Melissa shoots into top ten

The Melissa macro virus hit the UK Top 10 within five days of having being discovered. It spreads by sending itself to the first 50 names in a victim's email address book. Melissa has no malicious payload other than passing on a list of smutty sites, but it was reported to have overloaded several mail servers. A 30-year-old New Jersey programmer, having been accused of spreading the virus, is expected to face a trial by grand jury.

Satellite service

EasyNet has launched satellite-based web access for £49.99 (ex VAT) per month or £599 (ex VAT) a year.

• *See next month's PCW.*

Non-Wintel devices put Microsoft on the defensive

Microsoft has outlined what looks like a strategy to counter the proliferation of smart non-Wintel devices.

Some of these, highlighted this month, were unveiled at Germany's giant Cebit show. Few think they will displace the PC, but many vendors believe that cheap, task-specific smart devices are more likely to hit a true mass market.

Microsoft president Steve Ballmer, in a keynote at the WinHec hardware conference, announced an EasyPC initiative to simplify the PC. He said users had to be able to expect to simply switch on and go. But he claimed the Wintel architecture would reach beyond the desktop and into home appliances. 'The PC of

More Cebit news on pages 28-31, 33, 42 & 43

tomorrow will be able to be general purpose,' he said. 'But if the customer wants a single-purpose machine, we will give it to him.'

His view is shared by Cyrix, which plans a series of specialist x86 designs *(see p33)*.

Ballmer also announced that Windows 98 will get at least two more upgrades until it is subsumed into a new NT-based operating system some time after 2000AD.

One of these, dubbed Windows 98 Second Edition, will arrive this autumn and cost $89. It supports Device Bay — another move to simplify PC use.

Meanwhile, Corel is pushing Linux as a Windows alternative for the desktop *(p34)* and UK computing pioneer Sir Clive Sinclair plans a low-cost Linux portable.

CLIVE AKASS

Additional reporting by Robert Juman-Blincoe and Dominique Deckmyn.

Home, home on the always-online range

IT vendors, if not users, are waking up to the huge changes that will occur with the emerging **fast, home data links**. The speed of xDSL and cable modems is only the half of it: the fact that they are always on is at least as important.

One likely application is surveillance. Burglar alarms are often useless because police are swamped by false alarms. But if you are online, you can have a webcam snap an intruder and send you an instant alert — with picture. You can even keep a remote eye on your kids or babysitter.

The £159 (ex VAT) Moviestar pack *(pictured)*, although targeted at companies, shows the idea. It allows you to

link as many as four cameras to a PC, and a £399 (ex VAT) professional version will send video events across a network.

IBM is so excited by the prospect of home links that it is proposing a kind of data mains box which can talk to home devices using any of a variety of standards. The Java-based Open Service Gateway, unveiled at the Cebit show, could conserve energy by allowing power companies to control appliances to cut consumption at peak times. IBM, which has produced reference designs, reckons companies would save enough to warrant subsidising OSG boxes and give their users discounts on electricity bills.

Various systems are being suggested for distributing data around the house. Among them, using the new IEEE 802.11 wireless networking standard, is the Zoom radio LAN system launched here last month *(see p70)*.

ATM 0191 4145929, www.atmltd.co.uk

Ericsson opens up a new mobile Epoc

Hands up those who thought the handheld on the left is a Psion Series 5.

You're wrong — but you're not completely wrong. This machine from **Ericsson**, previewed at Cebit, is one of the first fruits of the Symbian alliance between **Psion** and the world's three leading mobile phone vendors — the other two are **Nokia** and **Motorola**.

Psion unveils mini notebook See page 29

The Ericsson MC218 has the same body as the Series 5 and uses an updated version of its Epoc 32 operating system, now owned by **Symbian**. The new Epoc boasts a Java Virtual Machine, enabling it to run Java applets.

All the rest of the hardware is Ericsson-designed and, predictably, it includes GSM cellular connectivity via the mobile phone pictured *(left)*.

Ericsson also showed the Epoc-based R380, its answer to the Nokia Communicator, a combined organiser and mobile phone.

● *See Cebit trends on pp42 & 43, with a picture of the R380.*

PRIVACY

Travellers face filth check

Notebook users will soon face **routine 'smut checks' at Customs**, according to a forensic software developer.

The check could open them to prosecution, even for deleted files, said George Stevenson, MD of Vogon International.

Vogon began as a data recovery specialist, but got into forensic work when it was asked to develop a package to enable easy identification of pirated software. Its method, based on a database of file signatures, was then adapted to identify pornography – particularly child pornography. It is already in use by police.

Stevenson said he 'has reason to believe' that Customs will run his software on notebooks coming into Britain. 'They'll ask you to switch on the machine. Then they will slip in our disk, run the check, and if it goes *ping, ping, ping* you are likely to get your collar felt,' he said.

The software can detect zipped and deleted files, but only some encrypted forms. The signatures it uses are all of pornography that has featured in court cases. 'Some of the material…is nightmare stuff. They have stuff where children have been murdered live…they have been murdered and videoed. A lot of that stuff is coming out of the Far East,' said Stevenson.

He agreed that there was a chance of innocent people getting caught with files others have left on machines, perhaps from a company pool used by several people. But he said: 'The sort of people Customs are looking for have tens of thousands of pictures on their disks.'

CLIVE AKASS

Vogon, www.authentec.co.uk

Product of the show

After all the talk about smart devices, few innovative ones have yet appeared. Which is why *PCW News* awards the **C-Pen from C Technology**, based in Sweden, its 'Product of the Show' award at Germany's Cebit. The pen is essentially an organiser, capable of synchronising its data with your PC. But it packs a 50-frame-a-minute camera which can scan printed text at 100 characters per second; OCR software translates this into machine-readable text, pumping it into specific fields of a contacts database. You can even write with it, and it will have a go at translating your scrawls into text. The 100g Strong ARM-powered device packs 8Mb of RAM and can store a claimed 3,000 pages of text. The current model uses infra-red to talk to a PC, but a version using Bluetooth was demonstrated at Cebit. The C-Pen costs £292.58 (inc VAT). *See also, Gadgets, page 71.*

MegaPixels 01425 674617; www.cpen.com

Cebit shorts

PDA PIGGYBACK

This card-sized Rex Organiser uses software by Starfish, recently bought by Motorola. No surprise, then, that this version, called StarTac, is designed to clip on to a Motorola mobile phone. No details yet on price or release date

www.motorola.com

SHARP MOVE

Sharp's VN-EZ1 viewcam is small enough to cup in your hand and stores on a 32Mb smart card up to one hour of MPEG 4 video which is designed for low-bandwidth lines. Not for video freaks perhaps, but it has many uses. ***(See page 71.)***

VOICE-ENABLED WEB

Conversa showed its speech-enabled browser which lets you navigate the web by voice alone. A voice-enabled version of Microsoft follows Outlook later this year.

www.conversa.com

PHOTODISK EUROPE

PhotoDisk Europe asked us to point out that its free image library at www.photodisk.com has no connection with Kodak, as stated last month.

Now it's the virtual Y2K bug…

What with people taking off to the wilds to escape a predicted global collapse of civilisation, you'd think the Y2K industry has no need to find yet another reason for people to buy beat-the-bug products. But find one the industry has. It's called the Crouch-Echlin effect, after its 'discoverers', though it might be described as a 'virtual bug', as it has its fixes even though the threat has yet to be incontrovertibly proved.

The theory is that Y2K-aware computers will take so long to cope with the onerous calculations at rollover (1+1999=2000) that they might mis-time reading the real-time clock. We're talking microchances amid microseconds here, but can you afford to take *any* chances if, say, your PC controls the trigger of an atomic missile? No, you can't, say the vendors of a Y2K hardware fix called Cybergeddon 2000. The £69.99 (ex VAT) card also tackles more mundane problems like the Y2K latency bug.

