad Points *2D graphics card. Not much software. Slightly disappointing performance.*
Conclusion *A great machine for the money, but it's certainly not perfect.*

PERFORMANCE RESULTS



BAPCo Sysmark Windows 95 test scores

Toshiba Equium 7000S
Corporate desktop system

This slim Jim is one of a new range of easily-manageable PCs for the corporate user.

Toshiba is pushing for the corporate market with its Equium range, and has used the NLX form-factor design developed by Intel that boasts slim cases but accessible components. The main space-saving difference between the setup of a conventional desktop and one using the NLX form factor is the use of a riser board fixed at a right angle to the motherboard. The PCI or ISA cards that usually sit on the motherboard are instead seated on the riser board and extend over the motherboard. With the Equium, the idea is that the model is easily manageable: the motherboard should be easily and conveniently detachable, rolling out of the side of the PC.

The review model we were sent was set up with NT 4 (although some models have Windows 95 installed). The specification of the machine was decidedly mid-range, with 32Mb of SDRAM offered on a single DIMM slot, along with Intel's PII 266MHz processor with 440LX chipset, as well as an Ether connection with the SMC chip onboard, for LAN networking. The Equium 7000S is the slimmest model in the range, priced at £785 (ex VAT) with a 17in monitor. It had graphics onboard, using ATi's 3D Rage Pro chip, with only 2Mb of SGRAM out of a possible 6Mb installed on the motherboard. Onboard sound is courtesy of the Crystal sound chip. We could only get a maximum resolution of 800x600 in 16-bit colour, but 1024 x 768 was attainable by dropping the number of colours to 256.

We couldn't run the 3D Final Reality software benchmark test because of the NT OS, but then, this is not the configuration for you if you need to run high-performance 3D graphics. Neither is this the model for you if you aim to upgrade your PC regularly with audio and graphics cards.

With only one PCI and one shared PCI/EISA slot on the riser board, this PC will have a select appeal only. However, it could do well with IT managers wanting to bulk-buy PCs with which their colleagues can't tinker. In any case, there is limited expansion space available in the 7000S, so once you have upgraded to a more powerful graphics and sound card, all expansion space is used up.

The 7000D series is aimed at corporates which need more expansion space from their PCs, it is slightly larger than the S series, and most of the size difference is due to the larger riser board, with three PCI slots and one shared EISA slot. Both models are sold with the desktop system and monitor priced separately. The S series starts at £600, compared to the £665 starting price of the larger 7000D. A 15in Toshiba monitor costs £210, a 17in, £380. It is unusual for a company to price the system separately from the monitor, but presumably Toshiba is doing this with its Equium range to entice managers with annual IT budgets who want reasonably fast machines but don't want to change their existing monitors. We were keen to check the accessibility of the series. We weren't that impressed with the 7000S: there was a particularly flimsy catch to release the motherboard from the riser board, and detaching it was no easy task. The motherboard came out slowly and awkwardly, and re-attaching it was a case of push'n'pray — tricky because there is no way of knowing (until you turn the PC on, of course) whether you have connected it up properly to the riser board. We liked the sturdier motherboard-release design of the D range much better.

The 17in Toshiba monitor produced an impressively sharp picture, and with colours set at 256 it was able to offer refresh rates in excess of 85Hz.

The 7000S that we reviewed is not going to set the world alight, but at these reasonable prices Toshiba should do well with the Equium range.

PAUL TRUEMAN

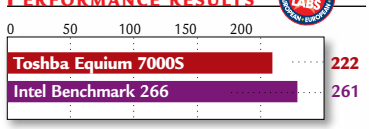
▲THE EQUIUM 7000S IS A WELL-BUILT PIECE OF KIT FROM A REPUTABLE MANUFACTURER

PCW DETAILS

★★★

Price *System reviewed £922.38 (£785 ex VAT); monitor £446.50 (£380 ex VAT)*
Contact *Toshiba 01932 828828*
www.toshiba.com
Good Points *A nice idea. Well-constructed, accessible machines.*
Bad Points *Some models in the range are more accessible than others.*
Conclusion *A solid performer backed by a reliable name.*

PERFORMANCE RESULTS



BAPCo Sysmark Windows NT test scores

Evolution Dance Station

Dance yourself dizzy with Evolution's keyboard, sampler and sequencing software.

Evolution's Dance Station has everything you need to produce dance music on your PC, including a velocity-sensitive, two-octave MIDI keyboard. The accompanying CD is crammed with over 1000 professionally-produced samples, so you can have decent tunes up and running in no time.

PCW DETAILS

★★★★★

Price *£79.99 (£68 ex VAT)*
Contact *Evolution 01525 372621*
www.evolution.co.uk
System Requirements *120MHz Pentium, 16Mb RAM, Windows 95, DirectX-compatible sound card.*
Good Points *Easy to use, great results.*
Bad Points *Hmmm... can't think of any.*
Conclusion *Probably the most fun you can have with 80 quid.*

The keyboard takes its power from your sound card's joystick connector and offers a comprehensive range of control parameters, from program-change messages to a handy General MIDI reset button. The modulation wheel can be configured to send any MIDI control data, such as pan and volume, and there are ten selectable velocity curves. The action, or touch, of the keys is quite positive, and there's even a connector for a sustain pedal round the back.

▶TOP DANCE TUNES ON YOUR PC STOP AT THIS STATION!

The software integrates a sampler and sequencer on a single screen. The LCD display shows the samples that are available, and you simply drag them onto the keyboard below to assign them to keys. Up to 25 samples can be played and recorded in real-time from the MIDI keyboard. The quality and range of samples won't disappoint, starting with laid-back funky grooves at 100bpm, through to pacey hardcore loops at 160bpm. The samples are grouped into categories (drums, bass, synth, etc) and you can import additional wave files in various formats. The sequencer is intuitive and offers a piano-roll editor at the push of a button. From here, notes can be erased or tweaked to your heart's content.

STEVEN HELSTRIP

Matrox Millennium G200

An AGP graphics card that will do wonders for your image in business or games.

The Millennium G200 boasts full AGP 2x compliance, with hardware acceleration for the whole range of 3D features like alpha blending, anti-aliasing and trilinear filtering. It offers superb 2D performance and software-based DVD playback.

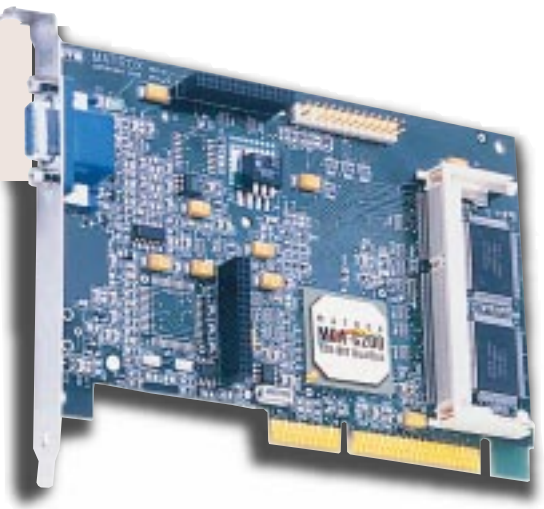
We tested the standard 8Mb version, but the board supports up to 16Mb. One of its prime features is its ability to provide 3D acceleration at full 32-bit colour depth: it always renders internally to 32 bits, then dithers down depending on the actual screen mode, thus improving quality. With a Final Reality score of 3.57, the Millennium G200 raced ahead of the ATI Rage Pro chipset, our previous Editor's Choice award winner. It also produced better results than newer entrants like Riva's 128ZX and Intel's i740. In fact, its 3D performance was only 10% below 3Dfx's Voodoo 2 — an impressive achievement for a combined 2D/3D card. Image quality is much better than with the Voodoo 2, with sharper lines and more vibrant colours. In 2D the card supports a whopping maximum desktop resolution of 1920x1200, with the legendary Matrox image quality.

