EDGE

Inside

Dreamcast ™

Sega's **128bit superconsole** is born

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/ CONTENTS

Sega president **Shoichiro Irimajiri**, May 22, 1998: "For the development of the hardware, it's cost $50 to $80 million. For the software development, $150 to $200 million, and for the marketing in each territory we will spend $100 million. Those are huge numbers."

These numbers represent Sega's forthright commitment to Dreamcast, the company's most important hardware launch in its history. Just about everything appears to be in place: the first sign of firstparty software is strong (see *Virtua Fighter 3tb* reviewed in this month's issue), thirdparty support is buoyant (350 developers are purported to be working with the format worldwide), the network strategy shows immense promise, and the technology looks capable of delivering just what Sega promised in many respects.

So how, following the disastrous performance of the Saturn in the face of Sony's full-blooded assault on the videogames market, has Sega managed to put together such a robust package? That's one of the questions this supplement looks to answer, by examining the Dreamcast story to date and talking to the men who have been engineering Sega's revival. Because it's not, obviously, simply a matter of hard cash.

/ THE RISE AND FALL AND RISE OF SEGA

With competition from Nintendo and Sony, the Sega console story is a rough one. **Edge** tracks the tale

an industry previously shared – and then decimated – by the likes of Atari, Coleco and Mattel. Nintendo was the Microsoft of videogaming.

Master System: mission impossible

It was against this seemingly infallible competition that Sega launched its Master System in Japan in 1985. On paper, at least, the machine enjoyed several advantages over its behemoth rival. It was technically superior, boasting a larger colour palette, better screen resolution and more colourful sprites. Furthermore, Sega – already a major player in the coin-op industry – had a range of hugely successful arcade titles available for conversion, including *Hang On* and, later, hydraulic hit *Space Harrier*. Sega's long-running home

Any company wishing to create games for Nintendo's machine had to sign an exclusivity contract forbidding them to work on any other platform. As the NES had such a strong market share, most developers had no choice but to sign. (This was a little piece of corporate gamesmanship which coincided with the beginning of Sega's difficulties with thirdparty development.) Although the Master System performed respectably in Europe, impressing gamers with a series of generally accomplished arcade conversions, this was not the entry into the home market Sega had hoped for.

Mega Drive: first is everything

By 1989, Nintendo's monopoly was beginning to look precarious. Computer technology never remains stagnant

Sega – already a major player in the coin-op industry – had a range of hugely successful arcade titles available for conversion, including *Hang On* and *Space Harrier*

console philosophy – 'Tempt gamers with flashy in-house arcade ports' – was already in place.

The machine also boasted a few unusual extras. Along the face of the machine, for example, sat a card port, designed to accept less-sophisticated games delivered on credit card-sized media. A range of peripherals, meanwhile, included a lightgun and 3D 'virtual reality' glasses. Rather like Nintendo's ROB and Zapper gun, these gimmicks were designed to extend the machine's appeal beyond the commonly accepted constraints of videogaming, an endeavour which has cursed the console market ever since and led almost uniformly to disastrous results (the SNES's bazooka-like Superscope and the Saturn's NetLink Internet peripheral being two more recent examples). One fine idea, however, was the hidden built-in game (inputting a joypad sequence initiated a simplistic snail-based maze affair), a concept Sony would eventually ape by including light synthesiser software in later Japanese PlayStation models.

But it proved too little in the effort to wrestle the 8bit market away from Nintendo. The Master System lacked a killer app of *Super Mario Bros* quality and, in any case, by the time the Master System was released in the key US and Japanese markets, the NES had already built up a commanding presence. More insidiously, NCL president Hiroshi Yamauchi had an iron grip on thirdparty developers.

and, as the '90s approached, the NES was tottering into its twilight years. Characteristically, however, Yamauchi refused to acknowledge any potential problems. There were fears that announcing a new system would alienate NES owners and, besides, the company was sure that the very existence of its vast user base would counter any superior technologies that might come along.

To begin with, he was right. The Mega Drive was launched in March 1990 in Japan, a year before the SNES debuted. Sega, of course, could afford to sacrifice its hold on the 8bit market quite simply because it had no hold on the 8bit market; its gamble was that better technology alone would topple the NES. The Mega Drive hit the market as the most advanced console system available, with a 16bit 68000 processor operating at 7.6MHz, a 512-colour palette and two character planes.

And Sega still had its commanding strength in the arcade market to call upon. Thanks to the Mega Drive's relatively powerful architecture, the likes of *Altered Beast*, *Golden Axe* and *Super Hang On* were sparkling conversions, superior to anything previously seen on home formats.

But still the NES battled on. *Super Mario Bros 3*, released in 1990, became the biggest-selling videogame in history, shifting seven million copies in the US alone. Alongside this were a number of thirdparty triumphs

B etween 1983 and 1989, there was no home console market as such – there was the Nintendo Famicom. This may sound like the stuff of airy hyperbole, but the figures speak for themselves: by 1989, a quarter of all American homes owned a Nintendo Entertainment System (the machine's moniker in the west); two years later, Nintendo was deemed the most successful company in Japan. Through the combination of brave long-term corporate strategy, great games, cheap hardware, and saturation marketing, the company completely dominated

including early efforts from the Rare stable such as *RC Pro-Am*. Nintendo still had the software advantage.

However, the tide was turning, and not just against the NES but against Nintendo's draconian approach to thirdparty development. In the west, especially, the company's strict exclusivity clause alienated free-minded developers, so when Sega offered a much less restrictive licensing deal it attracted companies that had previously steered clear of consoles. One example was burgeoning giant Electronic Arts. Trip Hawkins, EA's MD at the time, signed up for Mega Drive development in 1990 and the softco immediately brought its *John Madden Football* to the platform. It was the beginning of EA's long-running licensed sports title series which attracted thousands of sports-mad Americans to the 16bit machine and still pays handsome dividends on today's platforms.

Nintendo finally realised the threat and in October 1990 launched the Super Famicom – a 16bit machine that the company's R&D dept had been working on for several years. The specs were immediately impressive (a palette of over 30,000 colours, four layers of independent scrolling and the ability to display 128 16-colour sprites at once), plus there was a software ace up Nintendo's sleeve: Shigeru Miyamoto's *Super Mario World*.

Sega's response was inspired. The company needed something that could blow away the rather sedate offerings from Nintendo – more specifically, the pudgy plumber, Mario. The result was *Sonic the Hedgehog*, developed in Japan by a small Sega-licensed team and released in 1991. The game may have lacked the depth of Nintendo's *Super Mario World*, but it had a hip, spiky-haired hero, lightning pace, visual flair, and the backing of a superlative marketing campaign. The modern videogame industry, built around cutting-edge imagery and cool ads, began here. Nintendo's dominance of the industry was effectively over.

From this point until 1994, the two machines competed on fairly equal footing, Nintendo garnering gamers' support with a legendary SNES conversion of *Street Fighter II*, Sega pandering to the desires of more 'street level' gamers with the likes of a 'full-blooded' *Mortal Kombat* for the home. Videogaming began to go mainstream (fuelled, in part, by the popularity of sports games on Sega's machine), paving the way for the pastime's potential in the following years.

Interlude: Sega loses the plot

By 1993, the 16bit console market was waning and the world's attention was turning towards CD-ROM. Systems like the Commodore CD32 and Philips CDi were failures, but together with the PC they introduced the concept of multimedia and, more importantly, of full-motion-video footage and the interactive movie. In the background, Ex-EA honcho Trip Hawkins was also busy evangelising his 3DO project – a relatively powerful 32bit console standard. The industry was stumbling forwards, looking for the next generation of interactive home entertainment.

Considering the Mega Drive's success against the SNES, it was no wonder that Sega was keen to keep gamers loyal to its brand name during this explorative period. But this desperation led to a series of abortive and unpopular platforms. First up was the Mega CD, a basic CD-ROM drive addition to the Mega Drive which, for the princely sum of £270, offered little but clever sprite effects, FMV and CD audio. While *Night Trap* created a stir with the moral majority thanks to its risqué FMV content, even the urbane 'Sega Pirate TV' ad campaign couldn't shift dross like *Sewer Shark* and *Cobra Command*.

In March 1994, with the 3DO bandwagon gathering pace, Sega announced the 32X, a 32bit add-on for the Mega Drive. Again, despite promises to the contrary from Sega, the machine lacked software support and, with ▶

The Mega Drive's success was down to a combination of technology and marketing. The console gave gamers access to true arcade-style visuals, while Sega's ad campaigns were aggressive and pervasive

HOW NOT TO DESIGN VIDEOGAME HARDWARE: THE SEGA WAY

Sega's past consumer hardware failures are manifold. In fact, rarely have so many successive blunders been made

The Mega CD concept (the second incarnation of which is pictured) was Sega's first step on the road to disaster

While the 32X enjoyed a modicum of decent software support, it was clear that it was a halfway-house device

The Sega Neptune, which was never officially released in Europe, was the last blot on the troubled 16bit landscape

PLAYING THE 32BIT GAME

Unlike the PlayStation, which remains outwardly near-identical in every territory, Sega was happy to experiment…

The Saturn's outwardly modest appearance belies its technical ability. If only it wasn't so tricky to utilise…

The Japanese Saturn is in fact a hugely successful machine, having sold over five million units in its native territory

A 3DO-style licensing model existed with the Saturn, but only JVC (with its V-Saturn, above) and Hitachi signed up

◄ rumours of the Saturn already circulating, few gamers were interested in what was so obviously a stop-gap platform.

This was a disastrous time for Sega. In a 12-month period the company managed to get through most of the solar system in aborted or failed projects. The Jupiter, a cartridge version of the Saturn, was scrapped. The Mars, an early codename for the 32X, failed. The Neptune, a proposed 32X/Mega Drive combo was also scrapped. Finally, Sega decided to stick with Saturn – a relief to those envisaging the launch of a Sega Uranus.

The Saturn innards were, in short, a mess. The two-chip set-up was powerful, but it meant coders had to schedule them to work in harmony – a complicated task

Saturn: DOA?

In developing and releasing a 16bit system before its major competitor, Sega more or less assured the success of the Mega Drive. It's ironic, then, that following exactly the same gameplan for the 32bit generation would be its undoing.

Early Saturn specs were already circulating when, in late 1993, Sony announced that it would be entering the console market with a 32bit CD-ROM machine set for launch in Japan in late 1994. Preliminary specs hinted at a machine many times more powerful than the Saturn, allegedly prompting Sega president Hayao Nakayama to storm into the company's R&D labs and berate his engineers for being beaten by a newcomer. By now, however, it was too late to make significant changes to the twin Hitachi SH2 processor set-up, so Sega simply added a second video-processing chip to assist with textures.

The Saturn's innards were, in short, a mess. The two-chip set-up was powerful, but it meant programmers had to schedule the processors so that they worked efficiently together – a complicated procedure. Plus, two chips didn't mean twice the power. Both units were accessing the same memory and internal resources, the end result being around one-and-a-half times the power of a single processor.

Compare this to the sleek internal architecture of the PlayStation, with its single-unit CPU and powerful Geometry Transfer Engine (which certain Sony execs claim to be the console's most valuable component), and it's no wonder many developers were loathe to tackle Sega's system. Indeed, since the machine's inception, only a handful of triple-A thirdparty titles have debuted on the Saturn.

In many ways, the philosophy behind the machine was all wrong. While the whole videogame industry was moving inexorably towards 3D – including Sega's own arcade divisions with the likes of *Virtua Racing* and *Virtua Fighter* – the company chose to create a console that could handle huge 2D sprites and smooth-scrolling bitmap backgrounds. There were no similar facilities for true 3D. Indeed, the machine calculated in quads rather than triangles, which made porting games between the Saturn and other platforms a headache of significant proportions.

Admittedly, some Japanese developers have benefited from this 2D-biased setup. Capcom, with its growing range of *Street Fighter*, *X-Men* and *Marvel Super Heroes* titles, has fully exploited the machine's sprite power, as has SNK with its own beat 'em up catalogue. Similarly, several companies have kept the spirit of the scrolling shoot 'em up alive on the machine, most notably Treasure with *Silhouette Mirage* and the more recent *Radiant Silvergun*. Indeed, the Saturn has always proved more popular in the east. Despite intrinsic technical difficulties, it started well against the PlayStation when both were released in Japan in the winter of '94.

