



X marks the spot

Microsoft is taking on the console games king, Sony, with its X-Box. Jason Thomas wonders whether you'll be playing along

Microsoft describes its decision to enter the games console market as one of the biggest things it's ever done. Rumours began to circulate that Microsoft was considering a console at the end of last summer. Since then, the hype has built. The much anticipated X-Box announcement came only four days after Sony's PlayStation 2 went on sale in Japan. It was no great coincidence. Microsoft sees the device as an attack on a market it has spent billions to dominate – that is, Internet computing – and a product it is spending billions on to develop – a set-top box called Web-TV.

This is because the US version of PlayStation 2 will be more than just a games console – it will surf the Web, send and receive e-mail and play DVD movies. It will also have a hard drive. In fact, it can almost be viewed as a new type of consumer-electronics product undercutting low-end PCs.

Movies, games, videos

The thing about games consoles, says Microsoft, the thing you notice about them first, is that they are games consoles. That is, they're for playing games and nothing else. As soon as you start to build in PC-type features (e-mail, Web-browsing, DVD and so on) you've not only compromised your design and your market, but you're on the slippery slope to turning a single-function device into a multifunction device and, before you know it, you've got a PC – with all its driver problems, component compatibility issues, connectivity conundrums and other hair-pulling frustrations. The last thing you want to have to do with a games console is take the back off.

So Microsoft's design is for a games-only device – despite the fact that the specification reads like a mid-range PC. For example, although there is an Internet

connection in the X-Box (either through cable – Microsoft is betting on the widespread growth of broadband support in the next two-and-a-half years – or modem), you won't be able to send or receive e-mail or surf the Web – it will be purely for playing games and downloading upgrades and new characters for games and so on. There's also an Ethernet connection for networking multiple X-Boxes together for multi-player games.

The hard disk isn't for the player to use, it's for the games developer. There are two main ways Microsoft wants this to happen. The first is something called the perpetual universe, which will 'record' all previous uses of a game. For example, if you're playing a Formula 1 racing game and you crash horribly at Silverstone, the next time you play, the skid marks will still be on the track. Steve McGill, Microsoft's UK games spokesman, described it as "getting the game to live beyond the DVD."

The second is as a storage medium for game upgrades, new characters for games and new audio tracks. The X-Box will download these using the Internet connection, probably from the



Image © Reuters/Popperfoto

MSN Game Zone, although the details are yet to be finalised.

Significantly, the operating system won't be Windows CE – rather, it will be a stripped down version of the Windows 2000 kernel. There will be no familiar user interface, no file management – in fact, players won't even know it's there. A small section of the OS will be stored on the hard drive, the rest will be on each game disk.

To avoid driver and device conflicts, the four game controller ports are proprietary to Microsoft.

Would you trade in your PC or Playstation for this? Bill Gates wants you to – we'll have to wait and see.

One X-Box will support four game controllers and split the TV screen into four. If you want a screen for each player, you'll need four X-Boxes, four TVs, some Ethernet wire and plenty of room. Microsoft is keen to promote the 'social' aspects of gaming and is actively encouraging universities, youth clubs and other social centres to install X-Box 'arenas'.

There's 64MB of memory with a unified architecture. It has to be

TECHNICAL BRIEFING

PC vs X-Box – which is best?

A key difference between the X-Box and a traditional PC is the memory architecture. Microsoft said the X-Box will enable the graphics chip full access to the entire system memory, a feature that will improve graphics performance over current PC designs, where the processor gets first crack at memory capabilities.

A uniform memory architecture where the processor and graphics controller share one pool of DRAM has been widely debated in the PC community for its trade-offs in performance and cost.

"As screen resolution and depth complexity go up, so does the required fill rate," said Dan Vivoli, senior vice president of marketing for Nvidia. "This can ultimately put pressure on the bandwidth between graphics processor and frame buffer. We have to design our graphics processor so that we aren't limited by the memory bandwidth to the frame buffer."

The choice of Double Data Rate memory for the X-Box is significant. DDR improves graphics performance over conventional Single Data Rate (SDR) memory by transferring data on

both the rising and falling edges of the input clock. SDR only transfers data on the rising edge. This effectively doubles the peak bandwidth of the memory without requiring a wider interface.

Console maker, Nintendo, appears to be preparing for a shift from Rambus memories used in its current Nintendo 64 console to DDR-II in its up-and-coming Dolphin system. Like the X-Box, Dolphin is also slated for a Christmas 2001 launch. The PlayStation 2, by contrast, uses two channels of Direct Rambus.



such a huge chunk because developers like a lot of memory to play with and a unified architecture so they can use it for whatever they like – graphics, audio or the physics of a game.

Underpinning all this is a 128-bit graphics chip from Nvidia, which Microsoft claims is three generations removed from anything that's available for the PC at the moment. Certainly its claimed performance (see box below) should be making gamers' and developers' eyes water at the prospect. Despite various reports that it's a GeForce 256 or other existing Nvidia chip specially tweaked for Microsoft, it doesn't exist yet – or even have a name.