PCW DETAILS

★★★★

Price *£129 (£110 ex VAT)*
Contact *Matrox 01753 665544*
www.matrox.com
Good Points *Extremely fast, excellent quality.*
Bad Points *No hardware DVD playback.*
Conclusion *Great for business or games.*

▶THE G200 IS AN AGP-ONLY CARD



A few inexpensive add-on daughtercards will be introduced by Matrox in the coming months. These include a new version of the popular Rainbow Runner video-capture card and a separate hardware DVD decoder. Considering its low price, superior performance and high image quality, the Millennium G200 is a must-buy.

AJITH RAM

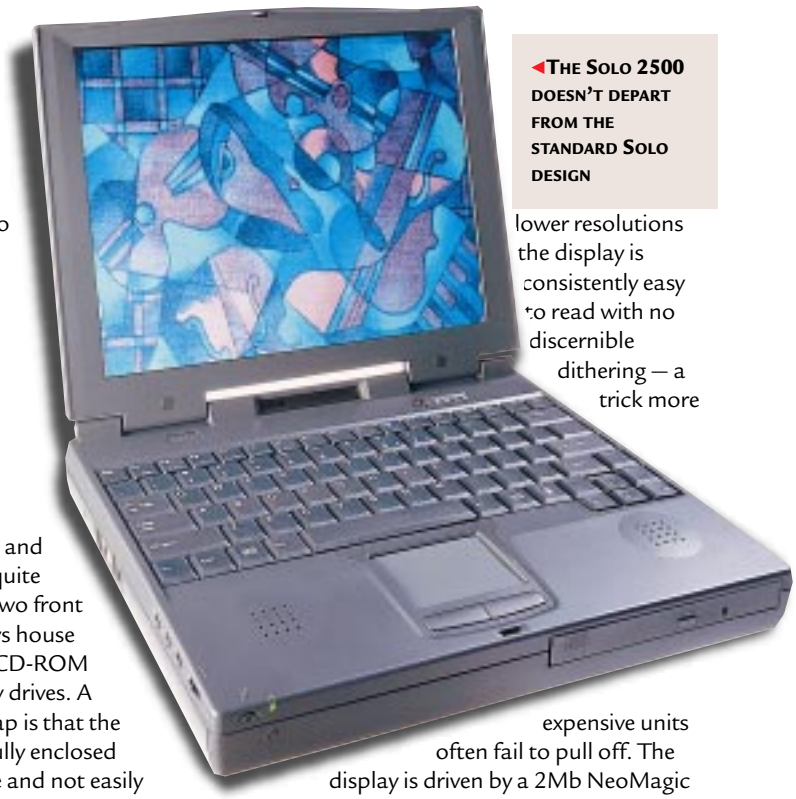
Gateway Solo 2500-266SE
High-performance notebook

The mid-range business user on a budget will welcome this PII performer.

Notebooks using the mobile version of the Pentium II are still not quite as common in the market as those with standard Pentium MMX processors. However, an increasing number of notebook manufacturers, including Dell and IBM, are producing products containing Pentium II 233 and 266MHz processors aimed at the mid-range business market. With the entry of the Gateway Solo 2500 into this lucrative segment, the price cuts necessary to make the Pentium II processor commonplace in the notebook market are well under way. Despite its modest price tag, the Solo 2500 is no pushover in either features or performance.

The system comes in a multi-pocket leather case which is sturdy enough to protect it from bumps and scratches. Microsoft's Office 97 Small Business Edition comes pre-installed. A sleek AC power adapter and cable complete the package. Although the system we tested had Windows 95 installed, the retail version will ship with Windows 98. The unit is fitted with a generous 64Mb of RAM and a 4Gb hard drive.

The Solo 2500 is by no means a competitor to the likes of the Toshiba Libretto in terms of size. However, at 3kg, the case is small enough and light enough to be handled with comfort, with sufficient room for the large screen, wrist-rest, speakers and keyboard. The general build quality is well above average and the unit feels quite durable. The two front peripheral bays house the 20-speed CD-ROM and the floppy drives. A minor handicap is that the hard drive is fully enclosed inside the case and not easily removable like the IBM Thinkpad's — possibly a point to bear in mind if data security is important to you.



◀ THE SOLO 2500 DOESN'T DEPART FROM THE STANDARD SOLO DESIGN

The Solo 2500 has the now ubiquitous twin-button touchpad. The pad itself, although large enough for comfortable use, proved rather unresponsive and erratic at times. The cursor often slows down for no particular reason and at least once stopped moving altogether. This was particularly noticeable after the system had been in use for a couple of hours. Problems of this nature are not confined just to Gateway's touchpads, though, and for long sessions that require a lot of pointing and clicking you could always plug a proper mouse into the PS/2 port. The wide wrist-rest is ideal for long typing sessions. The keyboard is responsive and has a pleasant feel, and the presence of the large Enter and Space keys enhances its usability.

But the most attractive feature of the Solo 2500 is its bright 13.3in TFT screen which supports a maximum resolution of 1024x768 pixels. Even at lower resolutions the display is consistently easy to read with no discernible dithering — a trick more expensive units often fail to pull off. The display is driven by a 2Mb NeoMagic MagicGraph 128XD graphics controller, allowing 16-bit colour depth at 1024x768 pixels.

The presence of a composite video output makes the Solo 2500 a good choice for presentations. The NeoMagic Magicwave 3DX sound chipset produces acceptable output through the twin speakers located at either side of the keyboard, but external speakers or headphones are more or less mandatory for any serious use of the system's audio.

The Solo has one parallel and two USB ports. Currently, use of the latter is limited by the dearth of USB accessories, particularly those aimed at laptops. But we can at last expect activity on the USB front now that Windows 98 is here. USB makes it much easier to use devices with both your desktop and notebook PCs, since many peripherals don't need external power supplies.

The Solo 2500 produced a SYSMark score of 210. Its high performance, along with its excellent display, features, weight and price, make it a good choice for the business user on a budget.