However, away from the modest success in Japan, the Saturn may well go down as a noble failure. Sony came into the industry with fresh ideas, an easy-to-use machine, and a brutally effective marketing campaign. The company also seemed to be more intent on evangelising western developers – showing off the technology early, listening to input, even buying a British company, Psygnosis, to head up game development in

The Euro Saturn wasn't nearly as brash as the model available in other territories, its one-colour case design setting the precedent for its eventual 128bit successor

Its past may be littered with a mess of convoluted architecture, but Sega's console future remains distinctly one shape, and it looks like this. From above, there may be slight similarities with another grey console, but this is a very different beast

Europe. The PlayStation may have been unpopular with hardcore coders who liked to program 'straight to the metal' (Sony wouldn't let them, Sega would), but it's been a long while since programmers had a say in which platform received publisher support…

Dreamcast: a winding road

The story of Dreamcast's inception is a tortuous one. Rumours of a Saturn sequel began way back in 1996, when the codename 'Dural' was circulating, but few trustworthy technical details were coming to light.

In March '97, **Edge** received news from the States that the machine – now apparently codenamed Black Belt – would be based around a customised version of VideoLogic's PCX2 graphics chipset, and that Sega had also approached Microsoft with a view to using its technology in the console. The second rumour would later be confirmed when Sega announced its adoption of the *WinCE* system.

Both revelations were greeted with excitement. Sega, it seemed, was looking to rectify its mistakes with the Saturn by creating a more user-friendly development environment. Plus, the use of so many PC-specific elements would mean easy conversions between Sega's platform and the PC (difficult with the Saturn due to its quad- rather than triangle-based 3D calculation). The Black Belt format would not exist in difficult isolation like the Saturn; it could be easily adopted by publishers as part of a multiple-platform development schedule.

However, the story was far from over. Just weeks later, 3Dfx executives announced their intention to float the company on the stock exchange, which meant all of its current projects had to be made public for prospective shareholders. One such project was a deal with Sega to produce a version of the Voodoo chipset for Black Belt. Exit VideoLogic. Enter 3Dfx.

But not for long. In late July '97, Bernie Stolar (vice president of Sega America) called representatives of 3Dfx to tell them the deal was off. Once again, rumour and speculation took over. Sega was alleged to have reverted back to the Dural codename, and then in early '98 a new moniker, 'Katana' (announced in **E**55), began circulating the international grapevine. With speculation came tantalising details: NEC/VideoLogic were back on the project; a modem would be built into the system; there would be more polygon-pushing power than Model 3. And a theory surfaced: Sega had been working on *two* Saturn sequels – Black Belt with 3Dfx in the States, and Dural/Katana with VideoLogic and NEC in Japan. The latter proved superior and was officially approved.

Until now the hypothesis has never been proven (Sega's corporate senior vice president of consumer products, Hideki Sato, admits all to **Edge** on p13) but 'official' confirmation of the new console came on May 21 this year when Sega publicly announced its Dreamcast hardware, complete with 128bit RISC CPU, VideoLogic PowerVR chipset, modem and revolutionary joypads. More importantly, thirdparty support – the Saturn's greatest failure – is set to be massive.

Ironically, Sega is now in the position it was in ten years ago, facing a seemingly invincible opponent in Sony which refuses to give up on its hugely successful, yet long-in-the-tooth hardware. Could the Dreamcast format become the true successor to the Mega Drive, an epoch-making technological leap which sweeps away a whole generation of previous platforms? Considering the convoluted story to date, anything seems possible…

The Mega Drive flourished with games like *Golden Axe* (left). When Sega bolted on extra technology with the Mega CD, however, dross such as *Night Trap* (centre) and *Ground Zero Texas* (right) was the result
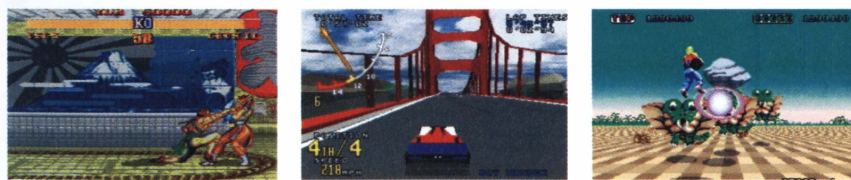
Capcom produced a respectable version of *SFII* for the Mega Drive (left), while Sega itself utilised the 32X to bring a 'special edition' conversion of *Virtua Racing* (centre) to the machine. Saturn *Space Harrier* (right)

The advent of fast, fluid polygons on a home console was marked by Saturn *Virtua Fighter* (left), but the machine truly excelled with full-on 2D, as demonstrated by *X-Men* (centre) and *Radiant Silvergun* (right)

/INSIDE THE DREAM MACHINE

Sega claims the Dreamcast name represents 'a revolutionary dream game world'. Take a look inside

Dreamcast is the first of the new generation of consoles to take to the videogaming stage. It delivers a specification that all but a few high-end PC owners will envy, for less than the price of a family video recorder (¥29,800/£150). While few doubt that Sony's PlayStation successor will graphically outpace Dreamcast, it's generally agreed that, technically at least, Sega's console does most things right – particularly compared to the complex and misjudged Saturn. Both inside and outside the casing, this is a far better conceived machine. However, as with all console hardware, Dreamcast will only be top of the technological heap until a newer, more powerful platform arrives. Sony, for instance, is not known for doing things by halves.

The deceptively plain motherboard, easily interchangeable power supply, modem and CD drive is a world away from the Saturn

The Dream team

Sega has not created its new machine alone. Perhaps taking its cue from the Windows CE operating system that has been licensed from Microsoft to run on Dreamcast (incurring the untold cost of a Windows logo on the console's casing), the hardware is constructed similarly to a PC, taking elements from several sources. While it has long been traditional for certain elements to be sourced 'out of house', such as the Sony audio chip that featured in the Super Nintendo, Sega has taken the trend one step further here. Several manufacturers have been drafted in to supply parts: Hitachi makes the main CPU (as it did for the Saturn), NEC builds the VideoLogic-designed graphics chip, while Yamaha delivers the audio processor and GD-ROM drive.

Looking beneath the lid, it soon becomes apparent that the console's engineers have created a remarkably neat

and compact device – particularly when compared to the clumsy Saturn. Sega's earlier machine had its polygon-handling capabilities enhanced late in its development cycle, leaving little opportunity for close integration of components. Dreamcast, from its deceptively plain motherboard to its easily interchangeable power supply, modem and CD-ROM drive, is a world away from its predecessor. However, Sony is thought to be planning a single-chip solution for PlayStation 2, which will move the game on further still.

Keeping cool

Possibly the only blot on Dreamcast's copybook is its – previously unrevealed – liquid cooling system which serves the main SH4 processor and CLX1 graphics chip. Two separate water-filled pipes connect a pair of heat exchangers over the chips to a heat-sink and fan, in an attempt to prevent excessive warmth building up within the machine. While **Edge** admires the ingenuity of the cooling system's design, that such a relatively complex and outmoded-looking piece of equipment should be required is unnerving. Once the thermal cut-out has been tripped (actually, melted-through is more precise), the afflicted Dreamcast must be returned to Sega for repair. Doubtless sharing **Edge**'s vision of mountainous warranty claims, Sega is toiling to eliminate the need for the cooling system – as soon as possible. As in previous cycles of the console war, Sega has positioned its troops early, although past experience suggests that this may not always be the best strategy. The Mega Drive was an early starter in its own race for supremacy, and failed in Japan. Sega's well-documented mistakes with the Saturn left the machine homeless in the west. Dreamcast is undoubtedly a capable warrior to carry Sega into what could prove its final showdown, but it doesn't have the field to itself. With PlayStation 2 and an N64 successor both known to be in the pipeline, and VM Lab's ambitious Nuon technology marching over the horizon, the battle starts here.

01 Hitachi SH4 CPU

Essentially an off-the-shelf unit, Hitachi's CPU nonetheless delivers impressive performance. Utilising a RISC (reduced instruction set) design, the 200MHz processor is reputedly capable of floating-point performance (essential for high polygon counts) four times higher than a Pentium II 266MHz. Perhaps the most telling feature of the SH4 is its ability to calculate 1.4GFLOPS (thousands of floating-point operations), compared to the original *Ridge Racer* coin-op's 0.4GFLOPS. Also of note is that the SH4 was designed from its outset to work with the Windows CE OS that Dreamcast uses.

02 NEC/VideoLogic PowerVR CLX1 graphics chip

Designed by UK-based VideoLogic and manufactured by electronics giant NEC, the CLX1 (aka PowerVR 2DC) is closely related to the new PowerVR Second Generation PC graphics card. Hardware features include full scene anti-aliasing, fog effects, coloured light sourcing, bump-mapping, texture compression and filtering. NEC's widely reported early manufacturing problems have been ascribed to the CLX1's 0.25micron technology (rather than the 0.35micron used in other 3D chips). Although a maximum polygon count of almost four million is claimed by Sega, real-world performance is actually around half that figure.

03 Yamaha AICA sound chip

Capable of 64-channel output, plus Digital Signal Processor effects including reverbs. The AICA also supports 3D audio effects, if connected to a suitable surround-sound system. Given the power of Yamaha's chip, it should be possible for game musicians to move away from CD-streamed tunes towards more interactive music.
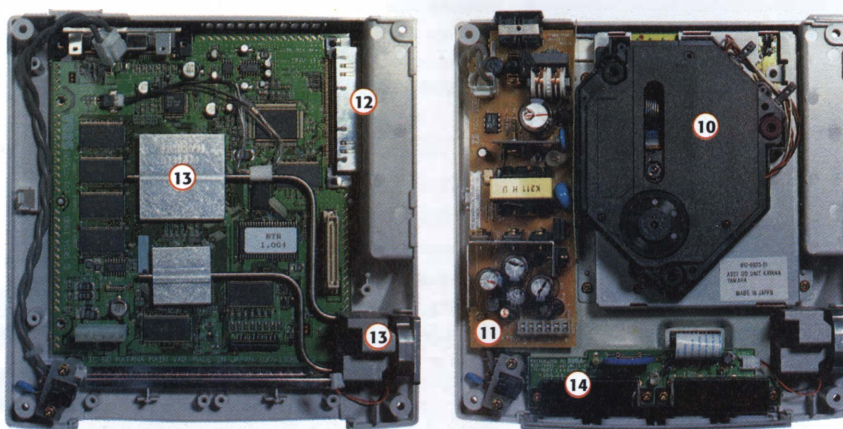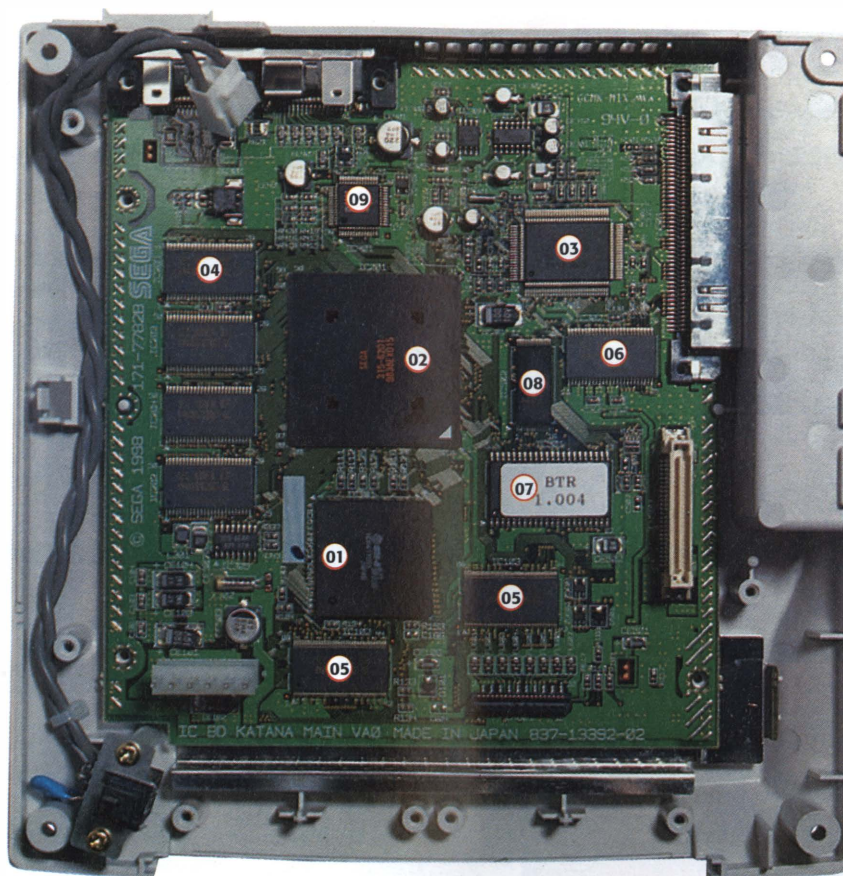
04 16Mb main operating RAM

As the cost of semi-conductors continues to fall, so the amount of RAM (and, indeed, ROM as used in N64 cartridges) in console technology has risen. Dreamcast's allocation of main RAM is some eight times higher than the PlayStation's 2Mb.

