Front runners

Welcome to the 1997 *What PC? and Software* Annual Awards. We reveal the best hardware and software products as selected by our panel of specialist writers and contributors

Once again, it's time for the *What PC And Software* Annual Awards, where our team of expert reviewers select the best hardware and software to have appeared over the last 12 months. This year things are a little different: the awards for both hardware and software are presented in a single issue rather than spread over two, and many of the categories have been altered in response to changes in the industry.

Innovation and development have proceeded at the usual furious pace over the past year, but probably the most important new technology to emerge has been Intel's MMX-enhanced range of Pentium processors. The promise of faster multimedia and graphics performance seems to have had universal appeal, and demand for the new processors has been widespread. Intel's prediction that MMX would become a standard part of the Pentium architecture looks well on the way to being fulfilled.

As ever, progress hasn't been restricted to just one or two areas, and the general trend in component pricing continues to be downward. The standard allocation of memory you get with a PC has risen again, and seems to be in transition between 16Mb and 32Mb, while hard disk sizes crossed the 1Gb mark some time ago and now seem to be pushing on past 2Gb and more. For all that, the cost of a powerful, well-specified PC is lower than it was a year ago.

Sustained demand for Internet access has caused modems to become both inexpensive and very fast, while Internet service providers have multiplied, competed among themselves and got cheaper. The battle of the browsers continues apace, with Microsoft's Internet Explorer and Netscape's Navigator reaching release 3 and both still going strong.

The business software suite industry remains in much the same shape it arrived at after the mergers and buyouts of the last couple of years, with Microsoft, IBM/Lotus and Corel holding most of the cards. A similar situation pertains when it comes to integrated packages, with a continued strong presence from Claris and Microsoft dominating the market.

The future looks set to remain fast-paced and interesting, with AMD's impressive K6 processor going up against Intel's Pentium II range, and a major change in the way peripherals are connected coming in the form of the long-awaited Universal Serial Bus. The graphics world seems to be poised on the brink of a 3D revolution which will bring quite literally a new perspective to everything from desktops and databases to games and Web pages.

We'll have to wait until this time next year to find out how far and how successfully these technologies have developed, but the key data on this year's hot products starts right here.

Contents

Budget PC

Dan Home PC

If your budget for a new PC is limited, you'll be attracted by the tempting adverts offering impressive-sounding computers at ridiculously low prices. Attractive though these sound, you should be wary of deals that seem too good to be true. Unscrupulous dealers may try to sell off out-of-date stock to the uninitiated, or simply use shoddy components that will deliver a poor performance.

Our awards in the budget PC category have gone to reputable companies – Dan, Tag and MJN are all well established and manage to produce sensible, no-frills packages at affordable prices. Since they produce PCs of good quality, you'll be able to gradually upgrade your PC as and when you can afford it.

Back in December 1996, we undertook a review of budget PCs, setting ourselves a price limit of £1,200. Both the Dan dantum and the Tag Entro performed well in our tests, and we had a tough time choosing between them. In the end, the accolade went to Dan and, six months on, it is still producing award-winning budget PCs.

The dantum that took the Best Buy prize in December was a 133MHz model, with 16Mb of RAM and a 1.2Gb hard disk. It was also equipped with an 8x CD-ROM drive, a Sound Blaster 16 sound card, and an ATI Mach64 graphics card and would have cost £1,200.

Like most computer companies, Dan is constantly revising its model range, and the Dan dantum is no longer advertised. However, the Dan Home PC offers excellent value for money. For £1,192 you can now get a 150MHz computer, albeit with only 8Mb of RAM. Fork out another £35, and you can take the memory up to 16Mb. Either way, you get a superb ATI graphics card and a TV tuner card. There's also a 16-bit sound card, a built-in modem and an 8x CD-ROM drive.

Software is not forgotten either. In addition to Windows 95, you get MS Works and the PagePlus desktop publishing package, as well as Encarta 97. Five games are also thrown in, including Magic Carpet, Theme Park and FIFA International Soccer.

We see a lot of computers from Dan in the *What PC? and Software* office, and they never fail to impress with the quality of their components and the way in which they are assembled.

An ideal budget buy. Dan has a rock-solid reputation, it builds sturdy PCs and prices them competitively. You may be able to buy a higher-specified PC elsewhere, but it's doubtful that you'd get comparable quality and support.

○ £1,192 (inc VAT)
○ Dan Technology: 0181 830 1100

Dan Home PC

Build quality	★★★★★
Performance	★★★★★
Features	★★★★☆
Value for money	★★★★★
Overall	★★★★★

Tag Entro 133

A very close second to Dan in the December roundup was an entry from Tag – the Tag Entro 133. This performed slightly better than the Dan, but didn't quite have the same edge of quality.

The Tag Entro remains an excellent choice for anyone on a tight budget. Helping to keep costs down is the use of an AMD processor rather than the more common Intel – however, this does actually out-perform an equivalent Intel chip. As standard, 16Mb of RAM is included in the PC and the hard disk drive is a respectable 1.2Gb. You also get a good 15in monitor, which is good news on a budget PC.

You also get an 8x CD-ROM drive, a 2Mb graphics card and a 3D sound card with speakers, making this a fully multimedia-capable PC. What you don't get is a modem, but at just under £1,000 it would be churlish to quibble over this.

£940 (inc VAT)
Tag PC Technology: 0181 803 7770

MJN P166+MM

In March we looked at entry-level PCs when the Best Buy award went to MJN, whose P133 offered good performance, quality and value, at just under £1,300.

You won't find exactly the same model on sale now, but you can find even better value. The P166+MM, with its Cyrix processor, is a fast machine. Like the March winner, it has 32Mb of RAM and a 2.1Gb hard disk drive. With an 8x CD-ROM drive and a 16-bit sound card, this PC is fully equipped for multimedia – it also comes with a good pair of speakers.

You can get onto the Internet as the PC has a built-in 33.6kbits/s. You can also get productive with the software, which includes Lotus SmartSuite, GSP Homewise and Quicken 5.

It's at the top end of a budget price – but this package from MJN gives you a lot for your money.

