

= Dreamcast =

The Dreamcast (Japanese : ドリームキャスト , Hepburn : Dorīmu kyasuto) is a home video game console released by Sega on November 27 , 1998 in Japan , September 9 , 1999 in North America , and October 14 , 1999 in Europe . It was the first in the sixth generation of video game consoles , preceding Sony 's PlayStation 2 , Nintendo 's GameCube and Microsoft 's Xbox . The Dreamcast is Sega 's final home console , marking the end of the company 's 18 years in the console market .

In contrast to the expensive hardware of the unsuccessful Sega Saturn , the Dreamcast was designed to reduce costs with " off @-@ the @-@ shelf " components , including a Hitachi SH @-@ 4 CPU and an NEC PowerVR2 GPU . Released in Japan to a subdued reception , the Dreamcast enjoyed a successful U.S. launch backed by a large marketing campaign , but interest in the system steadily declined as Sony built hype for the upcoming PlayStation 2 . Sales did not meet Sega 's expectations despite several price cuts , and the company continued to incur significant financial losses . After a change in leadership , Sega discontinued the Dreamcast on March 31 , 2001 , withdrawing from the console business and restructuring itself as a third @-@ party publisher . 9 @. @ 13 million Dreamcast units were sold worldwide .

Although the Dreamcast had a short lifespan and limited third @-@ party support , reviewers have considered the console ahead of its time . Its library contains many games considered creative and innovative , including Crazy Taxi , Jet Set Radio and Shenmue , as well as high @-@ quality ports from Sega 's NAOMI arcade system board . The Dreamcast was also the first console to include a built @-@ in modem for Internet support and online play .

= = History = =

= = = Background = = =

Released in 1988 , the Sega Genesis (known as the Sega Mega Drive in Europe and Japan) was Sega 's entry into the fourth generation of video game consoles . Selling 30 @. @ 75 million units worldwide , the Genesis was the most successful console Sega ever released . The successor to the Genesis , the Sega Saturn , was released in Japan in 1994 . The Saturn was a CD @-@ ROM @-@ based console that displayed both 2D and 3D computer graphics , but its complex dual @-@ CPU architecture made it more difficult to program for than its chief competitor , the Sony PlayStation . Although the Saturn debuted before the PlayStation in both Japan and the United States , its surprise U.S. launch ? which came four months earlier than originally scheduled ? was marred by a lack of distribution , which remained a continuing problem for the system . Moreover , Sega 's early release was undermined by Sony 's simultaneous announcement that the PlayStation would retail for US \$ 299 ? compared to the Saturn 's initial price of \$ 399 . Nintendo 's long delay in releasing a competing 3D console and the damage done to Sega 's reputation by poorly supported add @-@ ons for the Genesis (particularly the Sega 32X) allowed Sony to establish a foothold in the market . The PlayStation was immediately successful in the U.S. , in part due to a massive advertising campaign and strong third @-@ party support engendered by Sony 's excellent development tools and liberal \$ 10 licensing fee . Sony 's success was further aided by a price war in which Sega lowered the price of the Saturn from \$ 399 to \$ 299 and then from \$ 299 to \$ 199 in order to match the price of the PlayStation ? even though Saturn hardware was more expensive to manufacture and the PlayStation enjoyed a larger software library . Losses on the Saturn hardware contributed to Sega 's financial problems , which saw the company 's revenue decline between 1992 and 1995 as part of an industry @-@ wide slowdown . Furthermore , Sega 's focus on the Saturn over the Genesis prevented it from fully capitalizing on the continued strength of the 16 @-@ bit market .

Due to long @-@ standing disagreements with Sega of Japan , Sega of America CEO Tom Kalinske became less interested in his position . On July 16 , 1996 Sega announced that Shoichiro Irimajiri had been appointed chairman and CEO of Sega of America , while Kalinske would be

leaving Sega after September 30 of that year . Sega also announced that Sega Enterprises cofounder David Rosen and Sega of Japan CEO Hayao Nakayama had resigned from their positions as chairman and co @-@ chairman of Sega of America , though both men remained with the company . Bernie Stolar , a former executive at Sony Computer Entertainment of America , was named Sega of America 's executive vice president in charge of product development and third @-@ party relations . Stolar did not support the Saturn due to his belief that the hardware was poorly designed and publicly announced at E3 1997 that " The Saturn is not our future . " After the launch of the Nintendo 64 , sales of the Saturn and Sega 's 32 @-@ bit software were sharply reduced . As of August 1997 , Sony controlled 47 percent of the console market , Nintendo controlled 40 percent , and Sega controlled only 12 percent . Neither price cuts nor high @-@ profile games were proving helpful to the Saturn 's success . Due to the Saturn 's poor performance in North America , Sega of America laid off 60 of its 200 employees in the fall of 1997 .