05 8Mb video RAM (VRAM)

As in its PC incarnation, the PowerVR CLX1 chipset requires distinct RAM to function. To this end, Sega has fitted Dreamcast with a further 8Mb of dedicated VRAM which can be used either with or without texture compression, although the latter obviously allows for a greater number of textures onscreen.

06 2Mb audio RAM

Dedicated to the Yamaha AICA DSP chip, this separate bank of RAM puts Dreamcast's audio system on an equal footing with many PC sound cards.

07 Boot ROM

Contains basic system information for Dreamcast's start-up routine, such as checking for which OS is being used. Also known as the BIOS.

08 128Kb Flash RAM

Used for the storage of low-level user definable information, such as date and time.

09 Video encoding processor

Unlike the Nintendo 64, Dreamcast offers a fully wired RGB output, in addition to a composite signal. Standard resolution is 640x480 (the highest possible on current television sets), interpolated down from the CLX1's 1,920x480 signal. Through the use of a VGA adaptor it's possible to use PC monitors to display Dreamcast games, while standard connectors such as S-Video and SCART in Europe are also supported.

10 GD-ROM Drive

In an attempt to hamper amateur CD piracy using PC CD-writers, Sega has chosen a Yamaha-developed 'GD-ROM' drive, which stores 1,000Mb (1Gb) of data. This makes it incompatible with standard 630Mb drives. While the GD-ROM's 12x speed may sound impressive, it has a total of 26Mb of RAM to fill, compared to the 2Mb which a PlayStation's 2x CD-ROM has to deal with.

11 Power supply (120V Japanese specification)

A modular construction allows for easy localisation of Dreamcast's PSU. The unit simply slots onto the motherboard via a large multipin connector.

12 Modem

For the Japanese market, Dreamcast is shipped with a 33.6Kbps Rockwell unit, although thanks to its modular design, the modem can be upgraded at a later date. While Sega of America recently announced that it intends to launch Dreamcast with a 56.6Kbps unit, plans for a modem in Europe have yet to be finalised.

13 Liquid cooling system

Due to the high operating temperature of Dreamcast's main processor and graphics chips, Sega has opted to fit a system of pipes carrying purified water over the chips to a heat exchanger. Should the external vent become blocked, causing the system to overheat, a thermal cut-out ensures that the power is switched off.

Stages of undress

The main picture above shows Dreamcast stripped to its bare bones. The most striking feature is easily the main graphics processor, VideoLogic's CLX1 – although **Edge** was interested to see the 'Katana' stamp (one of the console's development names) on the lower edge of the motherboard and other components. Above left depicts the unit with its liquid cooling system fitted, mounted on heat-absorbent pads. The system is remarkably sturdy given its independent construction. Finally, the image above right shows Dreamcast with all its components, including the GD-ROM drive (numbered 10) and power transformer (11). In addition, the control ports are mounted on a separate circuit board, along with a renewable lithium back-up battery for the Flash RAM (8). Dreamcast's considered interior architecture is a marked departure from the Saturn's technological jungle.

/INCIDENTAL ARMOUR

Often seen as purely cosmetic, peripherals play a key part in the make-up of Sega's new strategy

Every console has its share of hardware accessories, from the Atari VCS 2600's paddle controllers to the NES's robot companion, ROB. Over the last few years, the market has grown exponentially, with countless steering wheels, duplicate joypads and memory cards for the PlayStation and N64. While Sony and Nintendo have seen thirdparty manufacturers flock to their respective machines over time, however, Sega appears to be assuming a more dominant position from the outset with the release of its own steering device, arcade stick and keyboard, with more on the way. All utilise the console's custom port design, which (like the VMS storage unit) allows for two-way information transfers. One thing is certain – Dreamcast users won't suffer from a lack of additional paraphernalia to tinker with.

Osamu Kaji is Sega's man in charge of peripheral research and development. Overseeing more than 100 engineers across two departments and more than 30 projects, Kaji-san's current project is a head-mounted display for Dreamcast. Apparently, there have been plans for such a device since the Mega Drive's heyday, but only now is the technology capable of delivering a decent experience. When **Edge** met him, Kaji-san also confirmed that a high-capacity removable drive was on the cards for Dreamcast, for particular use with the console's Web capability. However, worries about illicit use of such a device for piracy may call a halt to its development. 64DC, anyone?

Standard control pad

Dreamcast's lightweight joypad is an evolution of the Saturn's analogue controller, sharing a similar button and stick layout. The major difference, though, is the hole at the rear of the unit, which accommodates up to two VMS units. In addition to the four main buttons, start key, analogue and digital controls, the underside of the joypad features twin analogue triggers on either side, in place of shoulder buttons.

Arcade stick

Given the fame of Sega's AM coin-op divisions and their various fighting titles, it comes as little surprise to find that the firm has created this arcade-style joystick for Dreamcast. While the joypad lacks Sega's traditional six-button configuration, the arcade stick is armed for beat 'em up battles. And with Capcom already warming to Dreamcast's cause, perhaps a *Street Fighter* conversion is on the way…

Racing controller

Like the arcade stick, Dreamcast's racing controller was an inevitable partner for Sega's classic coin-op driving games. However, with *Sega Rally 2* slipping from its position as a launch title to a 1999 release date, the steering wheel has become temporarily redundant. Future interpretations of AM racing titles are expected to grace Dreamcast, which could make this an essential piece of kit.

Keyboard

At Dreamcast's original announcement in May '98, many pondered how useful Internet facilities would be with only a joypad interface. This is Sega's answer: a low-cost (¥4,500/£25) keyboard allowing text inputs to be made to Dreamcast's email and Web browser. As yet, Sega has made no mention of a mouse to accompany the keyboard, but the eventual appearance of such a peripheral seems certain.
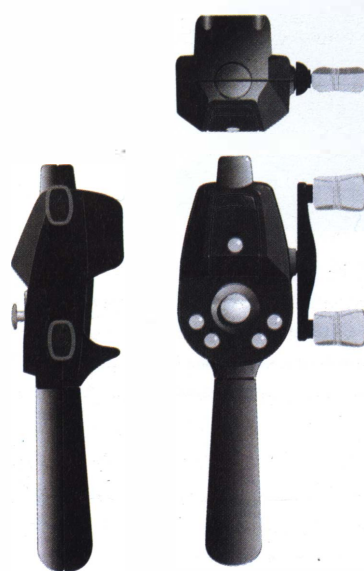
Alternative accessories

Sega's plans to litter Dreamcast owners' lounges with multiple control devices continue unabated. To tie in with the conversion of the popular Model 3 fishing simulator *Get Bass*, a 'virtual rod' is being planned. The prototype shown left features a similar design to the original custom arcade controller, minus, sadly, its force-feedback fishing line.

As is the vogue, other physical integrations will be supported, with a version of Nintendo's innovative Rumble Pak, dubbed 'Puru Puru Pack' for Dreamcast. Occupying the lower of the joypad's two peripheral slots in order to leave the other free for a VMS, the Pack should be compatible with most Dreamcast games.

Also 'borrowed' from the N64's stable of accessories is a planned microphone headset for use in simple voice-recognition applications, as witnessed in Nintendo's forthcoming *Pikachu Genki De Chu*.

Get the picture

Modern console launches are accompanied by a proliferation of audio-visual connectors for use with the various TV systems. Dreamcast, however, betrays its PC graphics card roots with a VGA adaptor box so that any monitor can be used with the console. **Edge** has yet to witness the adaptor in action, and so is unable to say whether it shaves the softened edges from Dreamcast's usual TV output.

Other A/V leads include standard S-Video and composite cables (shown left) for Japan, and a SCART connector for Europe which will benefit from Dreamcast's fully wired RGB signal, and should display the best picture available. In addition there will be an external RF adaptor, much like the PlayStation's, for basic television sets. Interestingly, all Dreamcast software titles are supposed to include a screensaver to protect TV screens from being burned by the console's high-powered signal.

Sega's modem-equipped Dreamcast is ushering in a new era of communication for console users…

With the new generation of consoles achieving relatively massive polygon counts, it was inevitable that new features would have to be added to capture gamers' imaginations. In pursuit of that goal, it seems likely that PlayStation 2 will have a DVD-playback facility (much to the chagrin of Sony's consumer electronics division which already manufactures DVD players). Dreamcast's calling card is its connectivity, which its Visual Memory System (see below) and its built-in modem both provide.

The success of what Sega president Shoichiro Irimajiri describes as 'new entertainment possibilities' (see p14), is founded on two major factors: the compatibility of the console with Microsoft's Windows CE operating system (see p12), and Dreamcast's communication features.

While there's actually nothing new about Internet gaming – PC users have been competing via the Net for years, starting with the most basic MUD (multi user dungeon) environments in the 1980s – Dreamcast's true point-and-click connectivity, coupled with its low price – ¥29,800 (£150) at time of Japanese launch – brings the online experience to the massmarket in a way no other machine ever has. Others – including Sega and Nintendo – have previously tried to succeed with console modems, but never has one been integrated so fully with a machine's ethos as that of Dreamcast.
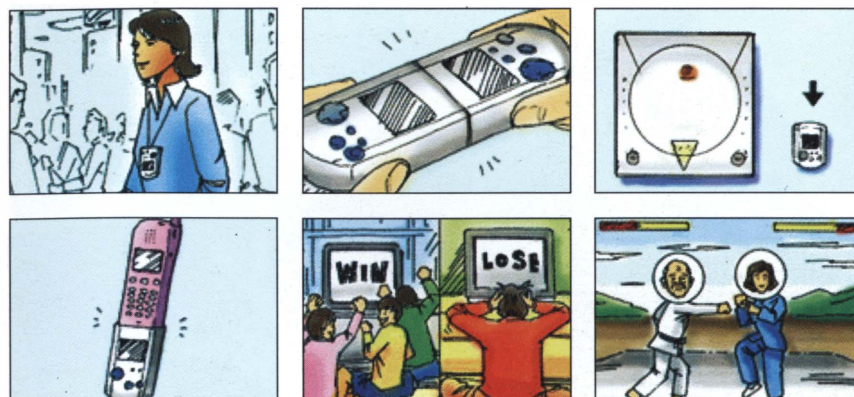
Originally dubbed 'Dreamcast Life', these images show the various aspects of the console's connectivity

VISUAL MEMORY SYSTEM

When consoles made the paradigm shift from cartridge to compact disc, a new method of saving games had to be found. Sony's answer was to equip the PlayStation with removable memory cards, capable of holding 128Kb of data, and it's this model that Sega has copied for Dreamcast – with one key difference.

The Visual Memory System (VMS) is a Lilliputian handheld console in its own right, equipped with a 48x32-pixel screen, a D-pad and four buttons. Simple games, particularly the popular virtual pet applications (such as *Tamagotchi* and *Pokemon*), can be downloaded to the VMS from Dreamcast. Yuji Naka's *Sonic Adventure* is among the titles to support VMS, with an intriguing set of sub-games themed around the various creatures that can be collected from, and nurtured separately to, the central experience.

There are, however, other methods in which the VMS can be employed. Once the unit is installed in the Dreamcast controller, the memory card's miniature display is visible through a hole in the joypad, making a personal screen for each player that is 'hidden' from others. Hopefully, developers will take advantage of this facility with extras such as pit information in racing games, motion trackers in deathmatch games and special moves for fighting games, rather than purely for save-game information.