£1,173.83 (inc VAT)
MJN: 01282 777555

Home/family PC

Packard Bell 9005D

A PC for the family and home needs, inevitably, to be all things to all people – easy for the novices in the family to set up and use, yet powerful enough to cope with a sophisticated user's more demanding needs. These days, full multimedia capabilities are a must and, with the growing interest in the Internet and the World Wide Web, it's a safe bet that someone will need a modem. A set of software titles, including something for all the family, is also essential so everyone can work and play straight away.

We see a great many PCs claiming to be 'for the family', but it's a rare computer that can satisfy all the criteria outlined above, meet the standards of quality demanded by vigorous family life and still be affordable. This year's outstanding machines came from Packard Bell, Viglen and, departing from the PC norm, Apple.

The Packard Bell Executive 9005D is a rarity – a computer designed specifically for family users. It looks less utilitarian than many PCs, with its light colour and heavily moulded casings. There's also the unusual Media-Select – a tray of extra buttons that lets you start most of the PC's multimedia features without having to start up separate programs in Windows. Its flashing lights tell you when there's a fax or voice message and there are buttons to switch on the radio, CD player and answering machine.

Inside the Packard Bell, you'll find a respectable set of hardware components. The processor is a 133MHz Pentium and 16Mb of RAM is included. The hard disk is reasonably comfortable at 1.6Gb and there's a nice SRS wavetable sound card. The modem, at 28.8kbits/s, isn't the fastest, but it's there and it's easy to use. There's also an 8x CD-ROM drive.

What most impressed us about the 9005D was not its hardware nor its performance – it's actually slower than some of the competition – but the ease with which even a complete beginner can set the machine up and start using it.

All the cables are colour coded, so you can see at a glance what goes where. Once you've plugged everything in and switched on, things remain simple, thanks to Packard Bell's Navigator software. This gives an easy introduction to Windows using a graphical interface based on the rooms of a house.

In addition, you get a massive selection of software, making the bundle very good value for money.

For a first-time buying family, with general-purpose computing needs, this is a superb choice.

○ £1,499 (inc VAT)
○ Packard Bell: 01753 831914

Packard Bell 9005D

Build quality	★★★★☆
Performance	★★☆☆☆
Features	★★★★☆
Ease of use	★★★★★
Value for money	★★★★☆
Overall	★★★★☆

Viglen Ultimate 166M

Viglen's Ultimate 166 Plus came into the *What PC?* office for our February roundup of family PCs and it impressed us so much then that it won our Best Buy award. While the Packard Bell 9005D's focus is on ease of use, the Viglen Ultimate concentrates on power and quality.

Since February, the Ultimate has been brought bang up to date, so now you get a 166MMX processor, a generous 32Mb of RAM and a 3Gb hard disk drive. There's also a fast modem, a 3D sound card and a 2Mb graphics card. Coming from Viglen, you can be sure that it's well assembled and top quality.

The PC comes with a solid selection of Microsoft CD-ROM titles, including Encarta 97, Dangerous Creatures and Publisher. A selection of games and edutainment titles written especially to take advantage of the PC's MMX technology is included.

£1,799 (inc VAT)
Viglen: 0181 758 7000

Apple Mac Performa 5400/160

It's not often that we recommend a non-PC-compatible computer, yet the Macintosh Performa 5400/160 has a lot to offer. It's attractively designed and incredibly easy to set up – you simply plug the keyboard into the back of the all-in-one monitor and the mouse into the keyboard. The monitor gives a very good picture and the keyboard is designed to stand up to family life. A modem is built in and trial Internet accounts are included. Software is pre-installed and includes Apple's At Ease program to set up the computer for easy access by different family members.

The bundled software includes reference and games titles, plus ClarisWorks. The choice of software is more limited on a Mac, but if it's otherwise not essential for you to be PC-compatible, this is a good computer offering good value.

£1,498.13 (inc VAT)
Apple: 0181 569 1199

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Looking for an award-winning professional PC is like trying to hit a moving target – someone who uses a PC at a professional or near-professional level is going to want the latest and best in technology. In the world of computers, the latest and best of six months ago is likely to look tired today, so inevitably our hunt in this category had to be restricted to the most recent arrivals.

MMX (multimedia extensions) is the latest and biggest development to hit PCs and no serious computer buyer would consider a machine without it. Processor speed is crucial as well, so in this category we were looking at 200MHz models. As for the rest, all the PC's components should deliver top performance: top-notch graphics and sound, together with a fast CD-ROM drive as well as plenty of memory.

A professional user is also going to want access to the Internet, so a built-in modem is a must. It goes without saying that the award-winner has to be of a high quality as well as offering outstanding performance – in fact the only compromise should be on price.

We looked at MMX PCs in April and in the group test we were particularly impressed by three entries, those from Dan, Viglen and Mesh. Of these the firm favourite remains Dan's Ultimate 200/X, which just has the edge over its nearest rivals in terms of performance and specifications.

A remarkable bonus of the Ultimate 200/X is evident as soon as you look at its midi-tower case – an Iomega Zip drive occupies one of its 5.25in drive bays. The Zip drive can store up to 100Mb of information on cheap, removable disks. This is ideal for backing up important data, as well as providing you with almost unlimited storage space – and you get a generous 2.5Gb hard disk to start with.

The 17in iiyama monitor gives an impressive picture at resolutions right up to 1,280x1,024 pixels. Its controls are easy to use, with good ranges of brightness and contrast.

Look inside the Ultimate 200/X and you'll find 32Mb of RAM, which should be enough for most purposes, and a 2Mb Matrox Mystique graphics card – both contributing to the PC's outstanding performance in the lab test. Add to that a 12x CD-ROM drive and a built-in 33.6Kbits/s modem and you have a computer that should keep even the most demanding user happy for a long time.

Professional PC

Dan Ultimate 200/X

Yet another winning computer from Dan. it might not be the cheapest, but you do get a lot for your money.

○ £2,381.73 (inc VAT)
○ Dan: 0181 830 1100

Dan Ultimate 200/X

Build quality	★★★★★
Performance	★★★★★
Features	★★★★★
Value for money	★★★★☆
Overall	★★★★★

Viglen Awesome 200M Genie ATX

The Awesome 200M's features and performance also impressed us, and this machine has not one but two features that set it apart from its rivals. First, it has an IrDA infra-red port allowing cordless communication with other IrDA-compliant devices such as keyboards. Second, it has a PhotoDrive photograph scanner which takes in a photo, scans it and then displays an impressive digital picture on screen.