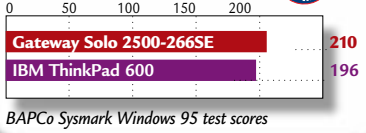
AJITH RAM

PCW DETAILS

★★★★

Price *£2500 (£2129 ex VAT)*
Contact *0800 552000*
www.gateway.com
Good Points *Excellent display, robust build.*
Bad Points *The touchpad becomes less responsive after extended use.*
Conclusion *A well-specified laptop at an attractive price.*

PERFORMANCE RESULTS



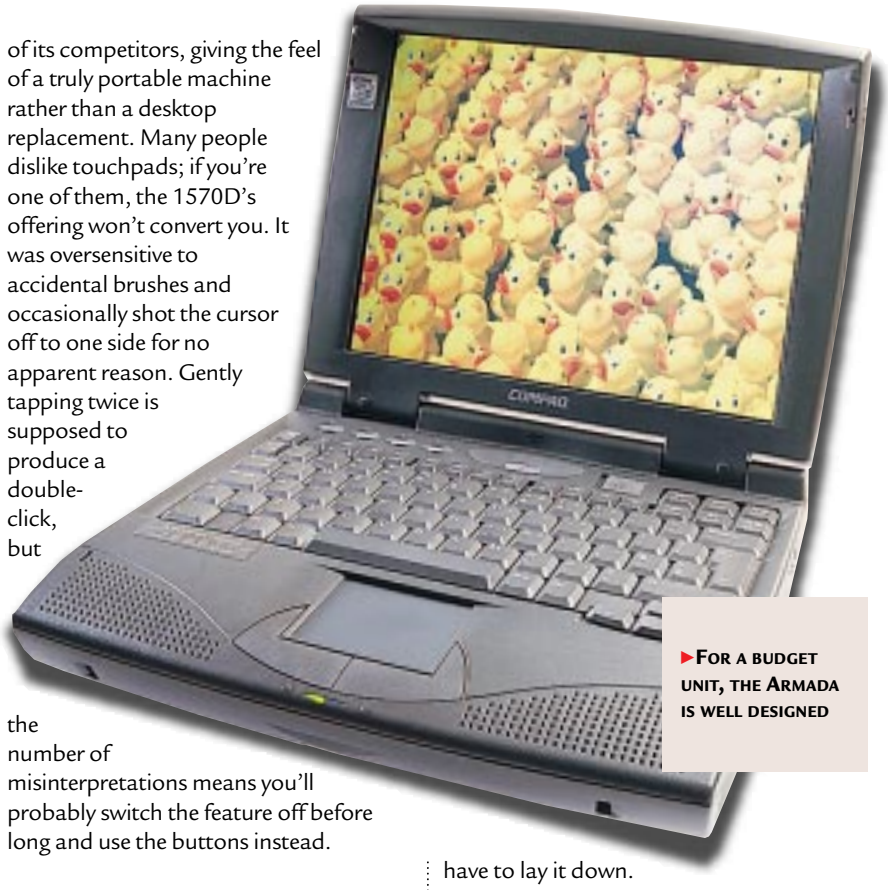
BAPCo Sysmark Windows 95 test scores

Compaq Armada 1570D
Entry-level notebook

A good-looking entry-level notebook, but Compaq really needs to ramp up the RAM.

Compaq's extensive range of notebooks reads like a Mafia novel with, at the last count, six Armada families. The Armada 1570D is tfrom the entry-level range. The basic spec is good, with a 200MHz Pentium MMX processor and a capacious 3.2Gb hard drive. Unfortunately, it has only 16Mb RAM, which these days just isn't enough; a slower processor and more memory would be preferable, since processor horsepower isn't important for standard notebook uses like word processing. What's needed is enough memory to avoid excessive swapfile usage that will eat into your batteries.

First impressions are of a remarkably sturdy machine, but the downside of this is its weight. The slight ears in the case, into which the stereo speakers are set, make good wrist-rests, but it does mean that your hands will be over the speakers most of the time, which is a shame since they produce above-average quality for a notebook. The overall design of the machine is really rather stylish, and although it's by no means super-slim, it manages to avoid the brick-like utilitarian looks of most other budget notebooks. It's also narrower than many of its competitors, giving the feel of a truly portable machine rather than a desktop replacement. Many people dislike touchpads; if you're one of them, the 1570D's offering won't convert you. It was oversensitive to accidental brushes and occasionally shot the cursor off to one side for no apparent reason. Gently tapping twice is supposed to produce a double-click, but the number of misinterpretations means you'll probably switch the feature off before long and use the buttons instead.



▶ FOR A BUDGET UNIT, THE ARMADA IS WELL DESIGNED

Good design touches include volume control buttons rather than an analogue control, which should be immune to wear, and four user-programmable keys above the main keyboard. Another real point in its favour, and one that shouldn't be underestimated, is the keyboard itself. Compaq has managed to avoid soggy plank syndrome by producing keys with superb bounce and responsiveness as well as a reasonable amount of travel. The 1570D also sports the Compaq hallmark of an integral mains power supply.

But the news isn't all good. The 12.1in STN screen in particular is a major letdown. Brightness is uneven and the images look washed out, with a distinct lack of contrast. A contributing factor in this is the low brightness, which tends to be unable to cope with normal daylight. Another feature that could irritate is the fact that there are latches on either side of the lid rather than a central one; you can't hold the unit in one hand and open it with the other: you have to lay it down.

All the now-standard notebook features are present, including an infra-red interface, two PC Card slots and the option for a second battery, which in this notebook's case would replace the floppy drive to enable up to six hours of continuous usage. The 20X CD-ROM drive is integrated into the side of the case. There are no USB connectors; and while four months ago this wouldn't have mattered, it could be a disadvantage now that there really are USB devices coming to market. For the keyboard-shortcut freaks, it's also worth noting that there's no Windows key.

There are many positive aspects to this notebook, not least the name of Compaq, which guarantees that wherever you are in the world you're likely to find some kind of support should you run into difficulties. But we couldn't recommend the 1570D unless you can negotiate some kind of memory upgrade deal when you buy the system.

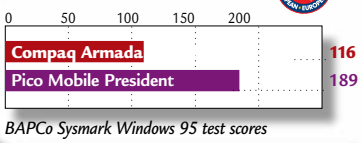
IAN ROBSON

PCW DETAILS

★★★

Price *£1526.32 (£1299 ex VAT)*
Contact *Compaq 0845 270 4000*
www.compaq.com
Good Points *Sturdy, sleek design. Great keyboard.*
Bad Points *Slow performance, poor screen.*
Conclusion *The excellent keyboard and good design are offset by a poor screen, and 16Mb RAM just isn't enough.*

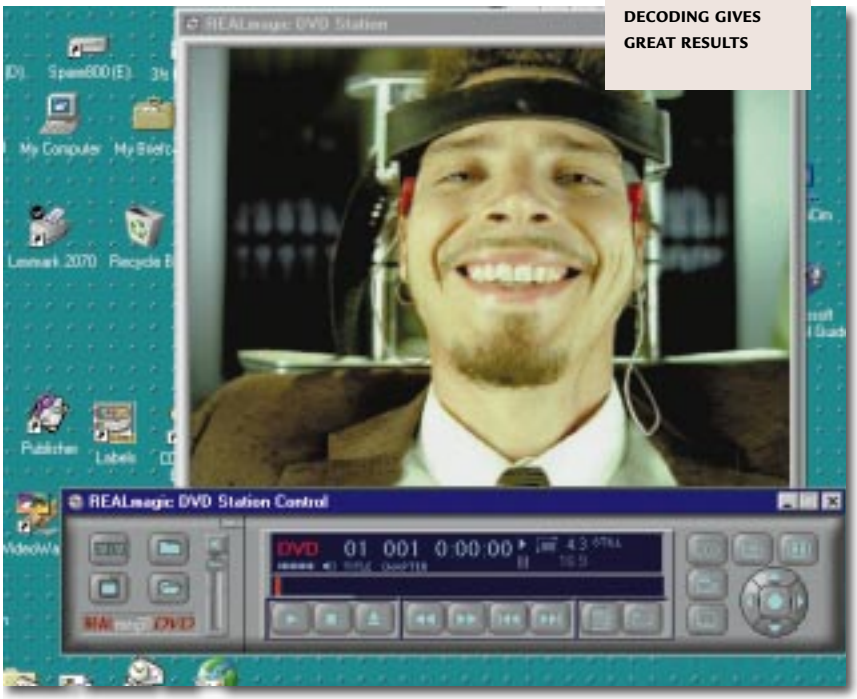
PERFORMANCE RESULTS



BAPCo Sysmark Windows 95 test scores

Philips DRD5210
DVD upgrade package

DVD drive and MPEG video card delivering motion pictures on Pentium PCs.