The diminutive Visual Memory System adds features to several Dreamcast games (such as *Sonic Adventure*, below), and is also compatible with the console's coin-op cousin, the Naomi arcade board

ONLINE GAMING

According to **Shintaro Kono** (above right) of Sega's Network Business Department, Dreamcast's homepage is, "Dedicated to Internet 'virgins'; not PC users, but those who are new to the Web." Dubbed Dricas, the service offers several features, including a news service, daily manga cartoons and email services. This latter facility is presented as a postcard creator, letting the user send their messages embellished with cartoons and unusual typefaces. Other Dreamcast owners online can be found via the Dream Map interface, which identifies other contactable users as flags on a map of Japan. Charges will be made via prepaid cards, similar to the pay-as-you-talk schemes offered by mobile telephone companies, with costs around ¥5 (2p) per minute plus the local call rate.

Sega previously attempted to market a modem for the Saturn in July '97

/DEVELOPING THE DREAM

Sega is hoping that a PC-friendly operating system will deliver a flood of games for Dreamcast

As with all hardware projects, Sega created a number of prototypes before settling on the final casing shape

The fact that Dreamcast utilises Windows, Microsoft's controversial, world-beating operating system, conjures up images of system crashes, hardware compatibility problems and complex installation procedures. Surely this is tantamount to Sega inviting a host of complications that it can do without?

Not necessarily so: there are key differences between Dreamcast and PCs, and between Windows and its CE sibling that Sega has opted to use. Where the OS has only to deal with one hardware configuration when running on Dreamcast, for the PC there are potentially thousands of sound card, graphics accelerator, processor and memory issues to be addressed. And CE is Windows' core elements and little else – even the GUI (graphic user interface) has been stripped out.

The key aspect to Sega's choice of Windows CE – a factor that has been hotly debated throughout the

Powered by Microsoft® Windows CE

videogaming world – is that it allows for easy porting of PC games to Dreamcast. The general concern is that a slew of poor quality conversions will appear for the console, poured onto shop shelves by greedy game publishers. However, the inverse should be true if Sega operates the tight quality control it has promised, allowing only the best PC titles to be transferred to Dreamcast. Until the console arrives in the west (PC games are strictly a minority occupation in Japan), it's hard to judge which situation is more likely to occur. Unfortunately, **Edge** fears the more cynical viewpoint may be the one to prevail. **E**

Standard setting

Game creators looking to engineer Dreamcast content are in much the same situation as those working on platforms from other manufacturers when it comes to the development environment.

Shown here is the latest iteration of Sega's dev kit for Dreamcast, 'Set 5'. Far more complete than previous versions of the dev kit, Set 5 contains a complete console motherboard, a GD-ROM drive, two SCSI connections, a GD-Writer port, plus VGA monitor, Composite and S-Video outputs. In addition, the unit features MIDI and stereo phono audio sockets for music authoring – and the system reset button that is strangely lacking from the Dreamcast itself.

Previous versions of the dev kit lacked in many areas; Set 2 was essentially the PowerVR graphics chipset, while Set 4 was only capable of 40 per cent of the console's final performance level. Updates are expected as Dreamcast matures, and a stripped-down Set designed for artists is in the pipeline.

Aspiring home coders will be dismayed to learn that Set 5 costs several thousand pounds to purchase, although Sega representatives bluntly mention that the company doesn't intend to profit from selling the dev kit (implying that other console manufacturers do). Notably, Set 5's front panel is emblazoned with a large 'Katana' – Dreamcast's codename during development – logo, thereby ensuring that the name will live on (as has the PlayStation's defunct 'PSX' moniker) for some time.
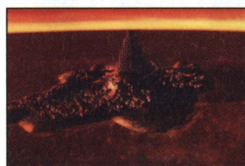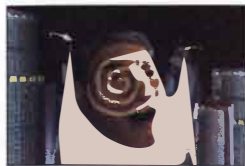
SHOW OF STRENGTH

The first public glimpse of Dreamcast's graphical advances over the PlayStation and N64 was seen at Sega's launch conference in May 1998. Two demonstration pieces were engineered, one by *Sega Rally* producer Tetsuya Mizuguchi and the other by *Virtua Fighter* mastermind Yu Suzuki.

The former's piece featured a polygon model of Sega president Shoichiro

Irimajiri's head delivering a speech about Dreamcast while being morphed, set fire to and generally manipulated in realtime. The latter demonstration was an impressive fly-by over an incredibly detailed Italian village, with scores of individual buildings and impressive lighting as day turned to night.

Dreamcast's current software line-up can be found on p18. **E**
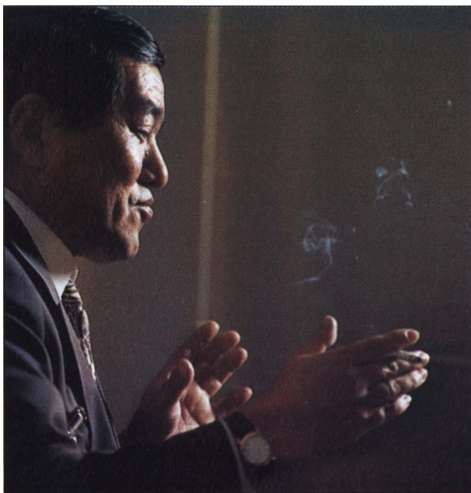
/A CONSOLE IS BORN

Sega's senior VP talks about its latest hardware, from conception to realising the dream

As with all new console hardware, Dreamcast has undergone a protracted and complex gestation. Meeting **Hideki Sato**, Sega's corporate senior vice president of consumer products, at its Japanese HQ, **Edge** sought to reveal the truth behind Dreamcast's creation.

Edge: What were the first elements of the Dreamcast design to fall into place?

HS: When we decided to make Dreamcast, the most important factor was to display as many polygons as possible – especially after the criticism of the Saturn compared to the PlayStation in this area. There were different candidates for the main processor, but for an entertainment machine we needed some particular specifications. For the Saturn we had used Hitachi's SH2, so it already understood Sega's requirements. With other parties things were not so easy. With the SH2, Hitachi had become the worldwide number one maker of RISC CPUs, and wanted to do it again. It understand the cost-versus-performance problems related to the games industry very well and tried to help in that area. The next step was the storage system. To be honest we wanted to use DVD, but gave up because it was still too expensive and the

development environment was a major problem. We needed to create the authoring tools from scratch! So we searched for a new cost-effective solution, and we came up with the GD-ROM. Then, around the same time, we chose the sound and graphics components.

Edge: Although Sega chose PowerVR's chipset, wasn't 3Dfx also in contention?

HS: We ran parallel developments in USA and Japan; Black Belt was a 3Dfx-based project, and Katana was PowerVR based. There were differences in both system architectures. Finally, in July 1997 we decided to go with the Katana project, which was continued in Japan.

Edge: Dreamcast's RAM allocation is high, considering you were trying to save money.

HS: At first the project only had 8Mb. But we found that if we wanted to display more than three million polygons, or five million without texture, we had to increase the memory size. So we raised the amount to 16Mb.

Edge: Industry watchers have argued about whether or not Sega's claim that Dreamcast is more powerful than Model 3 is true. What's your view?

HS: Model 3 is ROM-based, with around 100Mb of texture memory. Dreamcast has 8Mb, although using compression

Photography: Hiroki Izumi

"We wanted to use DVD, but it was too expensive and the development environment was a major problem. We needed to create the authoring tools from scratch!"

techniques you can have up to 20 or 30Mb. In peak moments, Dreamcast graphics can look better because it lets you use multiple graphic effects in realtime. But Model 3's 100Mb of mask memory can be accessed at 100 nanoseconds, whereas the GD-ROM is on the console. Considering these parameters, the Model 3 is more powerful, but Dreamcast has another advantage – its cost.

Edge: What are the graphic effects available on Dreamcast that the Model 3 doesn't offer?

HS: Fog that can be modulated, 256 levels of transparency, trilinear filtering, bump-mapping… It's not real bump-mapping, but it looks the same. Among the hardware effects, you have lighting and shadows with modifiable volume. Model 3 is three years old – technology has moved on.

Edge: Yamaha's DSP audio chip is fairly powerful. Are you expecting more developers to use it for

music, rather than simply streaming prerecorded music (CD-DA) from the CD?

HS: For certain sound effects it is better to make them in realtime. But the CD-DA technique is not flexible enough for realtime use, although it's easier for creating 'proper' music. However, if you want to reproduce the sound of an explosion in 3D, it's good to use both CD-DA and sound from the DSP chip – it's a good combination.

Edge: How does the GD-ROM system work – is it simply a higher-density CD format?

HS: It uses the present CD infrastructure at its maximum. We stuffed the spaces between the digital pits and tracks. If you imagine several people in a line with their arms outstretched, and then they fold their arms by their bodies, there is more space. Originally, if a certain space between CD tracks was not respected we could not read the disc. It wasn't easy to realise, but the basic concept is very simple.

Edge: Dreamcast's online capability is a great idea, but it's not your first machine with a modem, is it?

HS: This is the third time I've launched a modem. The first one was the Mega Modem for the Mega Drive, then we launched one for the Saturn called X Band to provide Internet access and network games. So far the number of members of X Band is around 60,000. Half the traffic is email! Network games are more interesting, but mail seems to be more accepted by users. And for this we do not need to provide any game content at all!

/ DRIVING FORCE

Sega's rejuvenation is being attributed to two factors: Dreamcast and this man, company president Shoichiro Irimajiri

Following a successful career heading up one of Honda's car divisions, **Shoichiro Irimajiri** was hired by Sega Enterprises to lead the firm's renaissance. A passionate believer in the potential of Dreamcast, and a personality strong enough to regain the support of Sony stalwart Namco, Irimajiri-san is the man behind Sega's new sense of vigour. **Edge** talked to the company's president about renewed strategies in the wake of the Saturn.

Edge: What do you think is the main difference between the Sega of today and the Sega as it was when it was preparing to release the Saturn?
Shoichiro Irimajiri: Clearly the technology is completely different. In this industry four or five years makes a big difference. The Dreamcast is more than 20 or 30 times more powerful than the Saturn, so it's very clear that the machine is completely different. But the biggest difference is not the technology but our mindset. When we started the Saturn project we were not a completely consumer-oriented company – even though we had great success with 16bit in the US and Europe, the culture of Sega was formed mainly by the arcade business. At the start of the Saturn business we were not ready to go to the consumer market, and that resulted in a terrible experience. So, by reviewing the whole experience with the Saturn, we have already learned lots of things about the consumer markets, and

knowing all those facts, and also some mistakes from the past, I can say that we are 100 per cent ready to go to the consumer market with Dreamcast.
Edge: Why do you think westerners didn't take to the Saturn in the same way they did the Mega Drive?
SI: In the past, the markets in Japan, the US and Europe were completely separately operated. So the Japanese market was controlled mainly by the SOJ HQ, and in Japan Sega has never been successful with 16bit business. In the US and Europe, SOA and SOE were operated by the local people, and they knew the market in the 16bit period. But by making several mistakes before we started the Saturn – mostly with the 32X – we couldn't recover those mistakes in the west. In Japan, we have had some success with the Saturn – we have already sold five million units. Compared to the 16bit business in Japan, the Saturn business was very successful. So in Japan we have been gradually growing, and now we are ready.
Edge: Do you really think that the Sega brand can be as big as it once was in the consumer market?
SI: Right now, the brand image is probably damaged, badly damaged, because of the Saturn's failure, and we have to do everything to recover from that. It is the same situation, to some extent, in Japan, and that's the reason behind our very unusual TV ads. Delivering that kind of drastic message from our side, and also the really good games from Sega, can recover those damages we believe. But we realise that we have to do everything we can for the launch of Dreamcast in Europe and the US from now.
Edge: Did you ever feel tempted to give up on the consumer market, especially after Sony's success?
SI: That's a tough question [laughs]. Sure, we have been under big pressure because Sony is a big name, but we have been carefully reviewing what was wrong and what was right. And we decided that we can overcome those problems by ourselves. And Sony is not 100 per cent powerful, right? So right now we believe we can compete.
Edge: Why do you think that Sega has been more successful with coin-ops than with console games?
SI: The biggest asset of our coin-op business is our coin-op facilities [individual arcades]. We have almost 1,000 facilities in Japan alone. We have received a lot of information from those coin-op operations, and the feedback is the best driving force for our R&D. Also, we can recoup the investment to the coin-op titles by selling those coin-op