The 200M has rock-solid specifications – 32Mb of RAM, a 3Gb hard drive, a 12x CD-ROM drive and a 33.6Kbits/s modem mean that you're getting plenty for your money. An excellent 17in Envy monitor is complemented by ATI's 3D Xpression card, with 4Mb of memory. And, as always, superb Yamaha speakers are included in the Viglen bundle. This truly is an Awesome package, and well worth serious consideration.

£2,351.38 (inc VAT)
Viglen: 0181 758 7000

Mesh 200MMX Fireblade Connect

For delivering the power of a 200MMX machine at a budget-conscious price, Mesh merits a special mention.

The Mesh Elite 200MMX Fireblade Connect has 32Mb of RAM but a slightly smaller hard disk of 2Gb. A Creative Labs Sound Blaster AWE 32 card is included, and graphics are provided via an ATI 3D Xpression card, but there's only 2Mb of memory on board. Another cost saving is a smaller monitor but this is still a respectable 15in model, which gives good pictures up to a resolution of 1,024x768 pixels.

There are no compromises on the modem, whose satisfying 33.6Kbits/s will allow you to connect comfortably to the Internet, or on the 12x CD-ROM drive.

The Elite doesn't have the extras, but then it doesn't have the extra price, either.

£1,643.83 (inc VAT)
Mesh: 0181 452 1111

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Notebooks have traditionally been the last in line when it comes to innovation in the PC world but this situation is beginning to change. In fact, much of the past year's exciting developments have been in the notebook PC market and, apart from one notable exception – Intel's new and improved processor, the Pentium MMX – desktop PCs look hard done by in comparison

That PC makers had MMX-based desktop models available as soon as the chip was launched is hardly surprising, but when MMX-based notebooks appeared shortly afterwards, everyone took notice.

The past 12 months have also seen the launch of the largest notebook display – a whopping 13.3in on the Toshiba Tecra 740CDT (which was also the first MMX notebook). Screens can't get any larger without altering the notebook's case and it will be interesting to see what manufacturers come up with next. Multimedia has also made its presence felt and now most notebooks have built-in sound, speakers and an optional CD-ROM drive.

Singling out one notebook PC from the year's models is difficult, not least because there are so many to choose from. Notebooks also fall into several categories, ranging from compact, highly portable models to ones with features that would put some desktop systems to shame. As ever though, portability has its price and notebook PCs are still markedly more expensive than an equivalent desktop model.

Of all the notebooks we've reviewed over the past year, one offers the best combination of portability and features – the Toshiba Portégé 660CDT. The Portégé range has been around for a couple of years but the 660CDT is the first to feature the same modularity as Toshiba's A4-sized notebooks.

Notebook PC

Toshiba Portégé 660CDT

The Portégé is light (2.6kg) and compact, but still manages to pack in a 150MHz Pentium processor, 16Mb of EDO RAM, a 1.3Gb hard drive and an 11.3in TFT screen capable of displaying at 800x600 in 24-bit colour. The screen can also drive an external monitor at 1,024x768 in 16-bit colour at 85Hz.

A bay on the right of the 660CDT can house either the supplied 10x CD-ROM drive or a floppy disk drive. The bay can also carry a second battery, doubling the time the machine can be used away from mains power. Toshiba's Maxtime Windows software supplies its power management facilities.

The Portégé 660CDT isn't cheap but then notebook PCs never are. It is, however, extremely well-made, highly specified and eminently portable.

○ £4,694 (inc VAT)
○ Toshiba: 01932 828828

Toshiba Portégé 660CDT

Build quality	★★★★★
Performance	★★★★☆
Features	★★★★★
Value for money	★★★☆☆
Overall	★★★★☆

Hewlett-Packard OmniBook 800CT

If portability is paramount, then a notebook PC doesn't come much more portable than the Hewlett-Packard OmniBook 800CT. Weighing just 1.7kg and smaller than an issue of *What PC?*, the OmniBook 800CT is still more than capable of acting as a user's sole machine.

It's based on a Pentium 133 processor and comes with 16Mb of RAM, an 850Mb hard drive and a hot-swappable external floppy disk drive. The 10.4in TFT screen displays a crystal-clear image at 800x600 in 16-bit colour, driven by a 128-bit NeoMagic graphics controller.

The OmniBook has a full selection of ports, including infrared, and even a SCSI interface, albeit a non-standard one. The pointing device is a mouse-like wedge that pops out of the side of the case and is attached by a flexible strip.

£3,642.50 (inc VAT)
Hewlett-Packard: 0990 474747

Panasonic CF-25

Notebook PCs may be portable but they can't be taken just anywhere. Extremes of temperature, excess moisture and harsh handling can reduce a notebook's life considerably. Unless, that is, the notebook is a Panasonic CF-25.

Rugged notebooks usually lose something along the line but the CF-25 is remarkably functional. The 8Mb of RAM is a trifle measly but it has a Pentium 133 processor, 1.3Gb hard drive and 800x600 TFT screen.

It's the extras that make it really special, though. The sealed magnesium alloy case is dust- and water-resistant and the gel-encased disk drives make the CF-25 well up to being bumped about a building site. Easily light (and tough) enough to be carried around with its bolt-on handle, the CF-25 is perfect for anyone who needs a truly mobile PC.

£2,348.83 (inc VAT)
Panasonic: 0500 404041

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Inkjet printer

Epson Style Color 600

Colour inkjet printers are becoming ever more affordable and sophisticated. These days, you can buy a high-resolution printer that's both quick and quiet for around £300. A hidden cost of inkjet printers, though, is their running costs – if the printer has to use expensive paper, or if it relies on photo cartridges for printing photographs, you'll spend more than you bargained for.

In choosing a printer worthy of an award, we were looking for a good all-rounder that would deal well with text, graphics and photos without relying unduly on costly accessories. We didn't have too far to look – the Epson Stylus Color that won our Best Buy award in February has become even better, while printers from Oki and Hewlett-Packard are still proving their worth.

Epson's Stylus Color 500 walked away with the honours in our February group test. It performed well right across the board, producing photo-realistic prints, sharp text and vibrant graphics. Printing to a resolution of 720 dots per inch (dpi), it was thoroughly impressive.