Even Cybergeddon's Richard Nawrocki says he isn't sure he believes in Crouch-Echlin. But to help you sleep easier, he says Number 10 has bought two of the cards.

Cybergeddon Europe 07050 135076

'…finally, this is the ***only*** *product to counter the Brandt-Ebing effect; the tendency of people who have nothing to fear, to worry about not worrying'*

GRAPHICS PLATFORMS

Playstation II is more than child's play

The suspense is over. Console gamers of the world unite. **Sony's next generation Playstation has been unveiled** following intense speculation, not least among the near-50 million users of the original version; the best-selling console, ever.

Playstation II will have a DVD drive and is expected to be able to play DVD movies. This alone gives it an edge over its nearest rival, Sega's Dreamcast.

It is powered by what Sony calls the 'Emotion Engine', co-developed with Toshiba and based on the MIPS RISC architecture which is capable of delivering 16 million polygons per second — over five times more than the Dreamcast. Its floating-point power of 6.2Gflops is well above the 2Gflops attained by Intel's 500MHz Pentium III.

It will run Playstation I games and is expected to have support for PC Cards, USB and FireWire. There are rumours that Citrix is writing software enabling Playstation II to act as an NT client, allowing it to run Windows applications across a network.

With such impressive specifications, its success is not in doubt. What is uncertain is its ability to stay ahead of the competition. When the original Playstation débuted more than five years ago, the PC was still in its infancy as a gaming system. However, with the advent of faster processors and dedicated graphics accelerators, the PC is now a versatile games system.

By the time the Playstation II hits the market later next year, new technologies like geometry acceleration may put the PC on an equal footing. So, retaining the attention of gamers may not be as easy as before.

AJITH RAM

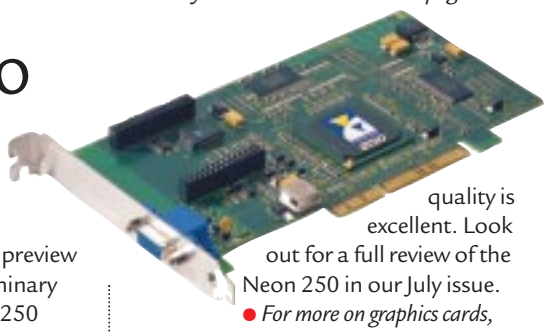
● *Is Playstation II the new PC? See page 50.*

Neon challenge to Voodoo

UK company VideoLogic previewed at Cebit its **second-generation Power VR Neon 250 graphics card** which uses technology very different to that of its competitors.

Traditional accelerators, like Voodoo, render not only the visible part of a 3D image but also the hidden elements. This results in a lot of wasted clock cycles and consumes more memory. Power VR uses clever algorithms to analyse the scene before rendering, which is more efficient.

We managed to get a sneak preview of the new graphics card. Preliminary testing indicates that the Neon 250 *(pictured, right)* will be much faster than ATi's Rage Fury and only slightly slower than 3Dfx's Voodoo3 3000. Image quality is excellent. Look out for a full review of the Neon 250 in our July issue.



● *For more on graphics cards, see our group test starting on p176.*

AJITH RAM

VideoLogic 01293 560511

POINT OF VIEW

Wiring up Dr Who

Sylvester McCoy, who many consider to have been the best Dr Who, asked me to help him get onto the internet. Our paths have crossed occasionally since way before his Tardis days, so I see him as a person rather than as his most famous role. Even so, fame has a habit of blurring the distinction, and so it turned out.

Sylvester occupies the upper floors of a house overlooking Hampstead Heath. It's a warren of a place, a clutter of books and mementos — exactly the kind of home you'd expect Dr Who to have. An overloaded coat-stand leaned across the doorway of the room where he keeps his Power Mac, as if hiding some secret recess of the Tardis. Each time we entered or left we had to lift it up... each time, it crashed back behind us.

Sylvester, a technophobe, said proudly that he had managed to plug in the leads for the internal modem and had bought an extension to reach to the nearest jack. His main concern was to get email so there seemed little point in using a paid-for service. A ring-round of the free services revealed that, at that stage, few offered Mac software. An exception was Virgin, so that was what we went for.

The software installed itself with no problem but we couldn't get a squeak out of the modem. Now, I have to say that even though I use a Mac and a PC side-by-side at *PCW* Towers, I am less than expert at troubleshooting a Mac. I tried everything on the control panel without success and then decided to examine the phone leads, which often go faulty. 'Have you got a spare phone I can plug in to test the lines?' said I.

'No... oh wait a minute, yes I do,' said Sylvester. He ducked under the coat-stand and re-emerged a couple of minutes later with a waist-high Tardis, complete with police phone.

Life imitates art: here I was with Dr Who, using a Tardis to test a line. It tested okay and I was baffled. 'At some time when you use computers, you are going to be faced with a problem to which you know in your bones there's a really easy answer,' I told Sylvester. 'When you find the answer, you kick yourself and you never forget it. The problem is that it can take hours, or even days, to find it.'

I'd been there two hours. I was getting a headache. I wanted to go home. 'I'll try one more thing. It must be the modem. I'm going to open up the box and have a look,' I said.

Mac users among you may have guessed what I found: inside was just one card, a network card using a jack similar to a phone jack. *The Mac didn't have a modem.* We bought one the next day and were on the net within seconds.

Clive Akass  ***and a Time Lord seek the elusive obvious***

Psion thinks big at last

Psion showed no less than **three new models** at Cebit — tucked away, unsung, in the industrial computing hall. Two were pen tablets, with half- and full-sized screens, targeted at niche applications. These are of the point-and-tick form-filling variety, so handwriting recognition will not come as standard. The third model was what many (including your reporter) have long been urging Psion to make: a larger version of its handhelds.

The prototype, codenamed Jedi, is the size of a mini-notebook and has a leather covering *(left)*, a memory card slot on one side and a PC Card slot on the other. At the rear is an infra-red link.

Psion has released few specifications, but the machine is said to have 24Mb of RAM and packs a Java Virtual Machine with its revamped Epoc 32 operating system, now owned by the Psion spin-off, Symbian. GSM mobile connectivity is likely to be an option, as many of Symbian's partners make mobile phones.

Steven de Saulles, senior designer at Therefore, which designed Jedi and the Psion handhelds, said that one aim was to match the stability of the prizewinning Series 5 as a typing platform.

'We wanted something that could go up against the CE machines. We also wanted something that you did not need to put into a case,' said de Saulles. 'That's why we put the leather on. It's cleverly designed so that it tucks in when the lid is lifted.'

He agreed that price will be critical. A big argument against larger CE machines like the Jornada is that they are neither fowl nor beast: they are too expensive to hit a mass market as mobile adjuncts to a PC, yet they aren't very much cheaper than a fully-fledged Windows sub-notebook.

'I think that's why Psion is going for the corporate market ,which is not so price sensitive,' said de Saulles. Psion is keeping quiet about prices but 'under £800' has been quoted, which would put it up smack against the Jornada.

High-pricing was one reason for the failure of Psion's previous attempt to launch a sub-notebook, in 1991. This year, it is expected to bring out a colour version of the Series 5 with the new Java-enabled Epoc 32 operating system.