machines and the software through our facilities. So, for us, it's a big advantage: we can invest a lot of money to develop the coin-op machines and software because we have the foundation and the infrastructure to absorb those coin-op machines and pieces of software ourselves. And fortunately we have lots of talented young people – creators and engineers – in our coin-op divisions, and those strengths were not established in a day, it took a long time, maybe ten years.
Edge: How does the coin-op/console split work?
SI: Well, we have to look at some of the issues surrounding the consumer console. It's getting powerful, so the coin-op side has received lots of pressure from the customers, who want to know what the difference is between the home videogame and the coin-op. So from the coin-op side they have to differentiate their videogames from the consumer videogames. At the same time, though, by using the same architecture in the coin-op side, with the Naomi board, we have to utilise the similarity, or the connectability, from arcade to consumer. So our strategy is differentiation and also cooperation between coin-op and console.
Edge: How are you going to implement this strategy?
SI: The basic difference between coin-op and consumer is, on the coin-op side, the gameplay is three minutes or five minutes, so it's like a very short distance, a sprint. In the consumer side, with ten hours, 20 hours, it's a kind of marathon. So the basic characteristic is different, but we can utilise the characters and also the gameplay, programs, and also the basic scenarios, in both sides, although at the same time we have to differentiate. So one thing we have to bear in mind is that with coin-ops we can utilise lots of space and lots of specialised equipment, such as joysticks or guns, and also big screens, multiscreens and audio technology, everything. Our coin-op R&D people are developing all sorts
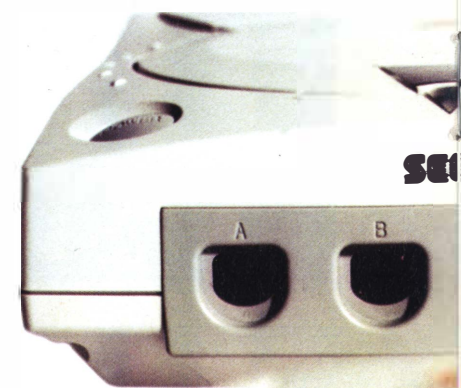
of different equipment and also the multiscreen systems, which you'll see in new coin-ops within a year.

Edge: What do you personally believe are the most important qualities within Sega today?

SI: Everybody! [Laughs] On the coin-op side, the marketing and advertising hasn't been so important ⌐ in the past, the coin-op business was like, okay, we have developed this machine, it's good, so sell it. But I think from now on, even in the coin-op side, we have to think about the importance of the marketing and advertising.

Edge: How hard was it to build links with the likes of NEC and Microsoft when creating Dreamcast?

SI: When we decided the Dreamcast project we started from the software side, thinking about what kind of titles the creators would want to develop for the future, and collating the information to form the concept. And after that we tried to find out which would be the best companies for us for the CPU, graphics chip, sound chip, and also operating systems. So we contacted lots of companies, and in some areas we worked together with several companies in parallel, and by doing so we decided which companies would be the final allies for us, and that was NEC, Hitachi, Yamaha and Microsoft.

Edge: After the Saturn, how did they feel about partnering with Sega?

SI: With Hitachi, as you know, the Japanese semiconductor manufacturers have been very strong in the memory market, but not so strong in the CPU market (or ASIC market), and in finding out the way to sell their CPU/ASIC they discovered that a game console could be the best way

for them to sell those chips. Hitachi has a very good relationship with us – they provided the SH2 for the Saturn, and in doing so they said that the SH series has taken off. So from the start they have had lots of confidence in Dreamcast being the right route for them. And we have worked with lots of graphics chips companies and VideoLogic was one choice that was kind of a conviction. We looked at what would give the best performance, and what would be most the most cost-effective graphics chips. NEC had already decided that they were going into the ASIC market very strongly, and they have already provided graphics chips to Nintendo, and they know this market very well, so from the start, they have been very, very keen to help us. So, no problem. [Laughs]

Edge: How important are thirdparty developers to Sega now? And what has it been like talking to them after the Saturn's failure in the west?

SI: In Japan and the rest of the world, thirdparties have been developing PlayStation and N64 titles, but they know that they have already reached some of the limits of the capability of those machines. Therefore, in so many cases, when creators have wanted to develop a new game, they have been very frustrated because they cannot express their feelings and the images they want. That's the reason why games consoles have changed over several years. And this is the right time for everyone – us, and the creators – for the Dreamcast to appear, because it can open the door for them, they can create completely new concepts by using the Dreamcast's performance. From the start, the developers were so excited to develop on the Dreamcast, but the problem lay with the management people [laughs], because they are always calculating in money terms. So at first they hesitated, but by receiving lots of pressure from the developers inside these companies they soon became very cooperative. Right now, thirdparties are very excited.

Edge: If Sony announced new hardware, what would Sega's answer be?

SI: I think Sony will announce PlayStation 2 very soon, and probably in this industry, a one-year period will give them an advantage in the performance, and that's normal. But at the same time we have a one-year lead, which is a big advantage. We can utilise a one-year period to install lots of our machines in the market.

Edge: What sort of software do you think Dreamcast owners will be most interested in?

SI: Dreamcast was designed to provide lots of variety in the titles. We can easily port the most advanced coin-op titles to the machine, so it will have lots of high-end arcade titles – that is one advantage. And at the same time, Dreamcast was designed to provide movie-quality expression, so RPGs can be developed completely in 3D, and with amazing

sounds and special effects. I think RPGs could be a big style of game on the Dreamcast. At the same time, by using Windows CE I think that very small developers who are so familiar with the very unusual PC titles – not games in the strictest sense, but interactive titles – will find Dreamcast easy to access. Developers will be able to create very unusual titles, especially when they use the network capability. We expect to see many unusual titles which will expand gameplayers' boundaries.

Edge: Does that mean you think that Dreamcast can actively change videogames?

SI: That's the primary objective of the Dreamcast. We want to let lots of normal people, not hardcore gamers, enjoy it. That's our final objective.

Edge: Finally, personally you always seem to be ready to have a joke. Why is that?

SI: [Laughs] I believe that Sega should be an entertainment company for the 21st century, so I think it would be wrong if I was always very serious and employees could not enjoy working for Sega.

"The Sega brand image is probably damaged, badly damaged, because of the Saturn's failure, and we have to do everything to recover from that"

Edge: Do you play games at home?

SI: Very little. Two days ago I received the alpha disc of *Sonic Adventure* and I played it, but it's very quick, so for me it's very hard. And I brought the game to my home and let my daughter play it, and watching her play has now given me a lot of feedback [laughs]. But honestly, she was really surprised and she enjoyed it. That was very nice. I enjoyed the game just by watching her play it.

/A NEW ENTERTAINMENT EXPERIENCE

Whatever Dreamcast's capabilities as a games machine, its online facility is a marketing man's dream

Anyone fortunate enough to have acquired a Dreamcast at launch will have walked away with one of these commemorative boxes, which features images from Sega's celebrated and 'honest' ad campaign (see opposite)

Before joining Sega last January as vice president, **Sadahiko Hirose** worked at ASCII and previously at IBM. Well versed in software matters, Hirose-san has spent a substantial proportion of the last 12 months overseeing the Japanese marketing strategy for Dreamcast. **Edge** stole a few minutes from his frantic schedule just two weeks before the launch to chat about the machine's networking capabilities, the main marketing differentiation point in relation to other current consoles.

Edge: How significant is the online gaming aspect to the overall Dreamcast launch?

Sadahiko Hirose: Online capability is just one of the key features of Dreamcast, and it doesn't necessarily only mean gaming. It will widen the gaming potential by providing new opportunities for game development as well as a new entertainment experience for players. So in that sense, online capability is establishing a new arena for game business. But actually, Sega provided online capacity, albeit limited, with the Saturn, so it's a kind of extension over that previous experience.

Edge: How many users do you expect to take advantage of the Dreamcast's online feature?

SH: That's a very difficult question. If you look at the PC market in Japan, only ten per cent of owners use the Internet. There are lots of reasons for this: the price of communication, network connection difficulties, or further operational trouble. While at this point we have no solution for cost, we've made improvements in user-friendliness. We're planning to sell half a million units by the end of this year and based on that percentage we'd have around 50,000 members on the Internet.

Edge: How have developers reacted?

SH: Gradually, developers have identified the value of network play, mainly because of the flexibility and potential of providing new gaming capabilities. But they've also found that this will change the present-day business model for game sales. Currently game development costs a lot – I'd

"Developers have identified the value of network play, mainly because of the flexibility and potential of providing new gaming capabilities"

Edge found Hirose-san to be relaxed and confident in Dreamcast's potential as a new entertainment system

say about three or four million dollars – and once you've released a game its real commercial lifetime is four to eight weeks. If you fail to sell sufficient quantities you may lose a lot of money… but, you could design a game and provide online upgrades every month after the release of the initial version. The first version may cost ¥5,000 (£25), say, and then if you charge only ¥500 (£2.50) per upgrade you can get a cumulative high income with very small risks. And from a user's point of view it means that you pay ¥5,000 at first, but then instead of paying another ¥5,000 you can get a completely new set of behavioural parameters for the game which will significantly extend its lifespan for just ¥500. So this is just one example of the advantage of online capability and developers are gradually realising its value.

Edge: How do you see Dreamcast's online capacity developing over the next few years?

SH: We expect online services to be a key operation of our business. New hardware is always better than its predecessors because technology evolves on a continual basis. We're about to release a new platform and assuming

Photography: Hiroki Izumi

Sony will release a new machine next Christmas, it will, without doubt, be technologically superior to ours. It wouldn't make sense to release something technologically inferior. Software depends heavily on hardware capability and if Sony can provide consumers with titles similar to ours they may even sell more than us. But online is different. Online is cumulative. So assuming we start a year earlier, during that year we can provide a whole range of services and users will connect to our network. And from an Internet point of view, do you really need a second Internet machine? Probably not. Sony can start a service after their machine is released but will still be a year behind us. From a hardware perspective it'll have an advantage but from a network point of view the advantage is ours.

Edge: That, of course, assumes people will enjoy playing against each other more than the CPU.

SH: That's an essential point. We're all members of a community. Until now, gaming has offered very specialised involvement – you play only with a games machine – but you spend most of your time talking, working together as a part of society – so in that sense communication capability will provide a more natural entertainment environment, so the user will feel far more comfortable using network capabilities when they're enjoying our games.

Edge: How do you feel about this November launch?

SH: I've felt very relaxed in the last three weeks [before launch]. What I can say is that we've done everything we could to make sure that the Dreamcast launch is successful. We're confident we'll provide new entertainment utilities for customers. Also, the marketing environment is very positive -- probably because of the recent economic recession there aren't any 'core' gift items this Christmas. I guess Dreamcast will be the only new and exciting gift so all we can do is provide enough units to meet the demand. **E**

/ THIS TIME IT'S PERSONAL //

Edge talks to the man responsible for *that* TV ad campaign…

Having worked with film and music, as well as a variety of television programmes, **Yasushi Akimoto** is one of Japan's most famous ad producers, and is currently in charge of Sega's corporate image as well as being responsible for the company's latest – and remarkably frank – advertising campaign. Armed with a box of washing powder and a microphone, **Edge** knocked on his Akasaka Mitsuke office door looking for evidence of a commercial whitewash…

Edge: What are the main aims of this campaign?

Yasushi Akimoto: We're aiming to get mass consumers buying into Dreamcast. Saturn users were mainly hardcore gamers. Sony's success is due to its massmarket sales approach – even people that weren't videogame players bought a PlayStation and sales reached ten million units [in Japan]. Personally, I'm not particularly into games, and my goal is to try and get people such as myself to purchase a Dreamcast. So we made the Yukawa Hidekazu [Sega's managing director] series of 'Yukawa Senmu' [Senmu is Japanese for managing director] humorous TV commercials. Currently everyone sees Sega as the company with the funny commercials – I think it's a highly successful campaign.

"The time of hiding the truth is over. Shouting endlessly about how much effort Sega is making is useless – there are ten million PlayStations out there"

Edge: How different is Sega's current image compared to four years ago?