Now, the best has become better, because Epson has released its latest range of Stylus Color printers and the 500 has been replaced by the 600. The printing resolution has doubled, with the Stylus Color 600 printing up to 1,400dpi, giving highly detailed results.

As always, Epson has built a stylish printer. It has a neat, pull-out paper-catch tray at the front and a capacious feeder on top for glossy paper, transparencies or envelopes as well as standard A4 paper. Buttons are kept to a minimum because you use the simple point-and-click printing software for most of your dealings with this printer.

It's print quality that counts, though, and this unit's is very difficult to criticise. If you print at high resolution on plain paper you will get colour bleed, but the results are nonetheless acceptable.

When you really want the best results, Epson's 'photo-quality' paper won't break the bank at £12.33 for 100 A4 sheets, and the output certainly justifies the extra cost. Colours are vibrant, photographic images look extremely realistic and printed text is very sharp, right down to the smallest font sizes. Again, if you print text onto plain paper, you won't get such high-quality results, but even so it is more than good enough for normal use.

As for speed, you'll find the Epson Stylus Color 600 compares well with its rivals, printing up to 4ppm (pages per minute) in colour and 6ppm in mono.

For family use, this printer simply can't be beaten.

○ £329 (inc VAT)
○ Epson: 0800 289622

Epson Stylus Color 600

Build quality	★★★★★
Performance	★★★★★
Features	★★★★★
Ease of use	★★★★½
Value for money	★★★★★
Overall	★★★★★

Okijet 2010

The Okijet 2010 is a printer that keeps on going, winning our 1996 printer award and a *What PC?* Recommended in February. In the world of inkjets, it has lasted a long time – and still looks good.

Although the Okijet 2010 printing resolutions are not the highest, like the Epson Stylus Color models, it prints well across the board. It produces sharp black text, black-and-white photo prints are of almost photographic quality and colour prints are equally impressive. You may find that heavy ink coverage can cause some paper rippling, but this doesn't detract from the overall print quality.

Printing is almost silent and the most noise you will hear is when the sheet-feeder loads a piece of paper.

It probably won't be long before Oki releases a new inkjet, but until then, the 2010 is an excellent choice for a home printer.

£352 (inc VAT)
Oki: 01753 819819

Hewlett-Packard DeskJet 870Cxi

Hewlett-Packard is another name that is inextricably linked with printers and when you look at the 870Cxi, you can see why. Costing rather more than many inkjets, the 870Cxi has a lot to offer.

There's a choice of three printing modes – Econofast, Normal and Best, and the higher the quality, the slower the output. In Normal mode, the 870Cxi churned out 7ppm (pages per minute) of very sharp text. Adding colour slows things down significantly, but even so high-quality colour prints emerge at a respectable 2ppm.

Interacting with this printer is easy, using the ColorSmart printer utility, which can also make selections for you.

With a solid metal chassis, the 870Cxi is rugged enough for sustained use in a small office, or for heavy family use, and it will deliver prints of a very pleasing standard.

£494 (inc VAT)
Hewlett-Packard: 0990 474747

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Personal laser printer

QMS DeskLaser 600

Today's personal printer market is a little simpler than it was last year, but not much. The price between inkjet and laser printers has now narrowed to the point where there's little between them. Laser printers are also getting smaller and no longer require a desk across the other side of the room to hide their noise and smell.

Although they can't yet print in colour (at least not at a price that most people can afford), laser printers still offer many advantages over inkjets. The most apparent is quality – only the very best inkjet printers can match the sharp text output of a laser, and then only on special paper. A laser printer can also churn out several pages of text a minute, even on cheap photocopier paper.

There are a couple of reasons for the diminishing size of laser printers. The first is that many aren't laser printers at all but LED printers. Instead of using a laser beam and all of the associated machinery, LED printers use a row of LEDs (light emitting diodes). The effect is the same but because there are fewer moving parts involved, the printer is smaller.

The other reason is the widespread use of the Windows Printing System. Rather than rely on the printer to do all the hard work in processing a page to be printed, the Windows Printing System gets the PC to do it. Most modern PCs are more than capable of handling this extra workload and the result is a simpler, cheaper printer.

The *What PC?* personal laser printer award goes to a printer that uses the Windows Printing System, but is a true laser, rather than an LED, printer. Despite this, the QMS DeskLaser 600 is still remarkably cheap and is a stunning performer.

Designed more like an inkjet than a traditional laser printer, the QMS DeskLaser 600 is very compact and will fit easily on all but the smallest of desks. Like other Windows Printing System printers, this one makes do with few controls (only two LEDs and a power switch) and instead relies on the PC to inform the user of such things as the printer being out of paper.

The QMS DeskLaser 600's print quality is very impressive. At 600dpi (dots per inch), the text is crisp and character edges remain smooth even under magnification. The graphics fare just as well and printouts are clear and detailed, with sharp contrast.

Compact, reasonably priced and with dazzling print quality, the DeskLaser 600 offers pretty much everything you want from a personal laser printer.

○ £287.88 (inc VAT)
○ QMS: 01784 442255

QMS DeskLaser 600

Build quality	★★★★☆
Print quality	★★★★★
Features	★★★★★
Ease of use	★★★★★
Value for money	★★★★★
Overall	★★★★☆

Hewlett-Packard LaserJet 5L

If anyone should know how to make a laser printer, it's Hewlett-Packard and its LaserJet 5L really delivers the goods. The unit is a little on the large side for a personal printer but it's still small enough to sit happily on most desks which can support its 7.1kg.

The LaserJet 5L is a genuine laser printer but doesn't use the Windows Printing System. Fortunately, this doesn't mean that it's speckled with cryptically-labelled LEDs and the printer driver is clever enough to detect printer faults and inform the user via the PC's screen.

Print quality is staggering – even better than the QMS DeskLaser 600. It does cost, though, and is one of the most expensive personal lasers around. However, its 600dpi output is razor sharp and both text and graphics are of a quality that puts some laser printers costing twice as much to shame.

£440.63 (inc VAT)
Hewlett-Packard: 0990 474747

Oki Okipage 4w

If it's a small laser printer you're after, they don't come much smaller than the Okipage 4w. With a footprint barely larger than the pages it prints on, it's small enough to fit almost anywhere.