CLIVE AKASS

● *Cebit trends — see pages 42 & 43*

Psion 0171 262 5580

Cebit shorts

1GHz PC FLIES BEOS

Fujitsu embraced multiple operating systems on its stand, although interestingly neglected CE on its portables. The company will happily sell you a system with Linux, which it believes will have captured a 30 percent share of the server market by the end of this year. Sexiest of all was a PC boasting a pair of 500MHz Pentium IIIs, running BeOS extremely quickly. Multiple video streams and rendering windows were shown running simultaneously without breaking into a sweat. Multimedia is bread and butter to BeOS, and AV-enthusiasts should certainly look into this alternative to Windows *(see our operating system feature, next month)*.

GORDON LAING

MAC-TO-PC SWITCH

Using a Mac and a PC side-by-side on the same desk can be confusing as well as crowded. Apex PC Solutions, which has just opened a UK office, sells a $224 box which allows you to use the same keyboard and monitor for both. Apex's focus is on console switching, which allows administrators to plug a central keyboard and monitor into any server on a network.

Apex 01752 708896

...but there's hot opposition

Hewlett-Packard's Jornada proved that Windows CE was a sensible operating system for notebook computers (*PCW* Feb '99). The combination of solid-state reliability and long battery life in a larger and more comfortable form factor than a traditional handheld appeared to be a winning idea, although since its launch few manufacturers have followed Hewlett-Packard's lead.

Sony and **Fujitsu** produce tiny sub-portables, but both believe users desire full Windows compatibility and describe CE as a proprietary OS that few would find useful. Fujitsu showed a touchscreen version of its LifeBook B110, with a display that didn't look any dimmer than its counterpart, for around £1,000, while Sony gained mileage with its new C1 sub-portable and 505 ultra-thin notebooks.

This hasn't put off **Samsung**, which showed its iZZi Pro, a classy-looking CE sub-notebook with over ten hours' battery life. Its spec is not dissimilar to HP's Jornada, with a 640 x 480 8.2in DSTN display, 16Mb RAM and weight of only 1kg, but the iZZi Pro looks smarter, feels sturdier, and is expected to sell for around £650. Handhelds are still popular, too. **Philips** showed the new colour version of its CE-based Nino *(left)* which goes on sale this month.

GORDON LAING

Laid back at Cebit

No need for expensive wide screens when you wear these display specs which are said to give cinema-quality pictures. The **Eye Trek,** from **Olympus,** is designed for TV or video pictures. Olympus says the Eye Trek will be on sale throughout Europe this month for about £460.

● **A real-time MPEG-2 encoder** shown at Cebit could lead the way to low-cost DVD-based video editing and compression systems. Apollo Expert, from DV Studio Technologies, costs less than $2,000, compared with up to $250,000 for a professional system with Dolby Digital audio. MPEG-2 has become the primary video compression format. A key feature of Apollo Expert, according to DV Studio, is its ease of use and installation. Werner Glinka, Hitachi America's senior director of marketing, said: 'The Apollo Expert from DV Studio Technologies is a big step in the convergence of digital media products for professional and consumer applications.'

JAN HOWELLS

The slim side of Cebit

Monitor displays at Cebit were predictably flat and thin, with conventional CRTs often relegated to secondary presentations. Virtually every major stand featured **gas plasma display panels** (PDPs). Most were rebadged Fujitsu models — even those shown by Sony which is still developing its competing PALC (Plasma Addressed Liquid Crystal) hybrid plasma/LCD technology.

Oddly, Fujitsu's largest plasma panel measured 42in across its 16:9 diagonal with VGA resolution, whereas Pioneer, Philips and NEC showed off huge 50in 16:9 PDPs with 1280 x 768 resolution.

Pioneer exhibited its 50in PDP using Microfield Graphics' SoftBoard 501, allowing a presenter to use it as an electronic whiteboard. This system, with software, costs $32,000 ($10,000 more than a 40in version). Pioneer's bare 50in PDP sells in the UK for little less than £10,000; a 42in VGA PDP weighs in at about £6,000.

Fujitsu showed a 25in 4:3 PDP monitor with 1280 x 1024 resolution. Plasma panels are very difficult to manufacture with fine pitches, and the only easy way to increase native resolution is to build a larger display. Considering most 42in PDPs feature only VGA resolution, a relatively compact 25in PDP with SXGA is technically impressive. Fujitsu hopes to sell it towards the end of the year for around £8,000.

Also expected towards the end of the year is Samsung's 30in TFT display with a resolution of 1600 x 1200. Samsung claimed it would be a competitor to 40in PDPs, although it had no idea of price. A spokesperson did reveal that because each panel needs an entire mother-glass to itself, production failures could be as high as 95 percent.

Sony had a wide range of LCD and CRT monitors on display, the latter based on its flat FD Trinitron technology. By the end of the year, Sony's entire PC CRT range would use FD tubes, except none would be made at its Welsh plant.

The latest TCO-99 standard for safety, ergonomics and recycling has reassuringly been adopted by most major players.

GORDON LAING

www.softboard.com

Microdrive time in Silicon Valley

More than 100 vendors have signed up to use IBM's 1in microdrive, created at the Almaden Labs just a stone's throw from my home. The 170Mb version ships this summer, and the 340Mb by the end of the year.

The drives will end up in smart cellular phones, handhelds, electronic books and digital still and video cameras. We could even see them in home appliances such as web phones, games players and surveillance systems. We are finally getting closer to having PCs that start up as fast as televisions.

A new, Quick-Start PC design from Intel, Microsoft and Toshiba includes an 'advanced configuration and power interface' which allows hardware and software to share information and go into a deep-sleep mode with minimal power drain.

Windows 98 has code to handle this, but few PCs implement it because more costly ROM and RAM is required. Some should be out this year, though. This is great news for users and is long overdue.

IBM's new 333MHz PII-powered ThinkPad 570 is worth a look if you are considering getting a sub-notebook. It is lighter (less than 3lb) and thinner than the 560, with a battery life of at least three hours. But its big selling point is that it sits on a docking station, with bays for a floppy or CD drive which in effect turns it into a full-sized notebook which looks remarkably like the popular ThinkPad 600.

The potentially award-winning design sets IBM apart once again, just as its original ThinkPad set the mobile market on end. It will cost between $3,000 and $4,000 and should be on sale by the time you read this.

Tim Bajarin
letter from Silicon Valley

PROCESSORS

Cyrix PADs out image

Chipmaker Cyrix is going for Intel's soft underbelly with a range of highly integrated chips targeted at a class of mobiles it cleverly calls **Portable Access Devices,** or PADs.

The chips will follow the lead of Cyrix's MediaGX range, which integrates audio and graphics functions into the main processor.

Rather than going for the Holy Grail of a PC-on-a-chip, Cyrix plans a series of device-specific processors with different function sets packed around the same core. This is common practice with cores from the likes of MIPS and *(see below)* ARM. The difference is that Cyrix retains the x86 architecture. 'This will make development very easy because the skills, software and tools are already out there,' said Steve Tobak, world marketing manager at National Semiconductor, which now owns Cyrix.

In the pipeline are PADs for music, personal banking, students, and motoring applications such as routing. Best known is the WebPAD *(pictured, above)* for wireless web access which Tatung will make and ship some time this year.

Cyrix has not abandoned the other end of the market, though. At Cebit it was showing its 366MHz MII, with 400MHz and 433MHz to follow by the autumn.

www.cyrix.com

The clocks run fast at Cebit

Intel and AMD both showed off fast versions of their leading edge processors at the Cebit show.

Intel, which launched 500MHz and 550MHz PIII Xeon processors at the show, boasted a PIII clocking 800MHz. Both are designed for multi-processor servers and high-end workstation applications.

Curiously, to show them off, Intel eschewed the usual flashy graphics in favour of a data tracking program called Enfield Tracker Pro.

This, although visually tedious, impressed me, as I had recently tried this program out on my humble 166MHz office PC and then took it off because it ran far too slowly. Clearly we are beginning to get software which requires these fast processors.