YA: Until now, the product was good but only bought by those who liked it. It's like vinegar on sardines – people who like vinegar do it, while those that don't won't feel the need to pour it over their fish. And it's the same for the

Saturn – those who bought it saw it as a high-quality product. But now we want more players, so we've adopted a different approach in the hope the general public sees Dreamcast as an interesting opportunity.

Edge: How does Sega's strategy differ from that of Sony or Nintendo?

YA: We have the strength of a beaten company. We're still competing, so we have the freedom to do things differently. We don't necessarily have any rules. In a marathon, for example, if a participant thinks he won as a result of running at a particular pace, the next time he'll probably try to imitate the pace of the previous race. But if he lost the first time he'll have complete freedom to try out different strategies.

Edge: How did you come up with the Yukawa Hidekazu campaign?

YA: I was shown demonstrations of Dreamcast's power. But even if you tell people how good the hardware is nobody will listen because people are satisfied with the PlayStation. This is how the 'Sega has lost' concept was developed. We wanted to advertise the fact that we were admitting to having lost the first battle against the PlayStation. People will feel we're now more confident, and that we've produced a

winning console. Usually, when mass marketing is used to advertise how good something is, people are sceptical. Normally, the role of mass advertising is to emphasise the positive features while hiding any negative aspects, which is why people don't trust commercials. And that's why we used the 'Sega lost in the previous battle but this time the product is good' concept. For that purpose the message needed to come from someone at Sega, not a comedian or an actor. I first asked president Irimajiri to do it, but he was too shy and declined. So we used Yukawa Hidekazu.

Edge: Four television commercials have been broadcast so far. What was the strategy?

YA: We wanted everyone to understand the reason why Sega lost to the PlayStation. In the third one, we showed Sega's MD being sad about this before regaining his confidence at Dreamcast's announcement. Until then, we hadn't advertised the console's potential, so in the next advert, we communicated this through Yukawa Senmu. In

Yasushi Akimoto has transformed Sega's public image in Japan

a second series of adverts we'll announce that Dreamcast continues the battle the Saturn started.

Edge: This campaign is based on comparative advertising. Sega's advert for the Saturn launch, which Sony claimed helped spread its brand four years ago, was based on the same principle. Isn't it unwise to use a similar approach?

YA: No, not at all. The time of hiding the truth is over, we are now in a disclosed era. Shouting endlessly about how much effort Sega is making is useless – there are ten million PlayStations out there. But we're not really using comparative advertising in the way that Pepsi claims it's better than Coca-Cola, for example. All we're saying is that until now the PlayStation was better, so I don't think it's dangerous at all. I think we're currently in an era when people can understand this message.

Edge: Are you planning to use a similar strategy for the international launch?

YA: Naturally, Yukawa Senmu himself can't be used abroad. We may have to think of something that appeals to everyone. Something funny… it could be based on Japan's current poor economic situation. For example, the Japanese have bought lots of European castles in the last few years. You could have a 'For Sale' sign up by one of them along with something like 'We still have dreams: Dreamcast'. E
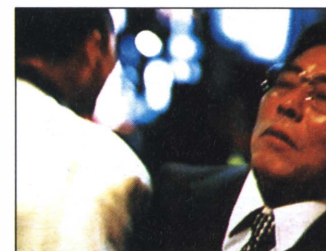
Edge has been featuring stills from Sega's unusual ad campaign in the months leading up to Dreamcast's launch. It's refreshing to see a company that isn't taking itself too seriously

Hardware, however impressive, is nothing without software. **Edge** assembles the Dreamcast catalogue
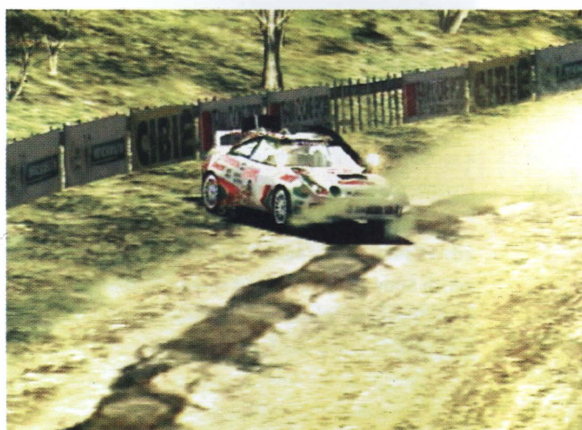
VIRTUA FIGHTER 3TB

Without doubt the most impressive of the five launch games, AM2's conversion of its own Model 3-powered premier fighting title looks impressively like its coin-op parent. As featured in the special-edition version of the same name, *VF3tb* features a team battle mode enabling a group of fighters to face opposing aggressors in a bout of successive rounds. Not only does this title represent a staggering technical achievement, but the gameplay has been faithfully reproduced, resulting in possibly the best beat 'em up ever to grace a home system. It certainly packs the most visual punch.
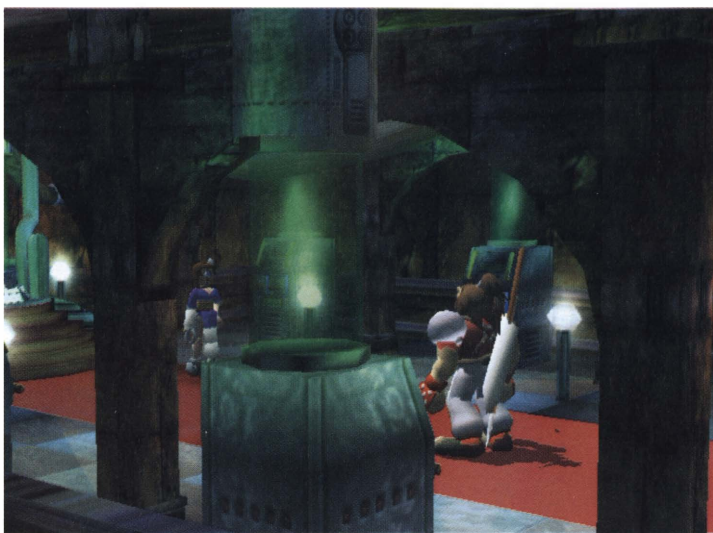
SEGA RALLY 2

The version shown at the Tokyo Game Show in October certainly had **Edge** worried. Not only did it resemble a hardware-accelerated PC title, it also looked remarkably substandard and in need of a lot of work. Now delayed until the New Year, the extra time will hopefully enable crucial and much-needed adjustments to be made to what *has* to emerge as a superlative racing experience if Dreamcast is to catch the general public's imagination – and their hard-earned Yen. Sega has got to get this conversion absolutely perfect.

SONIC ADVENTURE

Along with *Virtua Fighter 3tb*, and out by the time you read this, *Sonic Adventure* is the other most significant title in the early Dreamcast line-up. Graphical glitches such as pop-up present in earlier versions have long disappeared and the result (as these screenshots show) looks capable of re-igniting the whole *Sonic* fever of old, while attracting a new generation of fans – at least in Japan. **Edge** will endeavour to determine whether the addition of a third dimension hasn't spoiled the essential 2D nature of the original.

BUGGY HEAT

Tackling the unpopular sport of buggy racing, CRI will be hoping *Sega Rally 2* won't grab all of Dreamcast's joypad racers. Offering realistic dynamics, impressive visuals and a far more airborne ride than anything a world rally car can manage, if nothing else, *Buggy Heat* should prove immense fun.
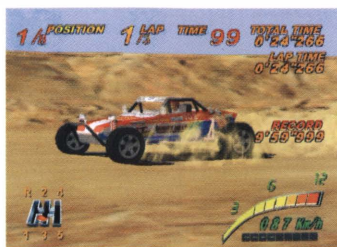

CLIMAX LANDERS

Climax's glorious RPG should be one of the early titles to make good use of Dreamcast's processing power. Rather than traversing vast landscapes, a town develops around you, with plenty of randomised dungeons to explore. The medieval and contemporary influences impress. *Landers* could prove captivating.

PEN PEN TRIICELON

Despite looking as though it was developed by a deranged set of individuals, *Pen Pen*'s nearest equivalent would be Rare's *Diddy Kong Racing* on the N64. But then, the sane *DKR* doesn't feature beautifully designed penguin-like hybrids swimming, running and sliding their way towards the finish line…

POWER STONE

First shown at JAMMA as part of Capcom's new arcade line-up, beat 'em up fans have been unable to sleep since. Other than the marvellous level of graphical detail, *Power Stone* threatens to bring new elements into a genre that has remained largely stagnant. Expect something special.
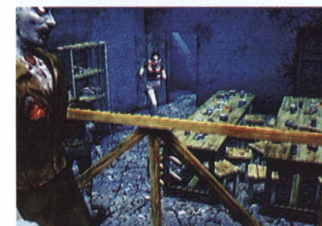
BIOHAZARD: CODE VERONICA

Another title certain to ensure Dreamcast's success in a country where Capcom's two previous horror adventures on the PlayStation have set impressive sales figures. Set for release in the first quarter of '99, this third instalment in the *Resident Evil* series is the first to offer 3D environments in realtime. The level of visual detail is certain to get temperatures rising.

BLUE STINGER

BioHazard: Code Veronica may have stolen the limelight, but it hasn't deterred other developers from attempting their own shock-inducing epics. One such developer is Climax, which is hoping its own film-like adventure will have the gameplay to attract fans of Capcom's horror-based series.

GRANDIA II

One of Japan's most popular RPGs for the Saturn gets a visual overhaul on the platform's 128bit successor. But the stunning graphics and intricate levels of detail are complemented by a quest far larger and more action-led than the original, and sees the main characters, now in their twenties, make a welcome return.
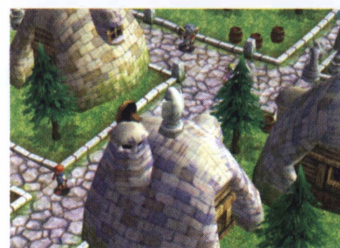

EVOLUTION

Another RPG, although unlikely to cause as much excitement as Game Arts' *Grandia II*, *Evolution* is graphically accomplished with detailed, manga-styled characters. The game offers a weird mix of modern artifacts, such as tanks, and more traditional settings where Mag Launcher searches for his lost parents.

GODZILLA GENERATIONS

Edge couldn't help wondering how much scope there was in roaming around a city – however impressively modelled – destroying everything in your path. And, disappointingly, General Entertainment's anticipated title confirmed **Edge**'s early impressions. VMS capability should offer more to some players.

CARRIER

Another pupil to have benefited from *Res Evil* schooling, Jaleco sets the action on an aircraft carrier. Currently lagging behind its competitors in the visual stakes, *Carrier* hopes to captivate players within an immersive, dynamic storyline where you and a CPU character must expose the inevitable government conspiracy.
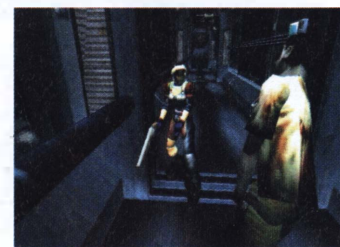
GEIST FORCE

The responsibility of Sega of America, this shoot 'em up looks set to follow previous graphically impressive titles devoid of any absorbing gameplay. Time will surely tell…

AERO DANCING

A seemingly simple concept overlooked by the world's flight sim developers, CRI's aerial acrobatics simulator should have videogaming's 'top guns' ready for action in February.
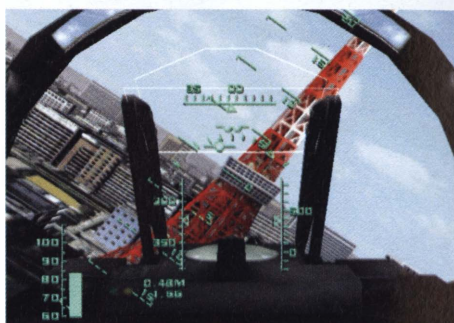
LET'S MAKE A BASEBALL TEAM!