▼ DVD-VIDEO AND HARDWARE DECODING GIVES GREAT RESULTS

Philips is breaking into DVD-ROM with a DVD-ROM drive/DVD-Video decoder card package along the lines of Creative's Encore. The company anxiously sent the package to *PCW* for its worldwide first review. The kit Philips originally submitted proved to be a non-starter, primarily because it was built around a DVD-Video card, with software not designed for use in Europe and that was in the process of being discontinued. But once this was pointed out, a new package duly arrived, containing the Philips DRD5200 drive, RealMagic's Hollywood Plus DVD card, and three sample DVDs of the Muppets, Spycraft and A&M's music sampler.

The DRD5200 DVD-ROM drive itself is a tidily-built, easy-to-fit Plug 'n' Play IDE device. It runs at the current standard of 2X DVD speed, and data throughput in the CD mode is up to a maximum of 4.1Mbit/sec — broadly equivalent to a 24X CD-ROM drive. As well as DVD-ROM, it will read CD-R and CD-RW discs, but not recordable DVD-RAM media.

RealMagic add-on MPEG video playback cards have been around since long before even VideoCD, and RealMagic has developed high-performance cards and ironed out the PC interface problems. The Hollywood Plus card is half-size PCI Plug 'n' Play and installs easily. Because the card does all the decoding work, it will deliver DVD-Video on a medium-speed Pentium PC. It has external leads to connect it to the display card. Hollywood Plus also has connectors to wire it up to a home cinema system — an S-Video output with an S-Video/composite converter cable for video, and both a digital S/PDIF and an analogue stereo output mini-jack for sound. The analogue output can feed video audio to the line input of a sound card, but a better way of linking the two is via the internal CD-ROM audio lead. One of the other complaints about the originally supplied system was that this cable was not supplied; a minor point admittedly, but the Creative package is notable in that it supplies absolutely everything. Philips will have to follow suit in its final package.

Predictably, being a RealMagic, the card setup was quick and easy with no conflicts. The DVD Station playback software presents a VCR-like control panel that can be onscreen or hidden. This gives the basic functions to navigate around the video disc, with keyboard shortcuts used to toggle between monitor and TV. The playback window is infinitely scalable, looks excellent at all sizes, and the display on the TV is first class.

DVD-Video does look fabulous and is well worth the effort. One word of warning for DVD-Video in general, though: you really need Release 2 (OSR2) of Windows 95, as Release 1's lack of PCI bus mastering and other bugs throw up occasional problems and slightly jerky performance.

Comparison with the Creative Encore is inevitable, and Philips will have to ensure that it offers good reasons for buyers to opt for its package over the Creative. Initial pricing indicates it may well be cheaper, and there is no question about the high standard of this system both in terms of picture and build quality. But it is the practical points that will matter, and Philips really needs to offer a fully-integrated package rather than simply bundle the RealMagic card in the box.

There is one real point in favour of Creative's package, although neither Creative nor Philips will thank me for pointing it out. Region code-busting software is easily available on the net for the Encore, making it easy to play either US or UK DVD-Video discs. A similar software hack is yet to emerge for the RealMagic.

TIM FROST

PCW DETAILS

★★★

Price *Around £190 (£162 ex VAT)*
Contact *Philips 0181 689 4444*
www.philips.com
System Requirements *Windows 95 OSR2, Pentium 133.*
Good Points *Good DVD drive, and the package delivers DVD-Video on Pentium PCs.*
Bad Points *Needs to come up to Creative's totally integrated package approach.*
Conclusion *Could be a strong DVD-ROM/Video add-on if Philips delivers the full monty as promised.*

Visioneer PaperPort OneTouch

One-stop home/business scanner with the ability to copy, fax and print documents.

The market is saturated with hybrids — scanners that can photocopy documents, and printers that fax and scan. The Visioneer PaperPort OneTouch scanner falls into this niche, with its added ability to copy, fax and print documents. It comes with a single CD containing its driver, PhotoEnhancer image-editing software and Quicken ExpensABLE SE. The latter seems a pretty weird choice for a multifunction device, particularly since it seems to come at the expense of any OCR or document management software. A projection of the scanner bed has large, easily-accessible buttons for one-touch scanning, printing and faxing. Driver installation was simple and the scanner was immediately recognised on rebooting the test PC.

▶ AN ALL-IN-ONE HOME/BUSINESS HYBRID SOLUTION

We tested the scanner using an A5 colour chart and a piece of printed text. The colour test was scanned at 150dpi resolution and text at its highest optical (600dpi) and interpolated (2400dpi) resolutions. Although the OneTouch's scan speeds were no more than acceptable, colour reproduction of its printed output was impressive, with excellent detail even in bright, highlight areas. Greyscale definition was even better, with little bleeding between adjacent scales. Clarity of text was equally good. Considering its multiple features, ease of use and quality of final output, the Visioneer OneTouch is an excellent choice for the home or office.

AJITH RAM

PCW DETAILS

★★★★

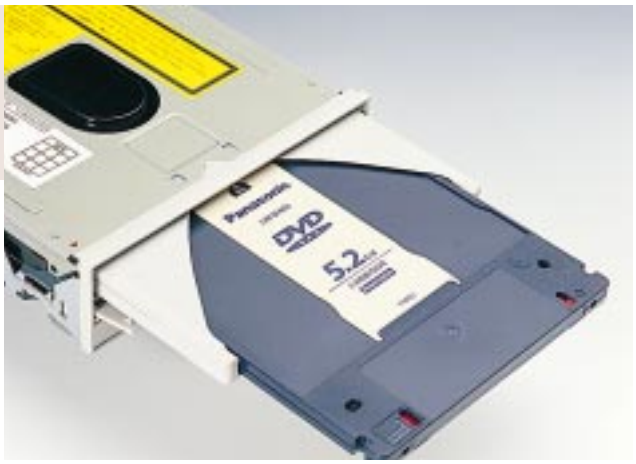
Price *£222 (£189 ex VAT). £30 cash-back on registering with Visioneer.*
Contact *0800 973245*
www.visioneer.com
Good Points *Great image quality and price.*
Bad Points *No OCR software.*
Conclusion *With its multiple features, an ideal choice for the home or business.*

Panasonic LF-D101 U

Drive offering both DVD-ROM and rewriteable storage — and a very strange disc tray.

Never mind the fact that it's a 2X DVD drive that also writes to 5.2Gb DVD-RAM discs that cost a mere £25 each, and also writes to PD discs. It's the weird disc tray that's the Panasonic D101U's most appealing feature. Press Eject, and a half-tray with slits in it pops out. CD and DVD-ROMs slip into the slits: a slight push on the disc and the drive snaps it up. Cartridge-held DVD-RAM and PD discs slide into the main body of the tray and get eaten with the same ease. It's impressive, and allows the drive to be fitted vertically without the discs falling out. The Panasonic is only the second SCSI DVD-RAM drive on the market, and already the format is looking good value for anyone who needs to store large quantities of data. Formatting each 2.6Gb side of the disc takes seconds, and moving files is pure Windows drag-and-drop.