AMD, which has been hit by low yields and low prices, showed a K7 running at 600MHz. The first K7 was due to ship in June but the launch is now likely to be delayed. The chip uses an electrically remapped Slot 1 and the same 200MHz bus used by the Alpha chip.

CLIVE AKASS

Two strings to Intel's bow

Intel has a two-pronged approach to the growing demand for mobiles. The first, codenamed **Geyserville**, is to increase power efficiency to reduce battery drain. It will switch operating voltage and clock rate on-the-fly so full power is drawn only when needed or when a mobile is plugged into the mains. The result will be a PIII mobile chip clocking 600MHz-plus, said Intel. The other approach is the fast, power-efficient **StrongArm** range. Intel has started making the SA-1110 used in HP's Jornada 820 handheld.

● *Intel has introduced 266MHz and 333MHz versions of the Celeron mobile.*

SUPER-FLOPPIES

Storage scramble

Sony has quietly withdrawn its 200Mb HiFD superfloppy drive because of head-crash problems. It will be back on sale in the autumn.

At the Cebit show, however, Sony displayed two prototype versions thin enough for a notebook — something which to date only the rival 120Mb LS-120 drive has claimed as a unique advantage.

Samsung offered a third contender at Cebit, unveiling its new ProFD super-floppy which reads 123Mb cartridges. Samsung claims that first units will be with PC builders in three months' time at $35 each, and that the price will drop to $20 within six months, which would make them cheaper than the LS-120 drive.

All these drives read standard floppies, although the LS-120 has a market lead. **Panasonic** has just a double-speed LS-120 drive.

Lance Quantrill, UK marketing manager of **Imation**, which makes LS-120 media, doubted whether the HiFD would succeed. 'It has come too late for the market,' he said.

Drive recall

Iomega has recalled a number of its 60,000 power units which had been sold with 1Gb and 2Gb Jaz drives. If you bought a Jaz drive between 1st September 1998 and March 1999, you are advised to call customer support or check out www.iomega.com/support/recalls/index.html.

Days of WINE and Linux

Corel's support for Linux might help propel this offbeat OS onto our desktops. Tim Nott reports.

After the party, the WINE flows. Despite a disappointing last set of figures, the Corel Corporation had much to celebrate in April. First, it is the tenth anniversary of the company's flagship graphics program. Second, it called press and partners together for the official launch of Draw 9 and WordPerfect Office 2000. Third, it hosted the annual Design Contest Gala, where digital artists from all over the world chased (US) $250,000-worth of prizes.

The party took place in the Corel Centre — a huge stadium normally used for staging ice-hockey matches. Category winners hailed from Bosnia, Germany, Russia, Greece and Canada, with Brazilian Adauto Dos Santos taking the Best of Show award. But for those in pursuit of more serious news, the story behind the stories is the Corel Linux initiative.

▲ THIS IMAGE, CALLED CONTEMPLATION, WON THE COREL WORLD DESIGN CONTEST. IT WAS CREATED IN CORELDRAW BY ADAUTO SANTOS OF BRAZIL

Last May, Corel pledged its support for the Linux platform, and in December released a version of WordPerfect 8 to run under Linux. It has been available free from the Corel web site and has so far attracted 900,000 downloaders. Although it isn't possible to tell how many of these successfully retrieved the entire 60Mb-worth of files, this figure is extremely encouraging, both for the Corel Corporation and for the Linux community.

Although implementations of Linux such as Red Hat and Caldera are widely used server platforms representing an estimated 50 percent of web servers, Linux on the desktop has been seen as strictly for enthusiasts. And this is what Corel seeks to change. The Linux community has over 10,000 developers working co-operatively on an open standard. Corel's programming workforce represents a significant although not dominant proportion and, for connoisseurs of such things, is following the Debian model with the KDE graphic user interface on top.

How is Unix going to win our hearts, minds and desktops?

The greatest hurdle to the success of a new operating system is having the 'killer' applications to run on it. This is one reason why Windows and the Mac OS succeeded, while OS/2 did not. By the end of this year a Linux version of WordPerfect Office 2000 should be available, with Draw 9 following early in the new year. However, two software bundles, albeit major ones, do not constitute much of a choice, and this is where WINE, another open-standard, Corel-supported initiative, comes in.

WINE stands for 'Wine Is Not an Emulator' which is, at least in layman's terms, exactly what it is: software that will run Windows applications under Linux. However, unlike conventional emulation software which re-routes each call to the operating system on an *ad hoc* basis, WINE strips out the entire set of WIN32 calls as the application is loaded and drops the program straight into the Unix environment. This 'recompile on load' approach results in a far smaller performance hit, and as its devotees claim that Linux is faster than Windows anyway, should still match or outperform the same application on similar Windows-equipped hardware.

There's still a lot of work to do. In terms of a user-orientated desktop OS, developers are addressing issues such as plug-and-play drivers and integration with Windows networks. The WINE developers have still to find a substitute for OLE (Object Linking and Embedding), a Microsoft proprietary technology on which essentials such as cutting and pasting between applications depend. Nevertheless, Corel is hoping to have a Linux-WINE OS available by the end of this year.

The big questions are, why is it backing Unix in this way, and how is it going to win our hearts, minds and desktops? The first is all about competition and choice. If Linux can be offered as an alternative to Windows, then Corel will be ahead of the game with native Linux applications. Secondly, it perceives a market for a cheap, or preferably free, OS. As PC prices continue to sink below the $500 mark, then the $65-or-so represented by a Windows 98 licence becomes significantly expensive.

As for how, Corel has already demonstrated its bundling skills by moving a rung up the supply ladder. A deal with Chips Inc. means that 18 million motherboards will ship to PC manufacturers with a copy of WordPerfect Office 8 on CD-ROM. This is not perceived as a direct revenue-generator in itself, but if just ten percent of buyers upgrade to 2000, that's a highly desirable bunch of sales.

Corel is spoilt for choice, then, on ways of delivering Linux and WINE to our desktops. It could go via a similar bundling deal, giving real consumer choice to PC buyers. For the more enthusiastic it can offer the free download approach, and third, it can bundle the OS with the product. Though this last might sound a little unconventional, PC veterans may remember when Aldus PageMaker came with a then-obscure operating system add-on called 'Run-time Windows'.

Card X marks the spot for joint USB/1394 port

A PCMCIA specification called Card X is about to turn the PC Card slot effectively into a combined USB and 1394 port. The Card X slots are expected to be used for modems, network cards, DVD and disk drives, PCMCIA chairman Anthony Wutka told a Cebit press briefing.

The top data rate for 1394 (aka Firewire) is 800Mbit/sec but is expected eventually to reach 1.6Gb/sec within three years. The PCMCIA's current-generation 32-bit Cardbus slot can cope with 1Gbit/sec.

Card X devices will fit into a standard slot but they will be invisible to it because two voltage-detect pins are grounded low. Other pins are remapped for 1394 and USB links, and eight spare ones are used to exchange configuration information when the card is plugged in.

PC Cards will be used to give set-top boxes access to different services; Card X would add the ability to connect to home hi-fi and computer systems.

The first Card X devices are expected next year.

www.pc-card.com

Memories are made of this

Disks and RAM modules grew bigger and faster at Cebit, with Seagate claiming the world's largest hard disk at 50.1Gb, available in U2W SCSI or FibreChannel flavours. But several other vendors with 'mere' 50Gb drives were pipped to the record.

Samsung showed a 1Gb memory module, while Sony plugged its Memory Stick with demos using digital cameras, portable stereos and an LCD picture frame.

Memory Stick looks to the outsider like a taller, thinner CompactFlash card, with expected prices of around £50 for 16Mb — roughly comparable to CompactFlash.