The Okipage 4w is both a GDI and a Windows Printing System printer, which goes a long way to explain its tiny size. The separate toner cartridge is on the same small scale and although it lasts for only 1,000 pages, it costs just £20 a time.

Size isn't an indication of performance though, and the Okipage 4w's 600dpi output is excellent. Text is sharp, and although character edges do show some unevenness, this isn't noticeable enough to cause much concern. Graphics quality is good as well and the Okipage 4w is perfect for anyone wanting great prints from a small package.

£279 (inc VAT)
Oki: 01753 819819

Monitor

Diamond Pro 87TXM

Most PC manufacturers, it seems, concentrate on the base unit – they'll make sure that the hard disk, RAM, graphics card, sound and CD-ROM are all impressive – whereas the monitor is a soft target for cost cutting. It's certainly not unusual to find a 14in monitor supplied with even a fairly powerful computer system, and the most you could normally expect to find is a 15in model. This means you are restricted in the resolution displayed by your monitor and in the amount you can see on screen. If you're working with graphics or a spreadsheet, this can be very frustrating.

If you feel the need to replace your existing monitor, a good compromise between size, resolution and cost is offered by monitors with a 17in tube diagonal – this gives you a comfortably readable screen at a resolution of 1,024x768 pixels. For our 1997 award, we were looking primarily for good image quality with easy-to-use controls, yet at reasonable cost. In the running were monitors from Mitsubishi, Idek and Nokia. And the winner of our December 1996 Best Buy award, Mitsubishi, has edged out in front again.

The Diamond Pro 87TXM monitor uses Mitsubishi's own Diamondtron screen. The 'tron' at the end of the name may sound reminiscent of Sony's Trinitron and, in fact, this is Mitsubishi's version of the Trinitron, following a technology exchange deal with Sony. The external characteristics of the two screens are the same, both being flat in the vertical plane, giving a very flat image.

The screen is packaged inside a compact cabinet measuring just under 17in deep, resting on a conventional tilt-and-swivel stand. While being firm and supportive, this is quite easy to reposition, despite the hefty 22kg of cabinet.

An impressive range of controls is operated through an on-screen display and the screen menus make use of pictures showing the effects of the various options. Each of the three factory-preset channels is fully customisable, with individual adjustments for the red, green and blue components.

What of the picture though? Here again the Diamond Pro acquits itself well. With good overall focus, the picture remains sharp to the corners, and colours are so rich and vibrant that you get a very strong impression of depth or relief to the display. A vertical refresh rate of 100Hz is supported at 1,024x768 resolution, so the picture is nice and stable as well as crisp.

A well-made monitor with excellent and detailed controls and a quality screen.

○ £821 (inc VAT)
○ Mitsubishi: 0800 212422

Diamond Pro 87TXM

Build quality	★★★★★
Performance	★★★★★
Features	★★★★★
Ease of use	★★★★★
Value for money	★★★★☆
Overall	★★★★★

Idek iiyama Vision Master 17 Pro

Unusually in the group review, there was a whole host of monitors competing for the Recommended award – in the end, no less than four monitors took this prize. Of these, one we particularly liked was the iiyama model. When you look closely, this perhaps is not so surprising, as it, too, makes use of a Mitsubishi Diamondtron tube.

At 23kg it is even heavier than the Mitsubishi and it has a viewable diagonal of 15.75in. Again, like the Mitsubishi, it has excellent on-screen digital controls, so it is easy to fine-tune the settings.

With a screen resolution of 1,024x768 pixels at a refresh rate of 110Hz, the iiyama also gives a very good, sharp image, that remains very stable. It, too, has a fine dot pitch of just 0.25.

All in all, this makes another excellent choice if you're thinking of upgrading your monitor.

£735 (inc VAT)
Idek: 01438 745 482

Nokia 449Xa

If your budget won't stretch to a 17in monitor, but you want to replace your 14in model, then a 15in screen is a fair replacement. Although only 1in larger, you'll find this will give a much-improved image and be a lot more restful to look at.

A 15in screen we particularly liked was Nokia's 449Xa Multigraph, with built-in speakers. The stylish 449Xa is surrounded by a minimum of plastic, making the 13.2in viewable diagonal seem a fair bit larger than it really is.

The speakers are fitted at the bottom of the case, one at each side of the monitor's controls, and there are sockets for attaching the speakers to the PC's sound card, as well as a socket for headphones.

The 449Xa gives an excellent picture, and is capable of a resolution of 1,024x768 at an 80Hz refresh rate.

£309 (inc VAT)
Nokia: 01793 512809

Modem

US Robotics Sportster Flash

When the first 28.8Kbits/s modem appeared, everyone thought that it was as fast as a modem could get using a normal telephone line. Then, along came a modem that offered 33.6Kbits/s. Can modems get any faster?

Of course they can and they have. Two modem manufacturers are now selling units that offer speeds up to 56Kbits/s – Motorola with its K56Flex models and US Robotics with x2. Buying a modem that can communicate at speeds close to that of an ISDN line isn't quite that simple though, and there are a couple of caveats

First, modems from both manufacturers can only *download* data at 56Kbits/s, because of the way the technology works. Since most ISPs (Internet Service Providers) have a digital connection to the telephone network, data can stay in digital form until it reaches the user's local telephone exchange, at which point it is converted to analogue and sent on to the receiving modem.

Digital-to-analogue conversion does little to degrade data sent at high speed so a PC can receive data from an ISP at 56Kbits/s. Unfortunately, analogue-to-digital conversion (required to send data from the user's PC to the ISP) does degrade data and so upload speed is limited to 33.6Kbits/s.

Second, receiving data at 56Kbits/s is possible only if the ISP supports it. Fortunately, most are planning to, but the presence of two technologies from different manufacturers does confuse matters. Until a standard is issued by the ITU standards committee, users are faced with a choice when it comes to buying a modem.

The choice is made a little easier, however, when you consider which manufacturer has the widest ISP support. More than 300 ISPs worldwide have announced support for x2 (see the complete list on the Internet site at x2.usr.com/leaders/index.html) and so this year's *What PC? and Software* best modem award goes to US Robotics for its Sportster Flash.