▶ THE DRIVE TAKES NORMAL CD-ROMS TOO



The DVD-RAM drive is already only marginally more expensive than a 2Gb Jaz drive, but DVD-RAM wins out in the cost-per-megabyte of the media, which is just one-eighth that of Jaz.

The DVD-RAM discs the D101U produces cannot be used on a standard DVD-ROM drive, but as a high-capacity and reasonably fast rewriteable optical storage solution, the D101 stands up well in its own right.

TIM FROST

PCW DETAILS

★★★★

Price *£465 (£399 ex VAT)*
Contact *Panasonic 0800 444 220*
www.panasonic.com
Good Points *DVD-ROM and 5.2Gb rewriteable/removable storage in the one box.*
Bad Points *Currently too expensive.*
Conclusion *A cost-effective, high-capacity storage solution.*

MediaForm 5900 CD-R

High-end CD duplicator that makes light work of copying

With CD-Rs now costing under £1 if bought in bulk, it's cheaper to send out company information, internal data and other promotional stuff on gold disc than paper. But for duplication runs of more than a few discs, a standalone PC can't cut the mustard, which is where dedicated duplication machines come in. The 5900 is near the top of MediaForm's range, an eight-drive unit with built-in controls and hard drive. Despite its specialised target market, it limits its copying process to a three-button sequence. To start a duplication run, the copy master goes in the top drive and blank discs are inserted in the other drives. The firmware analyses the disc to determine the format of the master and automatically sets itself up. The first run makes up to seven copies, and while the copy is in progress the unit puts an image of the CD onto its internal hard drive; this image can then be used as the master for further batches of eight simultaneous copies. Slave units can be added to the system to copy bigger batches: up to 64 discs can be copied simultaneously.

The 5900 seems simplicity itself and it doesn't suffer from all those Windows problems that regularly mess up copies and turn them into expensive drinks mats. Costly, yes, but in time saved for mass production of CD-Rs, the 5900 pays its way.

TIM FROST

▶THE 5900 IS BIG AND EXPENSIVE

PCW DETAILS

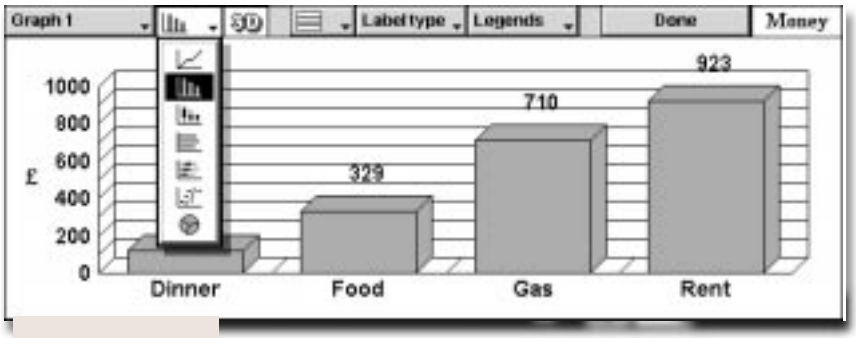
★★★

Price *From £5170*
Contact *Magellan 01256 681100*
www.magellanplc.com
Good Points *Bullet-proof CD-R duplication.*
Bad Points *Hefty price tag.*
Conclusion *Essential for heavy CD-R producers.*

Money for Psion Series 5

Get your cash under control with Money for the Psion.

Psion originally lined up Intuit's Pocket Quicken for the Series 5, but it never appeared. Instead, Palmtop has updated and adapted its own Series 3a personal finance manager, Money, for the Series 5. Money boasts a similar feature set to Quicken, and will import and export files in QIF format. If you are familiar with Quicken, you'll have no problem getting used to Money. The top view shows a list of your accounts — cash, credit card, mortgage — or icons, if you wish. To switch to another view you click one of the four tabs along the top of the screen. Categories view shows any categories you've set up: Book is a list of the actual transactions for a particular account or category; and Scheduled gives you a list of all scheduled transactions. In each of these views you can drill down by clicking within the list of headings, until you get to the transaction details, settings dialog, and so on.



▲MONEY HELPS YOU KEEP TRACK OF EVERYDAY OUTGOINGS

Analysis and reporting functions include transactions, net worth, profit and loss, and forecasts. Graphs in numerous formats are provided for most of these. Money does support multiple currencies, as well as VAT, although most users would probably disable these options. Little has been added in terms of features, or even look and feel, since the Series 3a version, but the pen and touch screen has been implemented to good effect. If you're looking for a personal finance manager for your Series 5, this is it.

MICK ANDON

PCW DETAILS

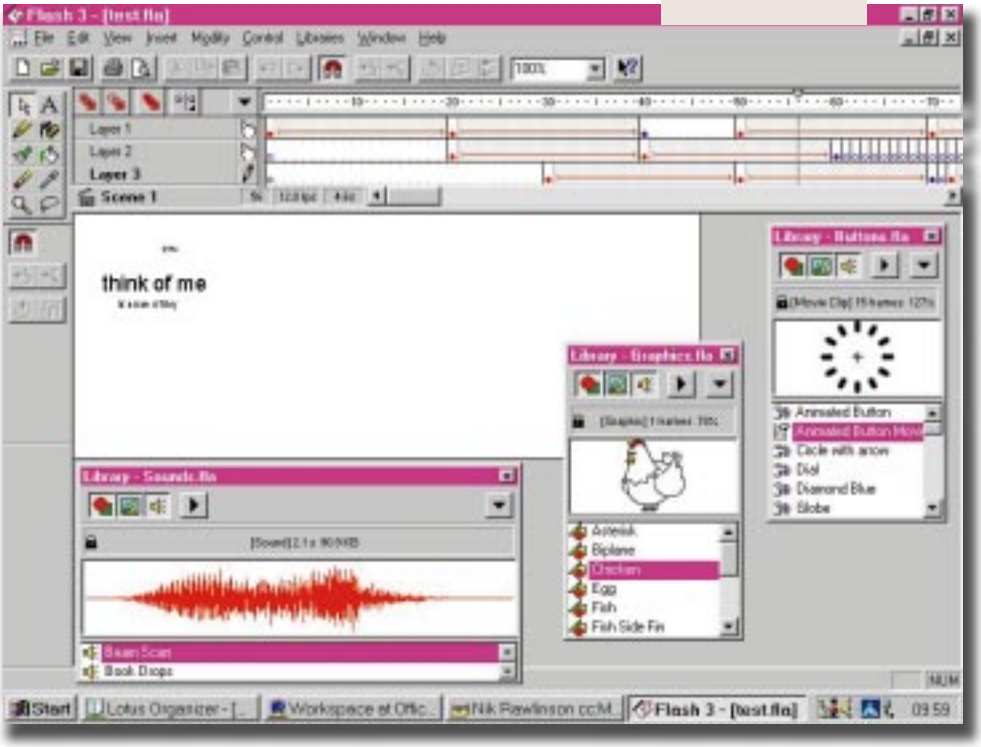
★★★★

Price *£49.95 (£43 ex VAT)*
Contact *Palmtop BV software available in Dixons and other high street stores.*
www.palmtop.nl
Good Points *Very complete feature set. Fast.*
Bad Points *Won't import from spreadsheet.*
Conclusion *The best Series 5 finance manager.*

Macromedia Flash 3

Web pages made easy

The latest version of this web design package cuts time and effort to a minimum.