GORDON LAING

Sentec brings real-world links to its sensors

Sensors and transducers link the real world to the information world, and one growing firm has focused on this interface with a stream of innovations. Sentec was formed just over two years ago by Andrew Dames, previously head of the sensors division at consultancy Generics.

Sentec has already spun out another company, Holotag (now seeking funding) to exploit a magnetic data tagging technology of which I will be writing more in a future edition. And in Sentec's pipeline is a system which faxes documents as soon as they are dropped into the in-tray. A prototype is up and running, and Sentec is talking to major fax manufacturers about it.

With interactive digital TV in mind, Sentec is also working on telepointers, which combine the functions of a remote control and mouse. Its low-cost design has drawn the attention of a number of set-top-box manufacturers. Sentec has used a number of technologies, including magnetic measurement and cheap optics, which should bring down the price of the devices.

Alternatives at present are handheld trackballs or accelerometer-based mice — both expensive, and using infra-red or radio datalinks. Sentec reckons it could bring out a product for about a fiver.

'We're using the smallest amount of technology possible,' says Sentec partner, Dr Edward Colby, who heads the telepointers project. 'The real opportunity comes from people who've got used to the interactivity the mouse gives you on a computer interface, and who now wish to use the same interface sitting in front of their television in the ubiquitous home entertainment field.'

He believes the field is one in which Sentec's core technology can excel. Colby says the firm is looking at licensing a product in the third quarter of this year.

www.sentec.co.uk

■ If a £20m plus investment in comms infrastructure company Flute is anything to go by, internet service providers and phone users will soon be on the receiving end of price cuts.

It seems Interoute Telecommunication (of which Swiss group Sandoz is a major shareholder) is to become a majority shareholder in Flute, which was started by Pipex founders Richard Nuttall and Peter Dawe.

Flute's goal is to bring down the price of voice telephony by getting a submarine network in place; its dark fibre cable will be snaking out under the North Sea. These will link with Interoute-owned land lines to create a European network.

Both companies are pushing Voice-over-IP, the use of the internet or intranets for telephony. 'There's a lot of synergy in this deal with Interoute,' says Nuttall, 'and we'll be benefiting each others' networks.'

The first undersea cable will link the UK with the Netherlands and Belgium, a second is planned to go north to include Denmark and Germany, and a third and fourth are to loop around the UK coast.

Nuttall said companies using a small leased line to connect offices between, say, London and Amsterdam could instead 'have a resilient connection over a network giving 155Mb/sec — yet the cost would be only 50 percent more than for a 2Mb service.'

www.flute.ltd.uk

Caroline Swift continues her reports from Silicon Fen

Sun shines only on sign-ups

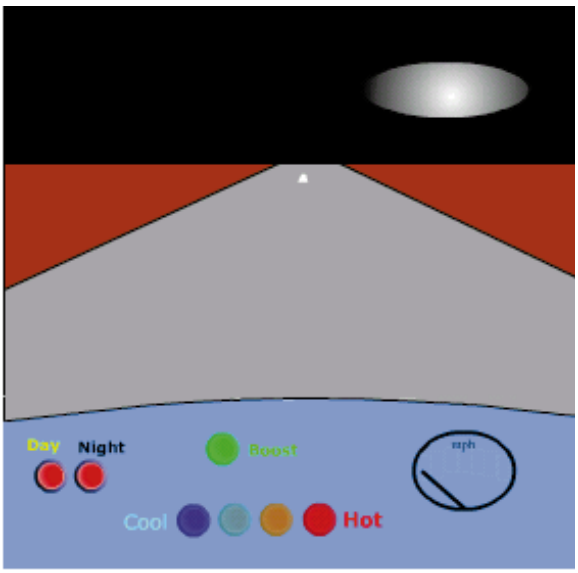
Companies are jumping on the **free web-access bandwagon** started by Dixon's with FreeServe — and new users are signing up at a rate which is rapidly transforming the web in Britain into a true mass medium.

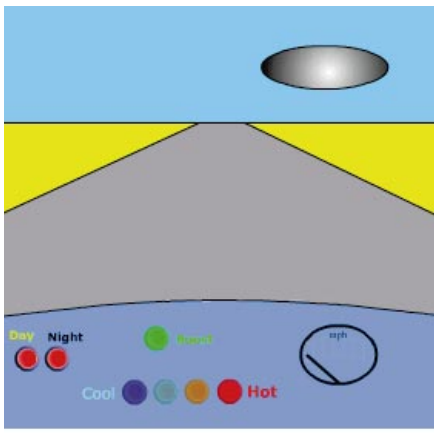
It is also creating new business models: Rupert Murdoch's *The Sun* is offering access to its new online edition, called the Currant Bun, only to people who sign up to its fee-free access service.

Murdoch, like all 'free' service providers, will take a cut of readers' line charges, but by barring users from other providers he is reducing potential advertising and transaction revenues. Evidently he hopes to gain more by tying some of the *Sun*'s four million readers into the Currant Bun portal.

But you don't need to be a global media magnate to set up a free service. Backbone providers like UUNet WorldCom and BT are offering packages which allow companies to offer access under their own brand, enabling them to maintain a close long-term relationship with customers.

PC vendor Tiny has followed Gateway's lead in bundling access with PCs; Citibank and Barclays are offering customers free access; so are HMV, Virgin, and, in a joint venture with Yahoo, booksellers Waterstones. Meanwhile FreeServe, which claimed one million active users within a few weeks of launch, is boosting its site offerings with a new educational partwork on its early learning channel. A large proportion of the people signing on to these services are first-time users rather than defectors from paid-for services, FreeServe reports.





Flash music effect turns day into night

These two screens are from a sample Macromedia Flash animation which is driven by music — a new feature of Sseyo's Koan Pro 6.0 computer-generated music package. It includes an application-programming interface which allows musical events to affect the animation: for instance, a change from major to minor key can switch the graphic from day to night. The reverse transition might trigger a cock crow. Sseyo says the combination of Koan and animation means you can create web sites that never look or sound exactly the same on revisits.

www.sseyo.com32

Web music hits bum note as IFPA sues over MP3 files

A Norwegian partner of US search engine Lycos is being sued as part of an **all-out war against web music piracy** — on the grounds that it provided links to sites offering illegal copies.

The International Federation of the Phonographic Industry accuses Fast Search & Transfer ASA of mass copyright infringement. It is also considering taking action against Lycos in the United States.

This is the first time a search engine operator has been targeted in the growing campaign against pirate music held in highly compressed MP3 files. Fast's engine software searches out MP3 files worldwide continuously for these files, and stores their addresses in a database. The IFPI claims the Fast search engine turned up virtually no legal MP3 files.

Lycos claims to provide access to more than 500,000 music files at any time. No other search engine provides a similar service. 'This is a threat to the companies who want to build a flourishing legal electronic marketplace,' said Mike Edwards, director of operations for the IFPI.

MP3 compression is posing an increasing threat to the music industry. 'MP3' is second only to 'sex' as the most searched-for word on the net.

Lycos declined to comment.

JAN HOWELLS

Court threat to internet freedom

A 'squalid and obscene' Usenet posting has highlighted the tricky position of service providers trying to maintain web freedom.

The posting to soc.culture.thai defamed UK-based computer-science lecturer Laurence Godfrey, but it purported to be from him and gave his email address for replies.

It came from the US but was cached on a Demon server. Demon did not remove it until its expiry date, even though Mr Godfrey faxed the company to say the letter was a forgery, a High Court judge was told.

Mr Justice Morland ruled that a case against Demon should go ahead, and as we went to press Demon was waiting for the result of an appeal. Solicitor Nicholas Bohm said the ruling meant anyone could get a web publication banned, simply by making a complaint.