As a result of the company 's deteriorating financial situation , Nakayama resigned as president of Sega in January 1998 in favor of Irimajiri . Stolar would subsequently accede to president of Sega of America . Following five years of generally declining profits , in the fiscal year ending March 31 , 1998 Sega suffered its first parent and consolidated financial losses since its 1988 listing on the Tokyo Stock Exchange . Due to a 54 @. @ 8 % decline in consumer product sales (including a 75 @. @ 4 % decline overseas) , the company reported a consolidated net loss of ¥ 35 @. @ 6 billion (US \$ 269 @. @ 8 million) . Shortly before announcing its financial losses , Sega revealed that it was discontinuing the Saturn in North America , with the goal of preparing for the launch of its successor . This decision effectively left the Western market without Sega games for over one year . Rumors about the upcoming Dreamcast ? spread mainly by Sega itself ? leaked to the public before the last Saturn games were released .

= = = Development = = =

As early as 1995 , reports surfaced that Sega would collaborate with Lockheed Martin , The 3DO Company , Matsushita , or Alliance Semiconductor to create a new graphics processing unit , which conflicting accounts said would be used for a 64 @-@ bit " Saturn 2 " or an add @-@ on peripheral . Development of the Dreamcast was wholly unrelated to this rumored project . In light of the Saturn 's poor market performance , Irimajiri decided to start looking outside of the company 's internal hardware development division to create a new console . In 1997 , Irimajiri enlisted the services of Tatsuo Yamamoto from International Business Machines to lead an 11 @-@ man team to work on a secret hardware project in the United States , which was referred to as " Blackbelt " . Accounts vary on how an internal team led by Hideki Sato also began development on Dreamcast hardware ; one account specifies that Sega of Japan tasked both teams , while another suggests that Sato was bothered by Irimajiri 's choice to begin development externally and chose to have his hardware team begin development . Sato and his group chose the Hitachi SH @-@ 4 processor architecture and the VideoLogic PowerVR2 graphics processor , manufactured by NEC , in the production of their mainboard . Initially known as " Whitebelt " , this project was later codenamed " Dural " , after the metallic female fighter from Sega 's Virtua Fighter series .

Yamamoto 's group opted to use 3dfx Voodoo 2 and Voodoo Banshee graphics processors alongside a Motorola PowerPC 603e central processing unit (CPU) , but Sega management later asked them to also use the SH @-@ 4 chip . Both processors have been described as " off the shelf " components . In 1997 , 3dfx began its IPO , and as a result of legal obligations unveiled its contracts with Sega , including the development of the new console . This angered Sega of Japan executives , who eventually decided to use the Dural chipset and cut ties with 3dfx . According to former Sega of America vice president of communications and former NEC brand manager Charles Bellfield , presentations of games using the NEC solution showcased the performance and low cost delivered by the SH @-@ 4 and PowerVR architecture . He further stated that " Sega 's relationship with NEC , a Japanese company , probably made a difference [in Sega 's decision to adopt the Japanese team 's design] too . " Stolar , on the other hand , " felt the US version , the 3Dfx version , should have been used . Japan wanted the Japanese version , and Japan won . " As a result , 3dfx

filed a lawsuit against both Sega and NEC claiming breach of contract , which would eventually be settled out of court . The choice to use the PowerVR architecture concerned Electronic Arts (EA) , a longtime developer for Sega 's consoles . EA had invested in 3dfx but was unfamiliar with the selected architecture , which was reportedly less powerful . As recounted by Shiro Hagiwara (a general manager at Sega 's hardware division) and Ian Oliver (the managing director of Sega subsidiary Cross Products) , the SH @-@ 4 was chosen while it was still in development and following a lengthy deliberation process because it was the only available processor that " could adapt to deliver the 3D geometry calculation performance necessary . " By February 1998 , Sega had renamed the Dural " Katana " (after the Japanese sword) , although certain hardware specifications such as random access memory (RAM) were not yet finalized .

Knowing that the Sega Saturn had been set back by its high production costs and complex hardware , Sega took a different approach with the Dreamcast . Like previous Sega consoles , the Dreamcast was designed around intelligent subsystems working in parallel with one another , but the selections of hardware were more in line with what was common in personal computers than video game consoles , reducing the system 's cost . According to Damien McFerran , " the motherboard was a masterpiece of clean , uncluttered design and compatibility . " Chinese economist and future Sega.com CEO Brad Huang convinced Sega chairman Isao Okawa to include a modem with every Dreamcast despite significant opposition from Okawa 's staff over the additional \$ 15 cost per unit . To account for rapid changes in home data delivery , Sega designed the Dreamcast 's modem to be modular . Sega selected the GD @-@ ROM media format for the system . The GD @-@ ROM , which was jointly developed by Sega and Yamaha Corporation , could be mass @-@ produced at a similar price to a normal CD @-@ ROM , thus avoiding the greater expense of DVD @-@ ROM technology . As the GD @-@ ROM format can hold about 1 GB of data , illegally copying Dreamcast games onto a 650 MB CD @-@ ROM sometimes required the removal of certain game features , although this did not prevent copying of Dreamcast software . Microsoft developed a custom Dreamcast version of Windows CE with DirectX API and dynamic @-@ link libraries , making it easy to port PC games to the platform , although programmers would ultimately favor Sega 's development tools over those from Microsoft .