Intriguingly, baseball remains fantastically popular in the US and Japan. Yet, while US developers agonise over attempting to create increasingly realistic visuals, the Japanese don't.
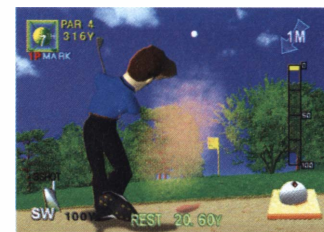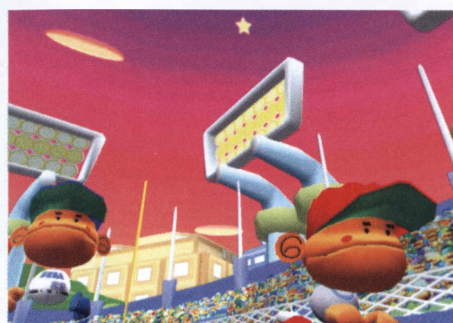
CHO HAMARU GOLF

Given the astronomical price demanded in Japan for the opportunity to hit a small ball with an angled club around a massive lawn featuring 18 holes at different intervals, golf-loving Dreamcast owners should welcome the ability to practice indoors.
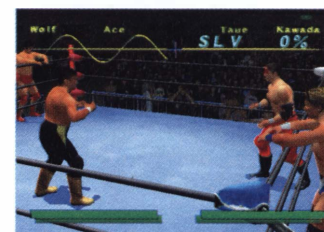
JULY

The action takes place within a diminutive (in RPG terms, at least) two-and-a-half-week time frame in July '99, during which a strange mutation is afflicting newborns.

ELEMENTAL GIMMICK GEAR

The first of hopefully many Dreamcast ventures from Hudson, this spring release offers an interesting fusion of 2D and 3D perspectives within an oddly classical RPG setting.

LET'S MAKE A SOCCER TEAM!

A fitting – and more realistic – companion to its similarly titled baseball cousin, this is nevertheless an odd release. Sega fans must surely have expected a conversion of *Virtua Striker 2*.

GIANT GLAM

Subtitled *Japanese Pro Wrestling at the Nippon Budokan*, it should be interesting to see what kind of new developments Dreamcast's processing power can bring to the popular wrestling genre other than the obvious cosmetic enhancements…

PATA PIES

Very little is known about this bizarre-looking product from Sega, although **Edge** suspects it may be the company's attempt at its own rhythm action game, currently enjoying a successful market invasion. If so, an imminent release can be expected.
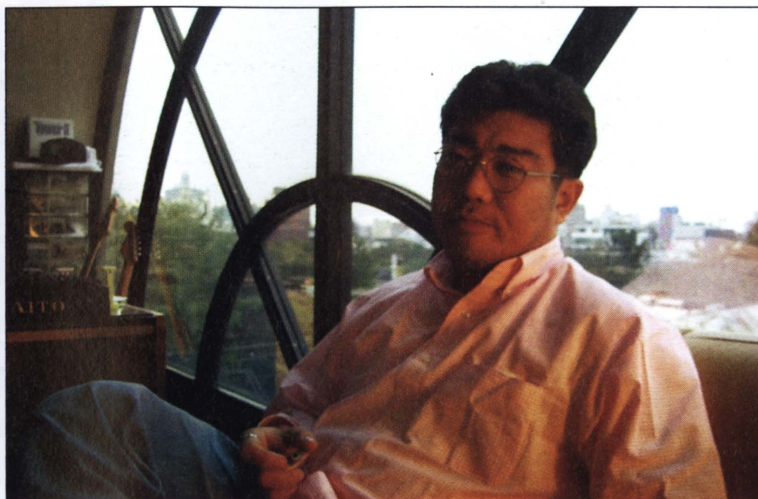
▶

/ WINDOWS OF OPPORTUNITY //

Dreamcast's WinCE OS is attracting developers with a different agenda…

Sega's new machine may offer you the opportunity to experience arcade-perfect titles from the comfort of your living room, but not everyone is interested in developing games for it. One such developer is **Yoot Saito**. Representative of a new generation of developers attracted to Dreamcast because of its programmer-friendly Windows CE environment and its memory capacity, Saito has finally made the transition to the console world not with a game, but with an experiment in Artificial Life (A-Life).

"I am a huge Macintosh fan. When I started this [A-Life] project, the 3D framerate wasn't fast enough – on Mac, it wasn't even moving," explains Saito-san. "I therefore immediately thought of consoles and called Nintendo. I met with Shigeru Miyamoto, showed him some sketches and told

makes use of a predetermined vocabulary in order to convey its mood. However, it also has the ability to memorise new words which are communicated by its owner via a microphone. This was developed after Sega entrusted Saito-san with its development and, now officially part of the accessory range, the microphone plugs into the joypad and is head-mounted for convenience. It's not the first time Saito has been involved with Dreamcast design issues, though, although he's had less success with some.

"I requested a front-loading model from Sega," he reveals. "The reason for this is that the title we're developing is designed to be played for five to ten minutes every day over a very long period, and with a top-loading

"One of the reasons I stayed away from consoles is the fact that you can't save on 64K or 128K. With Dreamcast, however, the 8Mb main memory was increased to 16Mb, and that convinced me"

him I wanted to make it on the N64 when news of 'Project Black Belt' emerged." The decision was easy: "The latter ran on Windows CE, with 16Mb of memory and a modem. Plus, the processing power was also sufficient."

This is not the first time Saito-san has played within the realms of A-Life: his previous company, System 7, had in 1992 released *Aqua Zone* and *Sim Tower* – A-Life-based titles involving fish and towns respectively. "One of the reasons I stayed away from consoles is the fact that you can't save on 64K or 128K. With Dreamcast, however, the initial 8Mb main memory was increased to 16Mb, and that convinced me."

Now with a new company, Vivarium, Saito-san and his ten staff are continuing their A-Life progress with *Sea Man*, which requires you to raise a half-man, half-fish creature according to Darwin's evolutionary principles. While not the most aesthetically appealing character to have graced a television screen, the program allows it to develop its own personality so that Sea Man's potential charm could actually mask its unsightly appearance. Like other A-Life creatures, Sea Man

design you can't place the machine in the shallow video rack under the TV, and it becomes inconvenient. I think it would have been an advantage for Sega before the release of the PlayStation 2. It's something I requested since the very beginning."

As if he didn't already have enough to occupy his time, Saito has been working on his own 'special edition' version of Dreamcast which he plans to submit to Sega for approval as a limited edition bundle featuring *Sea Man*. The combination of the two should prove intriguing…
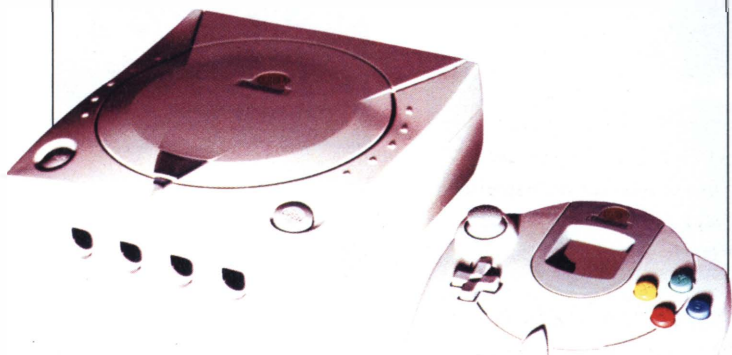
/ HOW THE WEST WAS WON

Sega Europe reveals that Dreamcast's western release will be supported by original, homegrown titles

In a bid to dispel the dark memories that tainted Sega's reputation in the west, last winter Sega Europe commenced a novel scheme for original games, dubbed '1.5party' development. Featuring five proven European development teams – Argonaut (*Star Fox*), Appaloosa (*Ecco the Dolphin*), No Cliché (previously Adeline), Red Lemon (ex-*Actua Soccer* staff) and Bizarre Creations (*Formula 1 '97*) – the plan is to create a fresh line-up of zesty new titles to appear with Dreamcast in Europe next September. **Edge** met Sega's European director of product development, **Naohiko Hoshino**, to discover more about the gestation of the 1.5party plan…

Edge: Where has Sega Europe's new emphasis on original software come from?

Naohiko Hoshino: I should explain what happened in Sega Europe. We had an internal studio when we started up the Saturn business, but we scrapped it because we couldn't deliver quality titles. I was transferred to the London office in May this year, but before that I was coming to the UK to motivate companies to create software on Saturn – which was a most miserable time for me! Through this experience I had a very good relationship with developers like Reflections and Bizarre Creations. What we learned is that to launch a new console, we need products dedicated to each market.

Edge: So that's Sega Europe's intention now?

NH: Historically, a firstparty publisher like Sega releases about 30 titles per year, in relation to thirdparty titles. I would like to have ten from Europe, ten from Japan and ten from the US – ideally. Of course the number of titles will fluctuate, but it's that sort of amount.

Edge: It must be good for Sega Europe's standing within the company, too…

NH: Right. We're looking at our resources globally, and we're having meetings periodically within Sega to avoid cannibalising each other. For the US market, Sega's more focused on the sports side – baseball, American football and basketball. And in Japan they're focusing on RPGs and dating simulations that are dedicated to that market. In Europe, driving and football titles are key areas, but for those titles we've already got some big franchises from Japan, like *Sega Rally 2* and *Daytona USA*, and they have a very good football title.

Edge: So what are you trying to achieve with European development?

NH: We're looking at the situation in the long term. Dreamcast is not the only console we're going to bring into the market – probably five or seven years from now, we'll have to bring another one. We do have strong brands like *Rally*, but we don't think that we should count on them forever. So we have to establish new franchises which can be taken over to the next new generation of hardware.

Edge: What do you classify as European-style games?

NH: Western people like much faster games; Japanese people tend to like turn-based RPGs, they're much more patient. Americans – I shouldn't say it – but they tend not to read the manual. Europeans are more like Japanese, in terms of their patience with games. We're doing massive research to match the games to the European market.

Photography: Nick Wilson

"Exclusive titles drive hardware. Once people have seen games in the arcade, they're not 'exclusive' any more. We have to have exclusive titles for Dreamcast"

Edge: How hard do you think it will be for Sega to expand its reputation as a coin-op producer?

NH: Exclusive titles drive hardware – *Sonic* is one example; *Mario* is the example for N64, and *Crash Bandicoot* for PlayStation. Once people have seen games in the arcade, they're not 'exclusive' any more. We have to have exclusive titles for Dreamcast.

Edge: Sega Europe's method of generating those exclusive games is its new '1.5party' developers. Where did the concept come from?

NH: Thirdparties are independent publishers, and if we called the scheme secondparty, it sounds like second-rate! So 1.5party – it's individual but it's still close to firstparty. I think they were pretty amused to be called that! Argonaut, Bizarre Creations and Red Lemon are completely independent, but No Cliché is 100 per cent owned by Sega.

Edge: Another aspect to your plans is to try and balance the range of games released for Dreamcast.

NH: We're telling thirdparty publishers what we are doing, saying for example, 'We're not going to do this [type of game], so why don't you?'

Edge: Are publishers responding well to the idea?

NH: They really want to see Sega bring fair competition into the market. Sony was too open to everybody and Nintendo was too selective.

/ ALL TALK

Just prior to the console's launch in Japan, the mood was unmistakably celebratory. But the new directions in which Sega is aiming to take its new games system will serve to pave the way for newcomers. **Edge** met with some esteemed industry figures in Tokyo's Aoyama district hoping for a glimpse of the future

CPS-2 board had lower specs than a Saturn or a PlayStation, but that's changed now that we're working with Dreamcast and Naomi – they will enable us to work on the same level for both home and arcade. It will be much easier. In addition, we used to make mainly 2D fighting games, but now we can do 2D or 3D conversions from and to the same chip! I believe this will make both arcade and console users happy. Hardcore arcade players will be able to play the console versions, and vice versa; they'll be able to train on the console to play better in the arcades.

Edge: But that doesn't suggest that coin-op games will be different to console titles. Isn't it, in fact, suggesting that they'll be more alike?

YO: The playing time will be different, of course. In a shoot 'em up, for example, a final boss will be more difficult to beat in the arcade version than in the console software version.

Tetsuya Mizuguchi: At the moment, consumer hardware graphics are getting much closer to arcade quality. In order to keep the two areas separate we may have to

more, they'd rather borrow games from their friends [laughs]. The first PlayStation buyers, three or four years ago, were buying lots of software, but present buyers don't want to.

Yuji Naka: It's sad, really...