A spokesman for Scottish Telecom, which now owns Demon, said: 'It's like someone being insulted in a bar and then suing the pub for slander.'

David Flint, a technology-law specialist at MacRoberts solicitors, based in Glasgow, described the ruling as deeply worrying both for service providers and for users. One answer might be to cache Usenet material in the US — although a United Kingdom court might still deem an internet service provider liable, simply by offering a link.

The ruling can be seen at www.courtservice.gov.uk/godfrey2.htm.

● *See our web site, at www.pcw.co.uk, for the result of this case when it becomes available.*

Pioneer Cliff returns to web

Pioneer service provider Cliff Stanford *(pictured, right)* has returned to the internet business less than a year after having sold Demon Internet for £66m.

Stanford kick-started internet use in Britain in 1992 by offering net access via Demon for just £10 a month at a time when the internet was largely the preserve of academia.

He netted £33m from Demon's sale to Scottish Telecom, and injected £15m of the money into a new venture capital company called Redbus with the aim of backing innovative ideas in Britain.

Now, Redbus has invested £4m in a new kind of web-hosting facility located in a highly secure building called Interhouse, situated in London's docklands. This has direct backbone links from all major telecommunications companies on the one hand, and fast links to service providers on the other.

The idea is that companies can site their web servers in the building, with 24-hour monitoring and power backup, without tying themselves to a particular telco or service provider. Short-term contracts are available so that companies can try the facilities at minimal cost without committing themselves in the long term.

Stanford said: 'A company's web site is its primary window on the world. It's imperative that data has to be close to the internet backbone.'

www.interhouse.redbus.co.uk

short stories

Milton Keynes may be famous for its concrete cows but it is the home of the Open University and claims to have one of Britain's most computer-literate populations. It's new city-information web site is aimed at creating a local community, with contributors updating news stories, details of events, and other information using a Self-Publish System provided by site designers Internet Digital Media. Director Brian White said the system uses server-side Java applets which provide speed responses.

The free-ads paper, *Loot*, has begun a new online auction of secondhand goods. Bids can be made over the internet, or by phone, with prospective buyers allowed a week for the bidding.

Also going into the online auctions business is Amazon.com, which is hosting sales under more than 800 categories, ranging from antique scientific instruments to vintage clothing.

A new web site containing news and information on some of the greatest cities in the world, is soon to be completed. www.worldcities.net will deliver up-to-date news from around the world along with weather forecasts, guides to hotels, tourist attractions, eating out and shopping.

ETELKA CLARK

Clive Akass reports on the trends at one of the best-yet Cebit shows

Europe rules the mobile waves

Cebit, held annually at Hanover, may be the world's biggest computer show but it has tended to be over-shadowed by the noisier and sexier Fall Comdex show in Las Vegas. But not so, this year. Computing is undergoing yet another tectonic shift, its biggest for 20 years, and a lot of the impetus is coming from Europe. This is partly because many of the changes involve communications, in which Europe is strong, but there seems also to be a new self-confidence among European information technology firms and with it a new willingness to innovate.

The result of this was a range of new designs and a buzz of expectancy regarding the next couple of years. There are four major trends:

- **The internet** is fast reaching a mass market, creating the need for easy-to-use access devices (*see opposite page*). New free services (*p39*) are already pushing usage figures close to the critical mass necessary for an explosion in e-commerce and this trend will accelerate with the take-up of digital TV.
- **Imminent 'always-on' broadband links** to the home will create a market for home networking, security devices (*pp26&27*) and web cameras.
- **The mobile phone,** also on the verge of a massive leap in bandwidth, is marrying the handheld computer and putting the internet literally into people's pockets (*see opposite page*).
- **Short-range wireless technologies** like Bluetooth and infra-red allow small devices to talk quickly and share resources. They are spawning a variety of simple, cheap mobile devices which can draw on the power of the desktop and network.

A measure of this new wave of computing is the fact that it has reduced the dominant force of the PC world to the status of an also-ran. Microsoft is still a very big player but this is a market it cannot corner: none of the new mobile devices needs Windows CE to the extent that PCs need Windows. Many are being made by consumer electronics firms which don't share the vulnerability of PC vendors to Microsoft's strong-arm tactics.

Typical of the new wave is Symbian, which was showing some its first products at Cebit. This is the company formed by Psion, Ericsson, Nokia and Motorola to develop the Series 5's Epoc 32 mobile operating system. The partners own 80 percent of the mobile phone market and all but Motorola are European. It may not amount to a European resurgence, but it has certainly given Bill Gates something to think about.

This GPS satellite positioning device *(left)* with the Kodak DC265 camera shows how devices are getting more intelligent and talking to each other. The camera has its own script language and can communicate with the GPS device via infra-red. The advantage is that you can take a picture and stamp it with a precise time and location. Uses range from military and police work to industrial audits. Connections like this are likely to move to Bluetooth *(see below)* from next year.

Bluetooth on the move

Cebit was witness to several demonstrations of the Bluetooth radio link which is expected to be the main way mobile devices will talk to each other in the future. One was the smart pen featured on page 27. And **Ericsson** was showing a number of imaginative prototypes including this wireless headset *(left)* which can talk to a pocketed mobile phone, and a wrist organiser *(also pictured, left)* that updates itself automatically when in range of a base PC.

Cambridge-based **Symbionics**, which is now owned by Cadence, showed Bluetooth reference designs and a development kit co-designed by Ericsson, which will allow manufacturers to add Bluetooth to devices.

Bluetooth uses frequency-hopping, spread spectrum radio to transmit up to 1Mbit/sec within ten metres. It could add less than $10 to the cost of a device. Production models are not expected until later this year.

◄ WRIST ASSURED, YOU CAN STAY IN CONTACT USING THIS WIRELESS HEADSET AND A MOBILE PHONE

Web struggles to think small...

The proliferation of web-access devices has created the problem of how to format information for displays as diverse as those on a mobile phone, a TV and a PC.

Nokia and Ericsson both showed mobile phones which use the **Wireless Application Protocol** (WAP) with its use of Wireless Markup Language (WML) for displaying information on small screens. Sagem showed one based around Unwired Planet's pioneering microbrowser, but pages first have to be converted to WML. Nokia announced that it is developing a WAP server which will translate information from company networks for transmission to small mobile devices.

British company, Argo, claims to be way ahead with its Nectar engine and software suite which can strip the essential information and links from a standard web page and reformat them as WML. It will do the same with data from other sources such as news feeds and databases. The idea is that it sits between the data source and the web server and translates material on-the-fly into a form suitable for the device requesting it.

Richard Jelbert, chief technical officer, says HTML conversion is likely to be a short-term problem because the web will move on to the very much more powerful Extensible Markup Language (XML). This includes metadata — data about data — which makes it suitable for database links and is designed from scratch for publication on multiple platforms. WML is actually a specialist XML language.

● *IBM, Nokia and airline booking specialist Sabre claim that they will develop a wireless net phone which will notify travellers of flight changes and enable them to switch reservations.*

www.argonet.co.uk

◀ **THIS WAP-ENABLED MOBILE IS ERICSSON'S ANSWER TO THE NOKIA COMMUNICATOR. THE R380 IS A COMBINED ORGANISER AND MOBILE PHONE, THE FIRST TO USE SYMBIAN'S EPOC 32 OPERATING SYSTEM [SEE ALSO, PP26 & 29]**

...but it doesn't look good on TV

This screen *(pictured, right)* was not seen at Cebit but it shows another aspect of the reformatting problem. It's from **NTL's new Interactive TV service,** launched in Britain last month.