Sportster modems have performed consistently well in *What PC?* Lab tests and the Flash is the latest incarnation of this popular model. Although it looks just like the other Sportster models this one has an important difference. The 'flash' epithet refers to the modem's flash memory that allows it to be easily upgraded from 33.6Kbits/s to x2. By the time you read this, the x2 upgrade should be available from the US Robotics bulletin board and, once this is installed, the Sportster Flash will become an x2 modem.

○ £229 (inc VAT)
○ US Robotics: 01734 228200

US Robotics Sportster Flash	
Build quality	★★★★★
Features	★★★★★
Ease of use	★★★★★
Value for money	★★★★☆
Overall	★★★★☆

Psion Dacom Gold Card Global

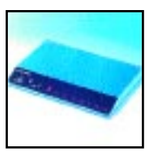
Psion's Dacom Gold Card Global is a perfect PC Card modem for travellers who need access to information on the move. Modems have to be approved for use in a country other than the one it was sold in and, even then, that's no guarantee it will work.

The Gold Card Global is approved for use in more than 20 countries and it will work in all of them, thanks to the supplied country-switching software. The 33.6Kbits/s card also works as a Group 2 fax and has 2Mb of flash memory for handling upgrades to new communications standards.

If landline communications aren't sufficient, the Gold Card Global also supports GSM handsets with the addition of an optional cabling kit. All GSM networks are supported and the lifetime worldwide support makes the Gold Card Global an indispensable addition to any notebook's carrying case.

£245.58; GSM upgrade from £163.33 (all prices inc VAT)
Psion Dacom: 01908 261686

Lasat Safire 336 Voice



When introduced a few years ago, the Lasat Safire brought a dash of style to the world of black-box modems. Lasat is continuing the fashion for angular blue modems with its latest model, the Safire Voice 336.

Although wider than other Safires, the 336 Voice retains other features and adds a few much-needed ones. There's an on/off switch and a telephone-through socket for when the modem shares a line with a phone.

In addition to 33.6Kbits/s data and Group 3 fax operation, the Safire 336 Voice can handle simultaneous voice and data calls and has a built-in speaker and microphone. This allows, for example, two people to converse via the modem as well as using it to play a game head to head. The unit can also be used as an electronic answering machine.

£163.33 (inc VAT)
Lasat: 0181 899 1764

Scanner

Epson GT-5000

Nothing startling has happened in the scanner market this year, although there has been a definite move towards lower-cost, higher-specification flatbed scanners aimed specifically at SOHO (small office; home office) users. Time was when a few hundred pounds would have bought you little more than an 8-bit (grey-scale) hand-held scanner with maybe a 400dpi (dots per inch) resolution. Today, for not much more, you could expect to get a 24-bit (so-called 'true colour') flatbed scanner with a good software bundle. This is obviously good news for the buying public, and it has had the added side effect of pushing the humble old hand-held scanners almost to point of the extinction.

We've gathered some low-cost flatbed devices together and put them through their paces in the VNU Labs. As a result this year's award for the best scanner also goes to the winner of this month's group test – the superb GT-5000 from Epson.

In computing circles, Epson is probably best known for producing a wide variety of printers. However, it has been producing flatbed colour scanners since the 1980s and the excellent GT-5000 is its latest stab at the home market.

Like most flatbed scanners, the GT-5000's design is conservative. The lid flips up revealing the A4-sized image 'bed', which, again like most flatbeds, has measurement graduations along its length.

The GT-5000's true optical resolution (the amount of detail, or dots, that it can actually 'see') is 300x1,200dpi (dots per inch), but this can be interpolated up to 2,400x2,400 through software. Essentially this means that your PC fills in the missing detail by making calculations from the information it does have.

Some scanners communicate with PCs using a SCSI card, while others have to do it via a slower (but simpler) parallel port connection. However, with the GT-5000 Epson gives you the choice – it comes with a bi-directional parallel cable (and card) as standard, but a SCSI interface is also available as an extra.

Epson's chosen set of software freebies is certainly thoughtful. Rather than simply assembling a disparate collection of cheap utilities, Epson has included a complete version of the excellent Corel DRAW 4, along with PhotoPaint 5 and the basic edition of TextBridge OCR.

You can buy better scanners than the GT-5000, but you would have to spend a good deal more than the £387 that Epson is asking.

○ £386.58 (inc VAT)
○ Epson: 0800 289622

Epson GT-5000	
Build quality	★★★★★
Performance	★★★★★
Features	★★★★☆
Ease of use	★★★★☆
Value for money	★★★★☆
Overall	★★★★☆

Microtek ScanMaker E6 Standard

Microtek's ScanMaker E6 Standard is a hefty model, both physically and in terms of features. It has an impressive 600x1,200 optical resolution and it's also a 30-bit scanner, meaning it can determine over one billion colours. It has a 330mm-long scanning window so it can scan documents or objects that are larger than an A4 page.

Surprisingly, even though it has a one-pass scanning action, the E6 Standard proved to be quite slow during our tests. Set at 300dpi and 24-bit colour, it took 175 seconds to deal with our A4 test image. However, the resulting scan was of a quality that places the E6 Standard firmly above many of its rivals.

Unfortunately, Microtek lets itself down a little with the manual, which, as well as being sparse, is highly generic.

This comes a very close second in this year's scanner awards.

£399 (inc VAT)
Computers Unlimited (distributor): 0181 200 8282

Mustek Paragon 600IISP

The Paragon 600IISP successfully balances cost and quality. If you want top-quality scans, buy either Epson's GT-5000 or Microtek's ScanMaker E6 Standard, but if you don't mind sacrificing a (small) measure of quality to save over £200, then get the 600IISP.

It's pretty compact, and the accompanying software can interpolate its basic resolution of 300x600dpi up to a whopping 4,800x4,800, but this only seems to work well if the original image is very detailed.

The 600IISP's scan of our test image fared very well. The pick-up at all parts of the spectrum was good and it also proved itself to be the fastest scanner we tested this year.

On the downside, it's a good job the 600IISP is simple to set up because the instruction manual is dire.

£159 (inc VAT)
Enta Technologies (distributor): 01952 428888

Sound card

Ubi Soft Maxi Sound 64

It's now almost impossible to buy a PC that doesn't have a sound card. What was once considered as a lightweight extravagance reserved solely for games players is now an essential component of every multimedia PC.