When is it out?

As for availability and price, well, X-Box is scheduled for an Autumn 2001 US launch, with the rest of the world some months later. That puts it at least 12 months behind the PlayStation 2 (more on the significance of timing, later). Pricing is obviously not finalised yet, but McGill said the X-Box would obviously have to be competitive with Sony. "It could probably put up with £249 or so," he said.

One of the major dynamics in the console market is that the hardware doesn't really make any money. The money comes from the games themselves. Microsoft is very aware of this and is putting a great deal of effort into home-grown development. It is actively recruiting as many top developers as it can – just look at its jobs page on the Microsoft Web site – and has agreements with Alex Garden, who wrote *Homeworld II* for Sierra and Chris and Erin Roberts who wrote the phenomenally successful Wing Commander series and Privateer.

At the launch, Microsoft released several testimonials from some of the top games developers in the industry. All expressed their enthusiasm for the device and their commitment to developing games. Actual commitment in terms of titles is still a bit thin on the ground, though.

Microsoft plans to be a first party publisher for the X-Box and will have at least 20 (and hopefully 30) titles available at launch, and double that each year after launch.

Quicksand

Of course, whether Microsoft makes any money out of the X-Box depends entirely on what gamers think of it and its games. So far, analysts haven't been too complimentary. Forrester is very negative. "X-Box spells quicksand for Microsoft," said Jeremy Schwartz, a senior analyst at Forrester. "Despite its enormous resources, Microsoft will fight a losing battle that will sap its other resources."

There are three main reasons for this, according to Schwartz. "Console gaming and PC gaming are different worlds," he said. "Console owners expect ease of use, instant start-up, and minimal interface complexity. For Microsoft, replicating these features using its Windows experience will be a tall order."

Nor does he believe enough developers will

This mock-up demonstrates some of the X-Box's projected graphics capabilities, which is a first.



jump to the new platform.

"Despite Microsoft's announced partnerships, we expect developers to focus most of their resources on established and emerging platforms like Sega Dreamcast and, increasingly, PlayStation 2." Schwartz argued the 'big three' already own the console market. Above all, Sony has a massive head start on Microsoft, and all have established game characters.

Microsoft doesn't. "PlayStation 2 will have a year's jump on X-Box; with more than five million units in the US in the first year out, Sony will be the clear winner in the console wars. Nintendo will launch its Dolphin console before X-Box arrives, leaving Microsoft in third place at best."

However, others believe Microsoft has little choice but to take on Sony et al because of the threat it poses to Microsoft's share of the desktop. If consoles grow to become like desktops and

notebooks, they will attack Microsoft's traditional revenue streams. So Microsoft is launching a console to pre-empt that threat.

And to take an even more skeptical view, Microsoft might not even release the product. The road to Microsoft's world software domination is littered with unreleased products: Cairo, handwriting recognition, and OS/23 to name but three. X-Box will succeed if all it does is slow down the market penetration of competitive products.

If this seems just a bit too cynical, remember one of the defences Microsoft used in the anti-trust trial: It claimed its threats were merely tactics to defend its markets – they were never intended to be carried out.

What is X-Box, but a threat to counter the threat from Sony? Wheels within wheels – which is the way Microsoft has always worked. We'll soon see. **PCP**

X-RAY SPECS

Microsoft is keen to point out the anticipated performance differences between its baby and the new PlayStation

	X-Box	PlayStation 2
CPU	600MHz	300MHz MIPS
Graphics processor	300MHz custom-designed X-Chip, developed by Microsoft and nVidia	150MHz Sony GS
Total memory	64MB	38MB
Memory bandwidth	6.4GB/sec	3.2GB/sec
Polygon performance	300MB/sec	66MB/sec
Sustained polygon performance (full features)	100+ MB/sec	20MB/sec
Micro polygon performance	300MB/sec	Not supported
Particle performance	300MB/sec	150MB/sec
Simultaneous textures	4	1
Pixel fill rate – no texture	4.8GB/sec (anti-aliased)	2.4GB/sec
Pixel Fill Rate – 1 Textures	4.8GB/sec (anti-aliased)	1.2GB/sec
Pixel fill rate – 2 Textures	4.8GB/sec (anti-aliased)	0.6GB/sec
Compressed textures	Yes (8:1)	No
Full scene anti-alias	Yes	No
Micro polygon support	Yes	No
Storage medium	4x DVD, 8GB hard disk, 8MB memory card	2x DVD, 8GB hard disk, 8MB Memory card
I/O	Game controller x4, Ethernet, Internet	USB, Ethernet (10/100), Game controller x2, i-Link, PCMCIA
Audio channels	64	48
3D audio support	Yes	No
MIDI DLS2 support	Yes	No
AC3 encoded game audio	Yes	No
Broadband enabled	Yes	Future Upgrade
Modem enabled	Optional	Optional
DVD movie playback	Built-in	Utility required to be on memory card
Game pad included	Yes	Yes
Maximum resolution	1,920x1,080	1,280x1,024
Maximum resolution	(2 x 32bpp frame buffers + Z)	1,920x1,080, 640x480
HDTV Support	Yes	Limited



Netscape 6 PR1

Netscape has finally released the first public preview of Netscape 6. Anyone care anymore?