Like most pages designed specifically for TV, it uses large text conveying little information. This is partly because television sets are viewed from a distance, but also partly because of a lower screen definition — which is why standard web pages reformatted for television never look as good as they do on a PC monitor.

Some — *including this reporter* — believe that a screen-equipped remote control linked wirelessly to the TV will be used to scan the web, rather than the set itself. This would allow viewers in the same room to surf different sites rather as today people read different newspapers while watching TV.

The NTL Interactive TV service will cost £15 a month, which includes net access and hire of a set-top box.

NTL 0800 052 1234

Microsoft mobilises CE

Static webphones are one of the emerging new class of access appliances. First models were simple email machines but the latest provide full web facilities.

No price has yet been announced for this elegant IBM Screen Phone *(pictured, right)* but it will be going into production in the second half of this year. It's ISDN based and boasts 16Mb RAM plus 8Mb flash ROM.

Microsoft demonstrated several CE-based models, which it said would be made by Philips and Panasonic. The company is not leaving the mobile field to the Symbian alliance *(see opposite)* either, ***writes Jo Pettitt***.

Windows CE marketing manager Greg Levin said the company is working with several mobile-phone firms to produce CE-based smart handsets within a year. He claimed that Symbian could not match Microsoft's end-to-end solution.

'[Symbian] has a great operating system ... but end-to-end provision is what will make this a multi-million dollar market,' he said.

Web challenge to lottery law

A lottery which aims to create 2,000 new dollar millionaires on the first day of the millennium is the latest wheeze to cash in on the boom in web gambling.

The organisers say the **Millions2000** scheme, which also offers a first prize of up to $50m, could raise $1.5bn for charities via a foundation based in Liechtenstein and known as the Millennium Fund.

Electrofunco, the firm behind the scheme, is mounting a legal challenge to the UK National Lottery's monopoly which prevents it promoting the scheme in Britain, although there is nothing to prevent UK punters from placing their bets via the web.

The company will seek a judicial review, on 5th May, claiming that a lottery ticket is a 'financial instrument' and is subject to the European free-trade laws.

Chairman David Vanneman said: 'We are confident that the restrictions imposed by UK Lottery law...will be overturned.'

A single $10 ticket, purchased by phone or on the net, allows entries into all the prize draws including a series of draws held in the interim.

The lottery is controlled by the **International Lottery in Liechtenstein Foundation** (ILLF), which is described as 'authorised and controlled' by the Liechtenstein government. The organisers say that 50 percent of the anticipated $1bn-plus ticket sales will go on prizes, 15 percent will go to the ILLF for local charities and costs, and 35 percent to global charities.

www.millions2000.com

A bug's-eye view

Cyber Snoop

A new package allows network administrators to track every virtual move of staff who use company net links to visit dodgy sites. The enterprise edition of **Cyber Snoop 3.0** can make a complete audit trail of net activity including news, chat sites, newsgroup access, email and site visits. Pearl Software's package also allows administrators to set different access controls for various users.

Opensoft 01488 681004

Hampton Court is one of four royal palaces featured in a new web site at www.hrp.org.uk. The others are the Tower of London, Kensington Palace, Kew Palace and The Banqueting House of Whitehall Palace. The site will be constantly updated with news of tours and events, including holiday activities.

DVDed loyalties

Rival standards for recordable DVD could prolong the life of CD-RW. Clive Akass reports.

Confusion over three rival standards seems likely to delay widespread adoption of DVD read-write drives, expected to become the next-generation of removable storage both for PCs and (replacing the VCR) TV. Two types, DVD-RAM and DVD-R, are already available and prototypes of a third, DVD+RW, were shown last month at Cebit.

DVD-R drives, made exclusively by Pioneer, cost as much as £15,000 until recently and the disks were £50 each. Prices have now fallen *(see table, below)* but remain high.

All writing to a DVD-R disk must be done in a single session and cannot be overwritten. But the 3.95Gb disks can be read by current DVD-ROM drives and are used for professional DVD production and archiving. The read-only data has the status of a legal document. Chris Tampsett, Pioneer's optical-systems product manager for Europe, says that doctors use them to store body scans. 'Hospitals are legally required to keep CT scans for 11 years in a tamper-proof form,' he said.

Pioneer showed a prototype 4.7Gb drive, the DVR-S201 *(pictured)* at Cebit. It will be available once the specification is finalised next month. A rewritable (-RW) version — unfairly called 'minus RW' to distinguish it from '+RW' — will follow when copy-protection issues have been settled. The Minus-RW and DVD-RAM specifications both emerged from the DVD-ROM Forum comprising representatives of more than 120 manufacturers. Backers of DVD-RAM include Panasonic, Hitachi and Toshiba. Drives taking 2.6Gb and double-sided 5.2Gb disks (which must be turned over manually) have been on sale for more than a year; a 4.7Gb-per-side version will be launched this autumn.

DVD-RAM drives are being used both in consumer and business applications. Plasmon showed a DVD-RAM jukebox based on Hitachi drives that can take up to 480 single-sided disks storing 1.2 terabytes. Prices start at £36,000 for a 120-disk model. But it is single DVD-RAM drives, available now for less than £400, which will go head to head with DVD+RW drives when they start to appear this autumn from major vendors such as Philips, Sony, Yamaha, Ricoh and Hewlett-Packard (HP). Both technologies offer random access similar to hard disks, but the Plus-RW camp claims superior performance because of the way data is written and read.

▲ PIONEER'S DVR-S201 4.7GB DRIVE WILL SOON BE AVAILABLE

In Minus-R/RW the spin speed is varied so that tracks are scanned at the same rate wherever they are on the disk. This is called Constant Linear Velocity (CLV) and is said to be better for audio-visual data streams. Constant Angular Velocity (CAV), where the spin rate is constant but the scan speed varies, uses disk space more efficiently and is more suited to small, scattered data files.

DVD-RAM uses a slightly different system called Zone CLV in which the disk is divided into tracks of equal length, each of which is scanned at the same velocity. Plus-RW uses a mix of CAV and CLV, which allegedly provides the best of both worlds. Other claimed advantages are:

- **Plus-RW** disks look like CDs whereas DVD-RAM disks are held in cartridges. They can be taken out to use in non-cartridge systems but this voids the warranty.
- **DVD-ROM** and DVD video players need only slight modification to be able to read Plus-RW disks. This is a polite way of saying that many current models are incompatible, but it is also true for DVD-RAM disks.

The battle recalls that between VHS and Betamax for the VCR market and the stakes in technology royalties are as high. But Mike Matson, general manager of HP's information storage group, pointed out that his company has backed Plus-RW even though it owns none of the intellectual property: 'We believe it is the best technology.'

Peter Molyneux, optical storage product manager at Panasonic, is not impressed. He says unprotected Plus-RW disks will be easily damaged and claims of superior performance have yet to be tested independently. He asked: 'Has anyone given you an RW to test? It's all vapourware. I'll be surprised if they [the RW camp] really bring out their 3.0Gb drive because we'll have a 4.7Gb drive on the market by then. On top of that, it will take them months to ramp-up production.' He could see no problems with compatibility. 'We'll be producing 500,000 compatible DVD-ROM drives a month, and that's not counting what our partners are doing,' he said.

The dispute could prolong the life of CD recordables, according to Petter Nordwall of Adaptec's software products group, developer of the popular EasyCD Creator: 'We are ready to provide software for any of the DVD products. At some point one will be the winner, but that could be a long way off. In the meantime, CD-R and CD-RW is good enough for most people's needs.'