Unlike the home computers popular during the 1980s and every Apple Macintosh, the original PC had no built-in sound capacity. The PC can, however, be expanded and adding sound to a system is as simple as adding a sound card.

The most popular PC sound cards are the 16-bit FM-based ones, not least because of their reasonable price. The next step up – a sound card with wavetable synthesis – has traditionally been an expensive option and one best left to PC owners who are serious about their sound.

Wavetable sound card prices have dropped considerably over the past year and you can now buy models for around £150. This means that wavetable sound is no longer the preserve of musicians and almost anyone can get fantastic MIDI music through their PC.

The standard for wavetable sound cards is 32-voice polyphony. This allows 32 instruments to be played simultaneously, which is adequate for most purposes but it can limit some compositions. Two cards released this year, however, have 64-voice polyphony and open up a whole new area for PC music.

Of all the sound cards we've seen over the year, the one that impressed us most came from a company dipping its toe into the PC hardware market for the first time. Ubi Soft's Maxi Sound 64, as its name suggests, has full 64-voice polyphony and, perhaps more importantly, great sound.

The Maxi Sound 64 is available in two versions – one with home recording software (Quartz Audio Master SE) and one without – but both install effortlessly, thanks to their plug and play support. The two-thirds-length card comes equipped with an IDE interface connect, a CD-ROM drive and a surround-sound socket for an additional pair of rear speakers.

The card has no on-board RAM for user samples but it does have a single 72-pin SIMM socket that can house up to 16Mb of RAM. The card's samples, which are particularly impressive, are stored in 4Mb of ROM. The rich and sonorous sounds bring a touch of class to almost any MIDI file and are really bettered only by those found in cards costing almost twice as much.

Reasonably priced and easy to install, the Ubi Soft Maxi Sound 64 offers great sound and advantage of 64-voice polyphony. A bargain.

○ £149 (inc VAT)
○ Ubi Soft: 0181 944 9000

Ubi Soft Maxi Sound 64	
Performance	★★★★★
Features	★★★★★
Ease of use	★★★★★
Value for money	★★★★★
Overall	★★★★★

Creative Labs AWE 64

Creative Labs' AWE 32 used to be the wavetable sound card standard by which others were judged but it's now been put out to pasture. Its successor is the AWE 64, a 64-voice polyphony card.

The 64-voice wavetable synthesis is split 50/50 between hardware and software. The 32-voice hardware synthesis can be used by any PC, but the software synthesis relies on software written for genuine Intel Pentiums only. Creative Labs is working on other versions.

The AWE 64's samples are cleaned-up versions of those used on the AWE 32 but the addition of WaveGuide technology improves them greatly. This software (again for Pentiums only) applies mathematically-derived filters to samples to make them sound more natural and expressive. The good news is that it works and the AWE 64 sounds fantastic.

£169 (inc VAT)
Creative Labs: 01734 344322

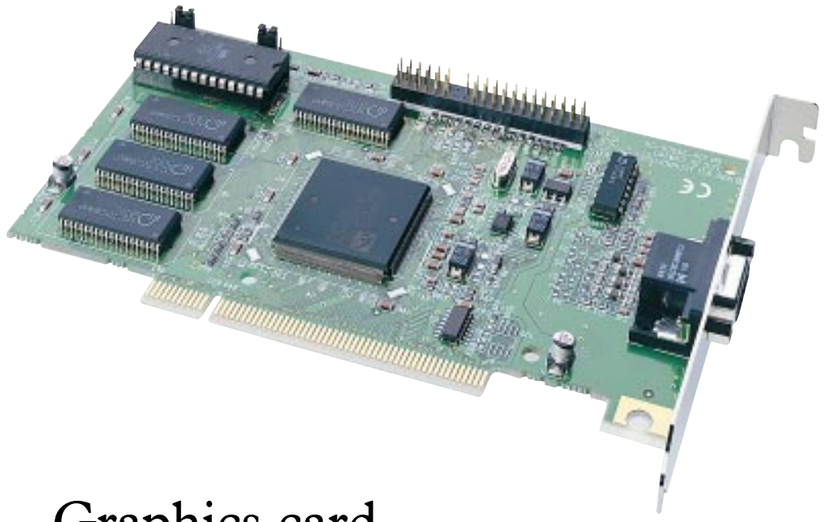
Yamaha SW60XG

Wavetable add-on boards for existing FM sound cards are not new but they rely on the existing sound card having a suitable connector. The Yamaha SW60XG gets around this by slotting into a free ISA slot and it works with any sound card.

Installation is a breeze and the only connections required are from the old sound card's speaker output to the SW60XG's input (so non-wavetable sounds can still be heard).

The exciting parts are the XG extensions to the GM (General MIDI) standard. When used in a MIDI file, they enable a variety of sophisticated instrument effects to be brought into play. Coupled with the high-quality samples, the result is a sound card that can produce music almost indistinguishable from original recordings.

£149
Et Cetera: 01706 219999



Graphics card

ATI Video Expression

It's been a particularly turbulent year in the graphics card market. Using a rough-edged knife you could probably now split it into two main areas: 2D and 3D cards. Broadly speaking, 2D cards are considered to be the all-round workhorses, expected to handle any graphical task you can throw at them. Most of the time this means day-to-day running of Windows and Windows-based applications, such as word processors and spreadsheets, but until recently 2D cards also had to cope with the increasingly demanding needs of games and games players. This is where the 3D graphics cards come in. These relatively new types of cards are designed to deal with 3D graphics and this, for the most part, means they're bought and used solely to enhance 3D games.

This past year has seen a huge growth in the market for dedicated 3D graphics cards, but it's also been by far and away the most confusing. Some 3D cards will only work if you already own a 2D card, while others replace your existing graphics hardware. Furthermore, some games will only work with certain 3D cards – and then only if you have up-to-date drivers. Microsoft's launch of its DirectX 3.0 standard promises to bring some stability to this market, but until all software and hardware developers settle on the standard the market could at best be described as a mess. So this year we're going to hold off from giving a separate set of awards to 3D graphics cards, concentrating instead on the trusted performers of the 2D arena.

The award for the best 2D card of the past year goes to ATI's competitively priced Video Xpression card. Like most companies in the computer industry, ATI started as a small company (in 1985) marketing just one product and has gone on to become a large manufacturer of a plethora of graphics solutions.