▼ FLASH 3'S INTERFACE IS SOPHISTICATED BUT INTUITIVE

It used to be that if a web page looked good, it was inevitably going to swallow bandwidth and freeze dial-up connections nationwide as home users tried to download it over a slow connection. That's no longer the case. Now in its third incarnation, Macromedia Flash continues to provide simple but powerful tools for creating spectacular animation in minutes. Compiling to as little as 10Kb for a minute's 250x400 pixel full-colour animation, the results of your labours will often download quicker than even a low-quality JPEG image.

Like many web development applications, the creation software is sold in retail outlets but the browser plug-in needed to play back your work can be freely downloaded from the Macromedia web site and totals less than 170Kb. Alternatively, your creation will play back in version 5 of RealPlayer or with the Flash ActiveX control in ActiveX hosts such as Director, Authorware or Microsoft Office. Users of version 2 may wonder how the package could be improved, but will no doubt be pleased to learn that the increased functionality has not led to larger file sizes. Flash's primary function is web animation. Before, you had to define a keyframe for each step between the first incarnation of a shape and its final image. With Flash 3, you draw the initial shape and the end result, then let the package do the tweening.

The ability to use masks has also been added. When television studio animators create a cartoon, they paint the background on one layer before overlaying it with clear cells containing the moving character, so they don't have to redraw the whole scene every time a character moves. Flash works in the same way, except that it can also treat one layer as a mask. In effect, this treats the areas in which you have worked (with colour applied) as though you have cut through the page. Any animation taking place on a layer beneath this shows through the cut-out areas but is hidden by the untouched parts.

Flash is also the tool of choice for many web designers looking for an easy way to create spectacular menus. MSN has generated many of its screens using Flash. Natural anti-aliasing ensures that your animations always look their best. Jagged edges on text are smoothed out, and curved lines, which along with other graphical elements, are all rendered as vector images, remain even.

Synchronised sound can be added to your productions. This may coincide with onscreen events or be initiated as a user clicks on a button. Full stereo sound allows for a range of effects such as panning, and by separating the continuous audio stream from audio events Macromedia has allowed users to set independent sampling and compression ratios for these two sound types to further save on download time.

The built-in player allows you to simulate download rates to test how your animation will stream across slow connections. Animations can be exported as QuickTime movies for Mac playback or as Windows AVI files, while individual frames can be saved in a variety of still graphics image formats.

We found the transition from Flash 2 to Flash 3 a breeze, and new users should have no trouble learning to use this fun and powerful package. You can download a trial version of Flash 3 from the Macromedia web site.

NIK RAWLINSON

PCW DETAILS

★★★★★

Price *£233.83 (£199 ex VAT) or upgrade for £92.83 (£79 ex VAT) from any previous version.*

Contact *Computers Unlimited 0181 358 5857*
www.macromedia.com

Good Points *Trial version on the net. Easy to use. Fast. Versatile.*

Bad Points *Pricey for the full version, but it's the only one of its type.*

Conclusion *A great buy for anyone interested in jazzing up their web site.*

Kai's Power Show

Spice up those presentations — and impress your colleagues — with a wealth of easy-to-use features that make a real impact.

▼ YOU MAY NEED TO TAKE SEASICKNESS TABLETS BEFORE TRYING OUT SOME OF THE TRANSITION EFFECTS

There's no excuse for lacklustre slide presentations with Kai's Power Show, which brings together a wealth of features into one easy-to-use package for both home and business use. Kai has decided to forgo the usual toolbars and palettes in favour of a hyperlink-type user interface. Show is organised into four different "rooms" where you can carry out tasks according to type: you use the IN Room to import your content, the SORT Room to organise it, the EDIT Room to add transitions and effects, and the OUT Room to save, play or print your show.

If you're pressed for time you can simply import your pictures and the QUICKSHOW! automated feature will create a presentation in seconds. If you're not happy with the results, you can go back to adjust the settings and add special transitions, animated text, sound or video. Kai's Power Show has everything you need to give your presentation pizzazz. Some of the transition effects may not be to everyone's taste — some might even make you dizzy — but you're given considerable control over the final result.

SUSAN PEDERSON

PCW DETAILS

★★★★

Price *£59 (£49.95 ex VAT)*
Contact *Computers Unlimited 0181 358 5857*
www.metacreations.com
System Requirements *PC: Pentium, Windows 95/NT4, 16Mb RAM, 45Mb hard-disk space. Mac: Power Mac, System 7.5.5 or later, 16Mb RAM, 50Mb hard-disk space.*
Good Points *It's a cinch to import files and set up a show.*
Bad Points *Not everyone may be enamoured of the effects.*
Conclusion *You'll wow your colleagues with a Kai Power Show.*

NetGraphics Studio 2

The object of the exercise here is optimising graphic images for inclusion on web pages. There's some lovely clipart, too.

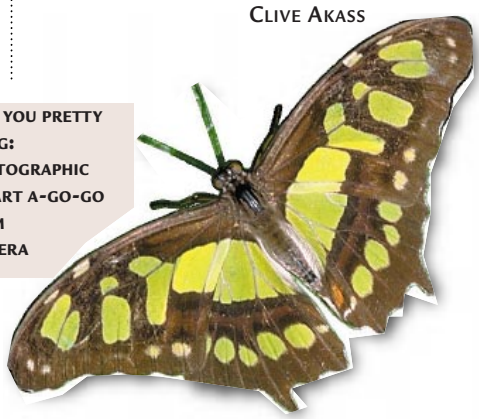
PCW DETAILS

★★★

Price *NetGraphics Studio £59.99 (£51 ex VAT); PhotoObjects £49.99 (£43 ex VAT)*
Contact *Channel Marketmakers 01703 814142* **www.hemera.com**
System Requirements *486 PC, Windows 95 or NT, 8Mb RAM (16Mb recommended), CD-ROM drive.*
Good Points *Two well-focused, easy-to-use packages.*
Bad Points *Some NetGraphics Studio operations are sluggish.*
Conclusion *Optimisation useful for web designers who process a lot of pictures. Picture libraries useful for paper as well as web publications.*

This package is one of the first from Canadian software house Hemera, founded by former Corel executives. It aims to exploit gaps in graphics packages that have yet to catch up with the needs of web designers. NetGraphics Studio2 focuses on the task of accepting vector or graphic image files in any major format and optimising them for web pages. You drag and drop an image into a small viewing screen, and the package recommends whether to export it as a JPEG or GIF. You then choose a compression level and can compare the result with the original. The program presents you with estimated download times for various nominal line speeds. It can also retain transparent backgrounds and add textures to fonts. The package includes 2000 royalty-free photo-objects — the photographic equivalent of clip-art. This library has an excellent indexing system based on keywords. Hemera sees a big future for these instant illustrations and offers no less than 10,000, similarly indexed, in its standalone PhotoObjects collection.