	DVD+RW	DVD-RAM	DVD-R/RW
Capacity per side	3Gb drives in 'second half of this year'. 4.7Gb due by next year.	2.6/5.2Gb drives readily available. 4.7Gb next year.	3.95Gb write-once available now. 4.7Gb by summer. 4.7Gb RW possibly next year.
RW mode (*see text*)	CAV or CLV Random access	ZoneCLV Random access	CLV Write disk at once
Media	Disk	Usually cartridge (*see text*)	Disk
Media cost	Unknown	£14.95 for 2.6Gb £22.95 for 5.2Gb	$20
Drive cost	Unknown	Panasonic drive £348 (ex VAT) street price	About $5,000

Playing with your emotions

Sony's Playstation II will deliver graphics that put games onto another level. Tim Bajarin reports.

Developers descended on Silicon Valley recently to get their first glimpse of a new games system that will shake home computing. Sony's Playstation II, although still a year away, will deliver graphics that until now could be produced only on supercomputers. Even more amazing is the fact that when it hits the market in late 2000, it will be priced below $500.

It's a great example of a coming generation of processors designed for application-specific devices, rather than PCs, and was developed by Sony and Toshiba in a joint venture. At its heart is a microprocessor, dubbed the 'Emotion Engine', designed to draw tens of millions of polygons per second, giving low-cost games system graphics the quality and realism of, say, the movie Toy Story.

To attract and recruit games developers, Sony showed the system a year ahead of its launch. And Sony hopes that developers will go beyond shoot-em-up games to create works with the same impact as a great book or movie. It says the new chip has enough power to convey human-like motions and abilities in the game characters. It could also deliver games which include artificial intelligence and speech recognition, technology that alone would raise this system beyond its rivals. Imagine the possibilities of giving the system high-speed web access : game developers and even movie studios could deliver interactive games and movies.

Analysts suggest it could herald a merger of the film, TV and video-game sectors. Some said that this was the first real alternative to the PC, for reaching people on the internet. Indeed, it has the power to become just about anything it wants. The system is proprietary but adheres to key standards like CD-ROMs, DVD, USB and Firewire. It will even have standard slots for modems, network cards, hard drives and flash memory. Clearly, Sony has more in mind than just a standalone games system, though no-one from the company would say what.

Designers who write for both the original Playstation and the Nintendo 64 were blown away by what they saw and couldn't wait to get the developer kits and begin working on their own Playstation II visions. A couple of mainstream developers were excited about the potential of writing programs to steer the Playstation II towards net-driven information systems. They wanted Sony to develop strong communications capabilities in the system.

▲ **Demonstration Playstation II** animations using a character from Namco's Ridge Racer 4

Sony sources suggest that when the system launches, communication will be built in and developers will produce multi-user games from the start. One can imagine that Playstation II, with net connections and add-on capabilities, could become the front-end to digital TV. Most digital TVs are not being designed with PC functionality; the computing power will reside in a set-top box or web TV-like system. But with a big hard drive for recording and playback, the Playstation could double as a digital VCR. Add the web connection and you have a versatile device which turns your TV into a digital entertainment system.

The Sony Playstation II then becomes the Trojan Horse which many people believed Microsoft had with its web television. Although the web television is going in this direction and Windows CE is the OS in the new Sega game system, the quality and versatility of the Playstation II could cause Microsoft and Sega's efforts to be slowly adopted come late 2000.

While low-cost PCs still dominate in the home, it's clear that Sony is ready to challenge the conventional wisdom of what a home computer should look like and what it can do. It is poised to take aim at this consumer market as it reaches out to more home owners looking for a device that does more than simply access the web on their TV.

GAMES NEWS

Space, stars and destruction in detail

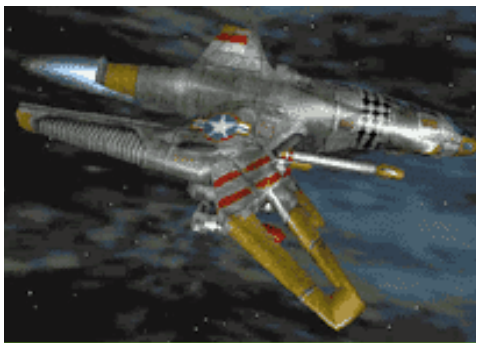
▲MICROSOFT BREAKS NEW GRAPHICS GROUND WITH ITS SPACE COMBAT GAME, STARLANCER ▶

Microsoft games are entering the market thick and fast this year. We have details of a new first-person space combat called **Starlancer** due for release at the end of 1999. This game will provide a level of graphic detail not currently found in space combat games, with particle effects, dramatic source lighting and realistic ship destruction.

Countries from around the world including the United States, China, Russia and Great Britain have formed strategic alliances and now battle for control of Earth, Mars and other planets across the solar system. As part of a newly formed, ragtag aviation unit, the 45th Volunteers Squadron, players must prove themselves and earn the respect of their peers. Look out for a review in *Screenplay*.

☛ If you have a Mensa IQ and a year to spare, then **Aureum**, the new Attica release, could be right up your street. The setting for this CD-ROM is the Roman Empire. For over 1,000 years, following a barbarian attack, a hoard of gold coins has been hidden in a ruined building. In the process, some have been lost. The player's task is to find the lost coins by using the clues on the CD-ROM; clues that use beautiful imagery reminiscent of the era, based on factual events and related issues of the period. Each puzzle takes, on average, three weeks to complete. They are mainly visual and use no present-day language. Ten people who succeed in the task will take part in an all expenses paid holiday to the Mediterranean and one will win £20,000! Aureum is out now priced £39.99. More information at www.aureum.net.

☛ Grand Theft Auto, the most dangerous game of the nineties, is back. The sequel, **Grand Theft Auto: London**, is set in 1969, just as the glamour of the swinging sixties meets the danger of the psychotic seventies. The hippies, freaks and potheads are on their way out, and a new breed of sharp-dressed, gun-wielding gentlemen are making their mark on the city. Gameplay is similar to the original but includes Mini's and pigeons, and among the crazy missions you can blackmail a bent MP and steal the crown jewels. Watch out for a review in *Screenplay*.



☛ Some of you may remember the review of The Rocky Interactive Horror Show, published in December 1998's *Screenplay*. Well, finally, the new graphic comedy adventure starring Brad and Janet has hit the shelves. The CD-ROM containing new and original songs from **The Rocky Horror Show** is priced at £29.99.

ETELKA CLARK

In Screenplay this month: Resident Evil 2, Pool Shark, South Park, Live Wire, Alpha Centauri and Biosys.

Top 10 products

Last month

CD-ROMs

1	**Simpsons: Virtual Springfield**	**Fox Int.**	-
2	Simpsons: Cartoon Studio	Fox Int.	1
3	Dancing Baby Screensaver	Guildhall	3
4	South Park Screensaver&Utils.	Telstar	2
5	Star Wars: Behind The Magic	Activision	4
6	Dance eJay II	Fast Trak	7
7	Dancing Baby CD Player	Guildhall	6
8	Rave eJay	Fast Trak	7
9	Encyclopedia Britannica	Acclaim	-
10	Top Of The Pops: Mix Factory	BBC	-

Games

1	**Championship Manager 3**	**Eidos**	-
2	X-Wing Alliance	Lucas Arts	-
3	Grand Theft Auto: London	Take 2	8
4	Jimmy White's Cueball	Virgin Int.	-
5	Call To Power: Civilization	Activision	-
6	Commandos: Beyond The Call...	Eidos	-
7	Heroes Of Might and Magic 3	Ubisoft	-
8	Populous: Undiscovered Worlds	Bullfrog	-
9	Lands Of Lore 3	EA	-
10	Silver	Infogrames	-

Games and CD-ROM figures supplied by HMV. Peripherals, Windows software and DOS software charts will reappear next month.