TM: Honestly, though, games are becoming less and less interesting. As the hardware capabilities have increased, new possibilities for games are almost endless, and so development time has increased, and a lot of money is being invested in the creation of titles. Graphics and sound are improving all the time but the preoccupation with new technology has meant that we haven't spent enough time striving to make 'better' games. If we don't change this, we will never make better games.

[Mizuguchi notices that Okamoto and Naka are in discussion on the opposite side of the table]

TM: Okamoto, what do you think about this?

YO: [Surprised] I don't know, I wasn't following the conversation, I was talking about wine with Naka! [Laughter all round] Okay, I'll pay attention...

YN: I agree that as higher hardware specifications have been reached the content of games has suffered. It's been like this since consoles with CD-ROM arrived. When there were storage limits, people were making a lot of effort to make their games more original and playable.

YO: If it becomes possible to make good-looking games too easily, the number of games that have stunning visuals but little gameplay will increase. Actually, the

Past assemblies of game designers hosted by **Edge** have proved rewarding for readers and participants alike, giving rise to frank views on the industry and the direction of game development that would otherwise remain unsaid. As one of 1998's most significant events, Dreamcast's Japanese launch seemed an ample excuse to repeat the exercise in the console's home territory. So, one evening in mid-November, prior to the console's launch, four leading lights of Nippon's development community were invited to wine, dine and discuss the implications of the next-next generation console hardware battle commencing.

Sega's **Yuji Naka** and **Tetsuya Mizuguchi** (Sonic Team leader and *Sega Rally* producer respectively) were on hand to represent Dreamcast, while **Yoshiki Okamoto**, Capcom's managing director of R&D – and overseer of the *Street Fighter* and *Bio-Hazard* series – provided a thirdparty's slant. Also present was

> ## "The preoccupation with new technology has meant that we haven't spent enough time striving to make 'better' games" Tetsuya Mizuguchi

experimental developer **Yoot Saito** (see p22), drawn to Dreamcast by the possibilities of developing via Windows CE. With two famed coin-op creators at the table, it seemed only polite for conversation to commence on that topic...

Edge: With the advent of Dreamcast, the standard of console graphics seems to match that of arcade machines. If the gap between the two is closing as a result of high-end graphics being made available in the home, what, in the future, will differentiate arcade and console titles?

Yoshiki Okamoto: That's difficult to answer. We develop both arcade and console titles, but I only ever worked on low-specification hardware for coin-op titles. Our

make some physical games which cannot be offered to home console users; connecting up three monitors or having a giant screen, for example. Or making more of networked games, or designing a peripheral that you can bring to the arcade cabinet, then connect and play... It may take time, but I believe arcade games will have to move in these directions.

TM: I don't believe the arcade games industry is shrinking...

YO: No, it's not.

TM: I do think that the consumer market is getting bigger...

YO: I don't agree, although the demand for hardware is growing. The latest hardware purchasers do not buy software – PlayStation owners don't buy software any
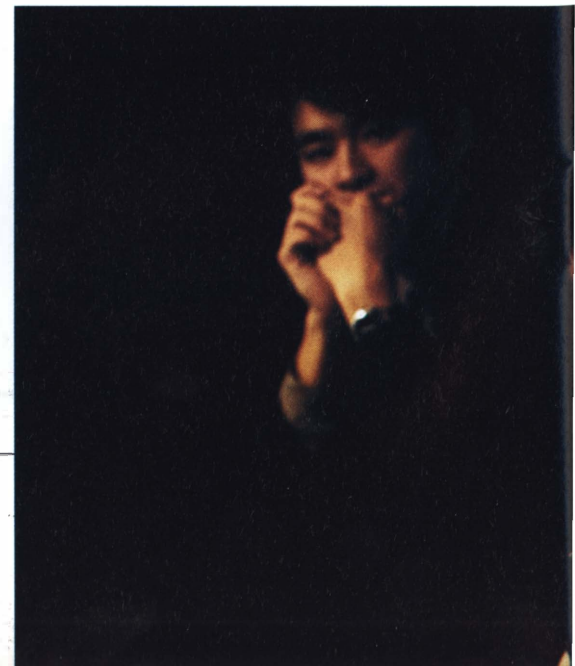
number of interesting games hasn't decreased – it's just that the number of *uninteresting* games out there has *increased*. Casual gamers are attracted by games with great visuals but it's not until later that they discover the gameplay is non-existent. Casual gamers shouldn't buy games based on their own judgement! They should let an experienced gamer buy it, and if after one month this person says the game is still interesting, then it really is worth buying.

Edge: Would you agree that slow software sales are due to a lack of imagination on the part of developers? Do you think new genres are going to appear? How old is the *Street Fighter* series?

YO: About ten years old…

Edge: Right. So do you think that the series should still exist in ten years' time?

YO: I would like the series to be there in ten years. But I think the time where everybody was playing *Street Fighter II* is over. There are still some fans of *SFII* that we can keep entertained; such games are becoming
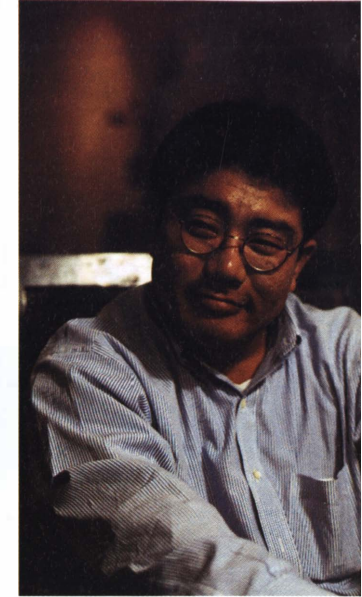
'phenomenon'. But are they really a revolution or just a flash in the pan, the latest gimmick?

YO: They're a novelty, like polygons were a few years ago. Everybody is saying, 'We have to use it', etc. I believe you should only use them if you need to. But if you don't *want* to use them, then don't. If you have a car, for instance, you use it, but for getting to nearby places you can walk. When I bought a car, I drove it to the nearest supermarket because it was new, I was proud

is very fashionable. It's seen as a cool 'accessory' – when you take it out of your bag, it's a stylish games console.

YN: I didn't think people looked good playing Tamagotchis. The PocketStation isn't any different. I prefer the portable computer IBM is advertising at the moment. It's very sleek and stylish. But it's a Windows machine – I'd really like a games machine that looked like that. Personally, I think it would be great to put a games console in the front of the car! [Laughs]

concept for a home console using a regular TV. But to make it for a console game I needed a hardware company willing to make a voice-recognition system and a microphone.

TM: I had similar ideas. I came to the console industry from an arcade background. With arcade games you can build any controller you want. I have used so many controllers over the last three months – an N64 one, a PlayStation one, a Saturn one and a Dreamcast one – and my ability to think objectively became limited by the controller. So I stopped holding a controller for a while and some fresh ideas came to me. I can't reveal any of these plans yet, but there are many possibilities.

YO: Personally, I don't want to buy a new controller each time I play a game. I want something that everybody can use: you simply turn the power on, hold the controller, and you play. It has to be natural. If I was to make a golf game for the N64, I want to use exactly the same controls that Shigeru Miyamoto used for *Mario 64*. Players shouldn't have to pay any attention to this and should be able to play the game very easily. We shouldn't be intimidating users – just making use of an existing control system.

> ## "Casual gamers are attracted by games with great visuals but it's not until later that they discover the gameplay is non-existent. Casual gamers shouldn't buy games based on their own judgement!" Yoshiki Okamoto

specialised to cater for the hardcore gamer, or serious fan. Capcom has designed games that only players who were familiar with the previous titles in the series could play! I think 95 per cent of titles should be given over to sequels and series while the remaining five per cent consists of brand-new games. But right now we want to make games that can be played by first-time gamers.

Edge: PDAs, such as Sega's VMS or Sony's PocketStation, are the current console

of it and wanted to drive it! [Laughs] That same novelty factor is true of the PDA. [Okamoto-san owns a Ferrari]

YN: There are some possibilities for evolving game design with the PocketStation and the VMS. Portable hardware will improve – I would really like to have a portable Dreamcast. Why does portable hardware have such low-quality graphics? I would like to have a Game Boy with Dreamcast's capabilities. When technology reaches that level I'll be happy.

TM: Those specifications would be very interesting in a portable…

YN: I don't know in which direction videogames are going, but if portable hardware improves to that level, it could be very exciting.

YO: That time is still some way away!

YN: Not really. I think there are some interesting possibilities with the VMS. An improved version of PocketStation is sure to be released, too…

YO: There are lots of things that could be taken further. There are always more possibilities, but you have to select what you want to improve. If you choose to improve the portability, it's to the detriment of other specifications. Or, likewise, a colour screen to the detriment of the cost. In my opinion, the PocketStation

YO: When roads become so congested that 'movement' is no longer an option, playing games in the car may well become possible.

TM: I did it once…

YO: I bet you had your trousers down! [General laughter] You're doing things differently to us… We're trying to make games you can enjoy with your family!

YN: You are very free in a car. And the same is true for trains and aeroplanes – Virgin has had Super Nintendos in its planes for a while.

Edge: Before the arrival of the 32bit machines, games were played on consoles using virtually identical digital controllers. Thanks to Nintendo, the leap to analogue control has been made. How would you like to see joypads develop?

Yoot Saito: With the first computers you used a keyboard to communicate. When the mouse arrived, it revolutionised the way we communicate with the PC – you can even draw using a mouse. I would like to use a remote control-type system that's easy for anyone to understand. I want to leave the console close to the TV. I thought about this remote controller for a long time and I wanted to make it for a PC. I tried to adapt the

Edge: Finally, as console hardware performance has increased, and graphics have become more important, development teams have grown a lot bigger in size. Do you think this is a good trend for game development?

YO: You'd better ask Naka… [Laughter all round]

YN: We made the first *Sonic* with five people – seven including the sound designers. That amount of people was best, as in small development teams everybody has the same objectives. When 15 people are designing a game there are always different opinions being voiced. At the moment there are about 100 people working on *Sonic Adventure*. At that scale you can't listen to everyone's opinions – it's very difficult to handle!
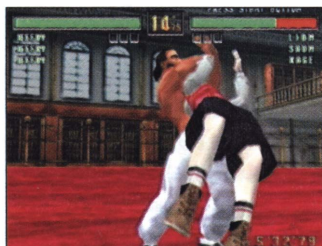
/ WANT ONE? WIN ONE

Edge has a Dreamcast console, plus a range of accessories and games, to be won

T here are two ways to get a Dreamcast this side of its September '99 UK release: buy one on import at considerable cost, or invest in a little creative thinking and a postage stamp. The prize consists of the console with two joypads, two arcade sticks, a steering wheel and two VMS units, along with the cream of the first wave of games – *Virtua Fighter 3tb*, *Sonic Adventure* and *Sega Rally 2*.

This isn't simply a pick-a-name-out-of-a-hat competition, though: in order to win Sega's superconsole you must create a storyboard for a television

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advertisement that promotes Dreamcast's launch in Europe. Examples of Sega's Japanese TV ad campaign can be found in this supplement on page 17, and in recent issues of **Edge**. Ideas can be as diverse and/or humorous as you like, and can be submitted in plain pen-and-paper storyboard fashion or in video format – although capital expenditure will not take precedence over sheer creativity when the entries are judged. The most innovative, interesting concept will secure its creator the dream Dreamcast setup.
• Note: the console offered in this competition is a Japanese model. You'll need either an NTSC TV or a PAL signal converter to use it.

Rules and regulations

Entry is open to any reader resident in UK & Ireland, excluding all employees of Sega, or Future Publishing, their families or agents, or anyone connected with this competition. Entries can be submitted in storyboard or video format and must be clearly marked **Dreamcast Competition**. Send to **Edge Magazine, Future Publishing, 30 Monmouth Street, Bath, BANES, BA1 2BW**.
Entries must not be received later than **Thursday January 28, 1999**. Only one entry per reader. Don't forget to enclose your name, address, telephone number and email address (if appropriate). **Edge**'s decision is final. The winner will be notified by telephone, email and/or post within two weeks of the closing date and the winning name and entry will be featured in **Edge** magazine. No correspondence will be entered into concerning the results of the competition. The prizes are as the items listed on this page and cannot be altered or exchanged for cash.

The cream of the first wave of games to be won, from top: *Sega Rally 2*, *Sonic Adventure* and *Virtua Fighter 3tb*

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