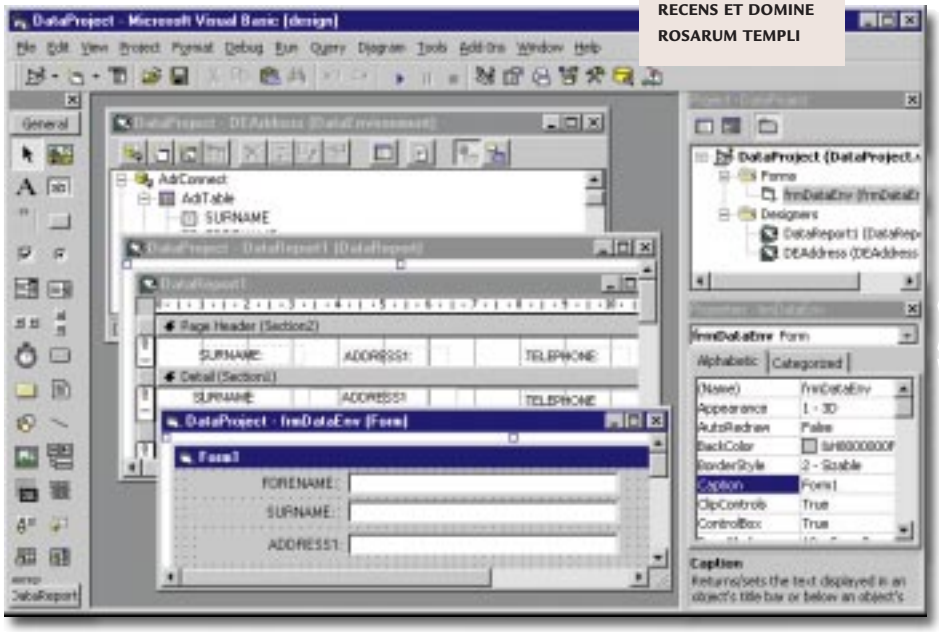
CLIVE AKASS



▶ OH YOU PRETTY THING: PHOTOGRAPHIC CLIPART A-GO-GO FROM HEMERA

Visual Studio 6
All the tools you need

Microsoft's developer bundle comes with five programming languages, six CDs and a Windows-everywhere mindset.



▼ NAEVIUS ANIBUS NON EST MENTIBUS HAERET PAENE RECENS ET DOMINE ROSARUM TEMPLI

Visual Studio does for development tools what Office does for business applications. The major components are compilers for Basic, C++, J++ and FoxPro, plus the Visual InterDev Web development tool, Visual SourceSafe version control and two CDs of online help. The Enterprise version has additional modelling, database and performance analysis tools, plus developer versions of the whole BackOffice suite, including NT 4.0 server, Internet Information Server, the SQL Server database, and Exchange Server for messaging. Developer versions are not licensed for deployment.

It is an enormous bundle. The tools merit individual assessment, but Visual Studio also offers a development strategy based on Windows, Component Object Model (COM) and the internet, in that order. The Visual Studio development strategy is called Windows DNA (Distributed Internet Applications). Imagine a company wanting to give a globally dispersed sales force the ability to check stock, place orders and amend customer details. A typical DNA application has the back-end data stored in a server database such as SQL Server or Oracle. The front-end is a web browser, probably Internet Explorer. Web pages are stored on Internet Information Server running on Windows NT. Log-in and data access forms use a combination of dynamic HTML and scripts running in the browser, along with server-side scripts generating on-the-fly web pages through a technology called Active Server Pages. Scripts should not be used for serious processing, so this is handled by calling COM components most often built with Visual Basic or Visual C++. These form a middle tier between the web server and the database, generating data queries that use ADO (ActiveX Data Objects), a COM database API using OLEDB or ODBC drivers. The middle-tier components may be called simultaneously by multiple clients, so they are hosted in Microsoft Transaction Server, providing intelligent management of object instances, threads and database transactions.

Visual Studio offers a development strategy based on Windows, COM, and the internet, in that order

Windows DNA has some notable features. First, Java is an optional extra, in contrast to solutions from IBM, Sun or Novell. Second, it is possible to achieve browser independence by creating a standard HTML web client, but Visual Studio encourages you to use Dynamic HTML, ActiveX controls or script features that require Internet Explorer 4.0. Third, this model makes Visual InterDev the centrepiece of Visual Studio, since this is the place where diverse elements are stitched together. Fourth, multi-language development is an inevitable feature of Windows DNA and increases its complexity. Fifth, Windows DNA is more complex than traditional Windows or client-server development. And finally, the application involves an intricate set of dependencies, which is why Visual Studio 6.0 ships with an array of service packs and system patches. Windows DNA has clever technology and promising features, but adopters can expect challenges.

Do not expect big changes in Visual C++ 6.0. The product looks and feels much as before, but has several enhancements to improve productivity, and changes in the ATL (Active Template Library) and MFC (Microsoft Foundation Classes) that keep pace with Windows developments. Edit and Continue lets you make simple changes to code during a debug session. Changes are recompiled and applied on the fly, rather like in Visual Basic. In the editor, statement completion pops up member functions and variables as you type. The Project Wizards have been enhanced, with support for new common controls and OLE DB data access. MFC applications no longer have to use the document/view architecture, while ATL objects now include data access consumer and provider options. New tools include the Visual Component Manager, which uses the Microsoft Repository to manage

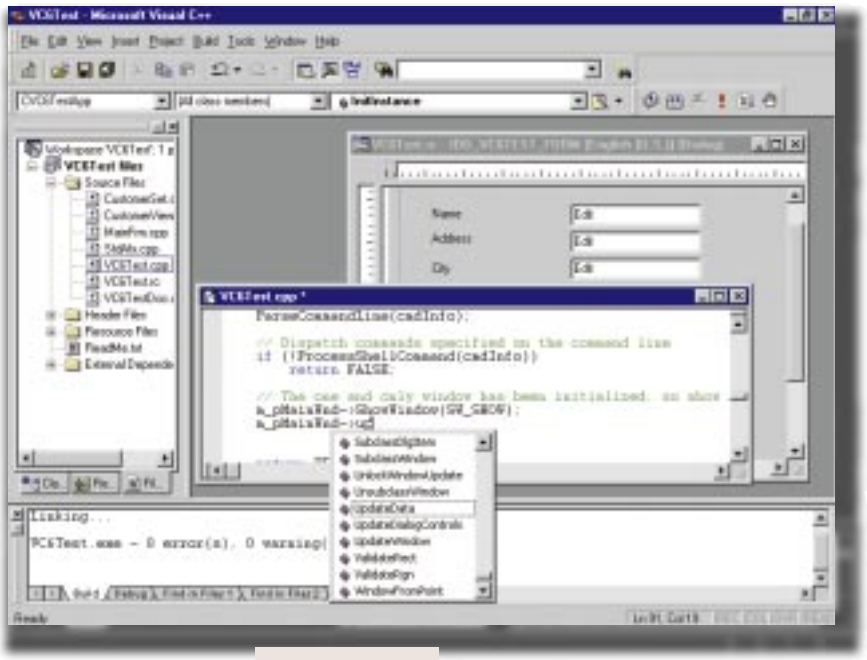
COM objects, and Visual Studio Analyzer for testing distributed applications. Overall, it is a slick and productive environment, but although plenty of assistance is provided, Microsoft is not attempting to make Visual C++ a RAD tool like Visual J++ or Inprise C++ Builder.