The Video Xpression is not the newest product in the ATI line-up, but is one of the most popular. The card is built around an ATI-264VT video and graphics accelerator chipset. Our review model had 2Mb of DRAM, although a cheaper 1Mb model is available. The 2Mb model can produce a top resolution of 1,280x1,024, with 256 colours and an 80Hz refresh rate.

ATI also offers a TV tuner board and a hardware MPEG (Moving Pictures Expert Group) decoder as upgrade options for the Video Xpression. MPEG is a popular format for storing and playing video clips as computer files, and a decoder is necessary to view them.

The ATI performed excellently in our tests, and is good value at £119.

○ £119 (inc VAT)
○ ATI: 01235 833666

ATI Video Expression	
Performance	★★★★★
Features	★★★★☆
Ease of use	★★★★☆
Value for money	★★★★★
Overall	★★★★★

STB LightSpeed 128

STB Systems is a veteran of the graphics card industry, having been producing such peripherals from its Texas base since 1981. The company has its own production facilities and claims to be the third-largest independent manufacturer of graphics cards in the world.

The LightSpeed uses an ET6000 graphics controller, which is also found in several other 2D cards such as Hercules' Dynamite 128, and is slightly unusual in that it is fitted with 2.25Mb of MDRAM (Multi-bank Dynamic Random Access Memory). This is a relatively new type of memory that, according to its manufacturer MoSys, offers the best all-round performance.

Resolution-wise the LightSpeed will output up to 1,280x1,024 pixels. You will benefit from higher resolutions such as this on a screen larger than 15in.

£97.88 (inc VAT)
STB: 0181 897 1003

VideoLogic GrafixStar 600

VideoLogic is something of an oddity among graphics card manufacturers – it's a British company with its corporate headquarters in Hertfordshire.

Since its release in 1996, the VideoLogic GrafixStar 600 has received much praise and a multitude of good reviews. This graphics card is based around the 128-bit ET6000 controller and also uses MDRAM technology rather than conventional DRAM or VRAM.

Capable of a maximum resolution of 1,600x1,200 and, at 200Hz in 640x480, the GrafixStar also offers one of the highest refresh rates around. It comes with a CD-ROM disc which has drivers for Windows 3.1x and Windows 95, as well as some demonstration programs. Regardless of which card you buy, you will receive a drivers disk.

£116.33 (inc VAT)
VideoLogic: 01923 260511

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Personal Digital Assistant/Palmtop

Psion Series 3c

The past 12 months have seen a number of major developments in the PDA (Personal Digital Assistant) market. The biggest was Microsoft's announcement that it was to produce a version of Windows for use on handheld computers.

This mini operating system, Windows CE (Compact Edition), isn't Windows 95 but it does look like it. A Windows CE machine's screen looks like the Windows 95 desktop, complete with icons for My Computer and Recycle. Cut-down versions of Word and Excel are launched from the Start button and a stylus/touch-screen combination takes the place of the mouse.

Windows CE machines have just started to appear on the shelves in the UK. They have been on sale for a while in the US, and models from the likes of Compaq, Casio, NEC and Hewlett-Packard have been selling extremely well.

The year's other big news came from Psion. It made two announcements – one more or less expected, the other less so. The surprise was the Psion Siena, a smaller, cheaper version of the Series 3. It retained the familiar clam-shell design of its forebears but the screen was smaller (half-size at 240x160 pixels) and incorporated a numeric keypad inside the lid. The applications were similar too, although rewritten for the smaller screen, and the lack of SSD slots meant that the Siena was one of the slimmest PDAs around.

This year's *What PC?* award, however, goes to Psion's other announcement, the Series 3c. To be fair, the 3c wasn't quite the replacement to the 3a that everyone was expecting but it still incorporates many useful additions and refinements. The 3c is the same size, shape and design as the 3a but the finish is now in black rubber. Other changes include the replacement of the old serial interface with one capable of 56Kbits/s transfers and the addition of an infra-red interface. Inside the case, the screen sits lower in the lid and, on the 2Mb model, there's a useful backlight.

Apart from the addition of a new quick note-taking application (Jotter) and a long-overdue file manager, the 3c's applications are essentially the same as the 3a's. They have been modified slightly – there's a new 'busy' view in the agenda and a much-needed list view in the database. If you use a 3a for sound recording you will be pleased to see the vastly improved digital recording and editing application.

The Psion wins the What PC? PDA award for the umpteenth year running because, quite simply, it's the best PDA around.

- 1Mb £329.95; 2Mb £399.95 (inc VAT)
- Psion: 0990 143050

Psion Series 3c

Build quality	★★★★★
Features	★★★★☆
Ease of use	★★★★★
Value for money	★★★★☆
Overall	★★★★★

US Robotics PalmPilot

Full marks to US Robotics for producing a device that redefined rather than merely rehashed the PDA model. The PalmPilot (as it is now known) is small and light enough to fit easily into a shirt pocket.

The PalmPilot lacks a keyboard and instead uses the Graffiti handwriting recognition system. The big advantage is accuracy – Graffiti gets the user to learn its handwriting rather than the other way round.

All the usual applications are present and two new models launched this year add an expenses manager, an off-line e-mail reader/composer, and a backlit screen. PC communication is straightforward – drop the PalmPilot into the 'cradle', press the HotSync button and both ends are quickly synchronised, leaving both PC and Pilot with identical copies of the data.

PalmPilot Personal $299; PalmPilot Professional $399 – UK pricing to be decided

US Robotics: 01734 228200

Sharp ZR-5800

Sharp's PDA, the ZR-5800, looks expensive. Unfortunately, it is expensive but that doesn't detract from the fact that it's an excellent machine.

Large, slim and with a leather-effect finish, the ZR-5800 takes the familiar clamshell approach with the keyboard and backlit screen inside each half of the case. Although the screen is touch-sensitive, there is no handwriting recognition and the stylus is used only for item selection and drawing.

The applications are well-written and easy to use. One useful feature is the ability to link entries in different applications. The ZR-5800 also has an infra-red interface and a single PC Card slot. Add a PC Card fax modem and, in conjunction with the supplied fax and e-mail applications, the ZR-5800 becomes an effective mobile communicator.

£529.99 (inc VAT)

Sharp: 0800 262958

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