Minimum requirements Various. See Netscape Web site before downloading
Tested on PIII 500MHz, 128MB RAM, Win98 SE, PI MMX 166MHz, 128MB RAM, Mandrake 7.0 Linux, PII 350MHz, 128MB RAM, WinNT 4.0, iMac G3 350MHz, 128MB RAM, MacOS 9.04
Extra information Windows and Mac use an installer application

After a long time in the wilderness, Netscape has finally released the first public preview of its next generation browser – Netscape 6. A complete rewrite and the product of the Mozilla open source development product, Netscape 6 is intended to be the browser that could knock Internet Explorer from the top of the tree. Designed to be cross platform and extensible, Netscape 6 is promising a lot. But has PR1 been released too early?

Currently, Netscape 6 is available for the three most common desktop operating systems: Linux, MacOS and Windows. We installed it on all three to see how well it performed. Installation is easy enough for Windows and MacOS users. All you need to do is download the small installer from

the Netscape Web site. When run, this connects to the Web and downloads the components you choose. You can select a full install with debugging tools, or you can drop Mail, News and Composer for just a pure browser. Things aren't so easy for the Linux user.

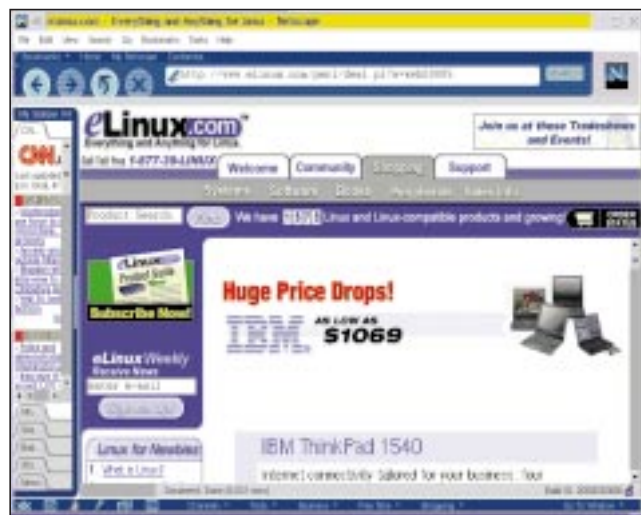
All three versions have a similar look and feel, with Netscape skins (or as Mozilla calls them, 'chromes'). Unlike the latest Mozilla milestone builds, Netscape 6 PR1 is not user skinnable, though the underlying XUL interface description technology is in place. The Netscape user interface is easy enough to use, with large buttons for the main browsing functions. Various links round the edges of the main window launch other functions, including a mail and news tool, as well as the Netscape composer Web page design tool. Netscape's mail tool is integrated with AIM, so you can send an instant message as a reply to an e-mail rather than a full message!

Probably the most innovative feature of Netscape 6 is the sidebar. This is designed to give you quick access to information you'll need while on-line. Here you'll find



Three different versions of Netscape 6 on these pages and three very similar looks and feels. The above is the Windows version. Netscape has re-thought the design of the Web browser, making it ready for Web appliances as well as desktop PCs.

The Mac version (below) and the Linux version (bottom).



news and stock information, as well as a persistent search pane. Netscape has integrated AOL's instant messaging technology into the browser, and the side bar replaces the AIM buddy list. Third parties will be able to create new sidebars for Netscape 6, so you could find your favourite eBay auctions as a pane, or the home page of a company Intranet.

One thing to remember with Netscape 6 is that this is preview release, so performance is poor. Unfortunately, our Mandrake 7.0 system had the worst performance: while page-rendering speeds were good, Netscape 6 was poor at actually connecting to a site and had problems with some dynamically generated sites. Resizing the window under KDE also caused problems – including crashing the browser. Performance was a lot better on both Win98 and NT 4.0, though these were slow to start up and occasionally prone to crashing on complex sites. The version we actually liked the most was the MacOS build. This was fast, small, and rendered HTML

well – including a test site based around CSS absolute positioning.

The most important part of Netscape 6 is the new Gecko rendering engine. This is designed to be standards-compliant, supporting HTML 4.0, XML (and XSL and XSLT), the W3C DOM levels 0 and 1, as well as CSS level 1. It's also ready for use in other applications. At the UK launch Netscape announced that Gecko was going to be used for the AOL Anywhere Internet appliances, as well as in Liberate's interactive TV set top boxes. Like Microsoft's MSHTML.DLL, Gecko is designed as a reusable component – and is very small.

This is only the first public preview of a browser that won't be released for another six months. We'd have been happier if Netscape had kept its browser inside Mozilla for a little while longer, as there are a lot of extremely rough edges.

It's just far too early to say whether Netscape 6 will enable AOL to reclaim the crown it lost to Microsoft's Internet Explorer.

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