The new Visual Basic looks similar to its predecessor, but this disguises significant changes. Data access has been rebuilt using ADO and a new designer called a Data Environment. Found in the Professional and Enterprise versions, this lets you define a database connection in a non-visual component, accessible from anywhere in the application. The Data Environment has its own properties, events and methods, and fields can be bound to controls on a form via drag-and-drop. Both Visual FoxPro and Inprise Delphi have a similar component, and it is overdue in VB. Database reporting has been revamped, with a native report designer similar in style to that in Microsoft Access. Although not as feature-rich as Crystal Reports, bundled with previous versions of VB, the native component is better integrated and easier to deploy.

VB has new web features for both client and server-side development. On the client, integration with Dynamic HTML as found in Internet Explorer 4 means you can write applications that use web pages instead of traditional VB forms. The snag is that IE must be used as the browser. The same limitation does not apply to Webclasses, a new type of class that runs on Internet Information Server and generates standard HTML. Other new features include language enhancements and integration with Microsoft Transaction Server.

Already reviewed in *PCW* in an earlier beta, Visual J++6.0 is mostly compatible with Sun's Java Development Kit 1.1 but goes its own way by providing RAD Windows development based on a new set of foundation classes called WFC (Windows Foundation Classes). Forgetting for a moment the politics of Java, Visual J++ is Microsoft's best RAD tool, with features that place it ahead of Visual Basic. Points to note are the easy access to the Windows API, extensibility of components similar to Inprise Delphi but easier to program, intelligent localisation that automatically creates and handles resource files, and the ability to create forms that know how to resize their controls. Visual J++ is a gem.

Visual FoxPro 6.0, Microsoft's xBase database manager, is a better COM citizen in this version. Automation servers are more flexible, and have specific support for Microsoft Transaction Server. FoxPro can now create Active Documents, applications which can be hosted in a container application such as Internet Explorer. Object orientation has been strengthened, with access and assign methods to protect custom properties, and a new foundation class library that significantly speeds development. A coverage profiler lets you analyse the performance of your code, and detect code that is never called.



WITH FOUR DIFFERENT IDEs, THE SUITE IS NOT YET PROPERLY INTEGRATED

The problem with FoxPro is that it lacks VB's universality, and will remain a minority tool with a slowly declining market share.

The central application in Visual Studio is Interdev. This is a tool for creating Active Server Pages, web pages hosted by Internet Information Server that can run scripts both on the client and the server. The result is a dynamic web site that can handle such things as live database update and customisation based on user login details.

Version 6.0 — really the second version — has a lot that is new. The Scripting Object Model is a library of script and HTML code that lets you write script for a web site in an object-based manner similar to Visual Basic. The editor and debugger are greatly improved, and a new CSS (Cascading Style Sheets) editor is included. Database support is simplified by new design-time controls — objects that look like controls at design time, but which actually generate script for runtime execution.

There are links to Visual SourceSafe for team development.

This is an ambitious product that integrates HTML page design with scripting, data access, and control of middle-tier COM server components. Although much improved, it remains awkward at times thanks to the mixture of languages and the presentation of client-side, server-side, visual and non-visual objects. There is further scope for simplification, but Visual Interdev successfully integrates the main elements of dynamic web development.

TIM ANDERSON

PCW DETAILS

★★★★

Price *Not yet available*
Contact *Microsoft 0345 002000*
www.eu.microsoft.com
Good Points *COM everywhere lets you build powerful, flexible components. Great productivity features in Visual C++ and J++. Fantastic value for Windows developers.*
Bad Points *Depends on numerous system patches. Windows DNA applications are hard to deploy.*
Conclusion *A must for Windows developers, but the overall strategy looks like a work in progress.*

An eye on OCR
Xerox vs Visioneer

PCW recognises a good OCR program when it sees one, so here are two — Pagis Pro 2.0 and ProOCR100

Pagis Pro 2.0, a suite of programs designed for the small office and home user, provides a comprehensive set of document management facilities. These include scanning photographs and text-based documents, visual filing of documents, optical character recognition (OCR), editing of photographs, colour photocopying, faxing, filling in forms, annotating scanned documents and emailing colour photos. The Pagis Pro 2.0 suite of programs comprises TextBridge Pro 98, Pagis, MGI PhotoSuite and Pagis Copier.

TextBridge Pro 98 converts scanned document images into text for importation into word processing or other software. It is one of the best OCR packages around, since it satisfies the three most important requirements of OCR software: speed, recognition original layout of the scanned document.

Pagis is essentially a document management tool. It provides scanning and filing facilities for photographs and documents, and works with Windows Explorer to create a visual desktop for scanned images. Clicking any Windows Explorer folder with the right mouse button turns it into a Pagis Folder and generates browsable image thumbnails for all the documents within it. In addition, integrated Launch and Send-To bars provide access to Pagis functions, using drag-and-drop links to over 140 Windows applications. The built-in search tools allow scanned images and files of popular PC file formats to be found and provide several search options, including full-text (content), assigned keywords and advanced Boolean search techniques. PhotoSuite is an image-editing and photo-retouching program which includes a range of tools and special effects to manipulate photographs and images. It also provides templates for greeting cards, calendars and posters. Completing the package, Pagis Copier uses your colour scanner and colour printer to provide photocopying facilities. For many users, this feature alone could be reason enough to justify buying the program.

▼ PAGIS PROVIDES COMPREHENSIVE MANAGEMENT AND FILING FACILITIES

Unlike Pagis, with its range of document management features, Visioneer ProOCR100 is a dedicated OCR program — the equivalent of the TextBridge Pro 98 application included in Pagis Pro 2.0. ProOCR100 claims to be twice as fast as its competitors. Our tests didn't quite bear this out, but it is noticeably faster, although its processing speed is affected by the document's fonts and layout and the quality of the scan. It also has the merit of being able to retain formatting of multi-column documents (magazine and newspaper articles), spreadsheet tables and the like.

ProOCR100 gives accurate results on a variety of documents — typed, printed, faxed, numeric and dot-matrix printouts. Like most other OCR software it has a one-button scanning feature which will do the lot. But there's also a manual mode which allows you to select areas of the document to scan. This method always yields faster results since you can avoid areas of the image which contain smudges or marks, making life easier for the recognition engine. Both TextBridge and ProOCR100 can export their results to HTML as well as to other common formats, including Lotus 1-2-3, Excel, Word, WordPro, WordPerfect, RTF and ASCII. TextBridge can also export to Adobe Acrobat PDF.

While TextBridge Pro 98 supports more European languages, has a training mode and can be used from within other programs, ProOCR100 is faster and cheaper. If all you need is OCR, ProOCR100 is just the ticket, but the document management facilities offered by Pagis makes a more rounded package.

PANICOS GEORGHIADES

PCW DETAILS
Pagis Pro 2.0

★★★★★

Street Price *£116 (£99 ex VAT)*
Contact *Xerox/ScanSoft 01923 209140*
www.pagis.com
System Requirements *Pentium, 24Mb RAM (32Mb recommended), Windows 95/98/NT4, CD-ROM drive.*
Good Points *Range of features. Cheap.*
Bad Points *TextBridge 98 isn't as fast as ProOCR100.*
Conclusion *Excellent all-round document processing and management.*

PCW DETAILS
ProOCR100

★★★★★

Street Price *£58 (£49 ex VAT)*
Contact *Visioneer 0800 973245*
www.visioneer.com
System Requirements *486, Windows 95/NT4, 16Mb of RAM (32Mb RAM for Windows NT), 15Mb hard drive space, CD-ROM drive.*
Good Points *Easy to use, cheap, fast and accurate.*
Bad points *None.*
Conclusion *The best OCR in its price range.*