Sega held a public competition to name its new system and considered over 5 @,@ 000 different entries before choosing " Dreamcast " ? a combination of " dream " and " broadcast " . According to Katsutoshi Eguchi , Japanese game developer Kenji Eno submitted the name and created the Dreamcast 's spiral logo , but this claim has not been verified by Sega . The Dreamcast 's start @-@ up sound was composed by the Japanese musician Ryuichi Sakamoto . Because the Saturn had tarnished Sega 's reputation , the company planned to remove its name from the console entirely and establish a new gaming brand similar to Sony 's PlayStation , but Irimajiri 's management team ultimately decided to retain Sega 's logo on the Dreamcast 's exterior . Sega spent US \$ 50 ? 80 million on hardware development , \$ 150 ? 200 million on software development , and \$ 300 million on worldwide promotion ? a sum which Irimajiri , a former Honda executive , humorously compared to the investments required to design new automobiles .

= = = Launch = = =

Despite taking massive losses on the Saturn , including a 75 percent drop in half @-@ year profits just before the Japanese launch of the Dreamcast , Sega felt confident about its new system . The Dreamcast attracted significant interest and drew many pre @-@ orders . Sega announced that Sonic Adventure , the next game starring company mascot Sonic the Hedgehog , would arrive in time for the Dreamcast 's launch and promoted the game with a large @-@ scale public demonstration at the Tokyo Kokusai Forum Hall . However , Sega could not achieve its shipping goals for the Dreamcast 's Japanese launch due to a shortage of PowerVR chipsets caused by a high failure rate in the manufacturing process . As more than half of its limited stock had been pre @-@ ordered , Sega stopped pre @-@ orders in Japan . On November 27 , 1998 , the Dreamcast launched in Japan at a price of JP ¥ 29 @,@ 000 , and the entire stock sold out by the end of the day . However , of the four games available at launch , only one ? a port of Virtua Fighter 3 , the

most successful arcade game Sega ever released in Japan ? sold well . Sega estimated that an additional 200 @, @ 000 @-@ 300 @, @ 000 Dreamcast units could have been sold with sufficient supply . Key Dreamcast software titles Sonic Adventure and Sega Rally Championship 2 , which had been delayed , arrived within the following weeks , but sales continued to be slower than expected . Irimajiri hoped to sell over 1 million Dreamcast units in Japan by February 1999 , but less than 900 @, @ 000 were sold , undermining Sega 's attempts to build up a sufficient installed base to ensure the Dreamcast 's survival after the arrival of competition from other manufacturers . There were reports of disappointed Japanese consumers returning their Dreamcasts and using the refund to purchase additional PlayStation software . Seaman , released in July 1999 , was considered the Dreamcast 's first major hit in Japan . Prior to the Western launch , Sega reduced the price of the Dreamcast to JP ¥ 19 @, @ 900 , effectively making the hardware unprofitable but increasing sales . The price reduction and release of Namco 's Soul Calibur helped Sega to gain 17 percent on its shares .

Working closely with Midway Games (which developed four launch titles for the system) and taking advantage of the ten months following the Dreamcast 's release in Japan , Sega of America worked to ensure a more successful U.S. launch with a minimum of 15 launch games . Despite lingering bitterness over the Saturn 's early release , Stolar successfully managed to repair relations with major US retailers , with whom Sega presold 300 @, @ 000 Dreamcast units . In addition , a pre @-@ launch promotion enabled consumers to rent the system from Hollywood Video in the months preceding its September launch . Sega of America 's senior vice president of marketing Peter Moore , a fan of the attitude previously associated with Sega 's brand , worked with Foote , Cone & Belding and Access Communications to develop the " It 's Thinking " campaign of 15 @-@ second television commercials , which emphasized the Dreamcast 's hardware power . According to Moore , " We needed to create something that would really intrigue consumers , somewhat apologize for the past , but invoke all the things we loved about Sega , primarily from the Genesis days . " On August 11 , Sega of America confirmed that Stolar had been fired , leaving Moore to direct the launch .

Prior to the Dreamcast 's release , Sega was dealt a blow when EA ? the largest third @-@ party video game publisher ? announced it would not develop games for the system . EA executive Bing Gordon claimed " [Sega] couldn 't afford to give us [EA] the same kind of license that EA has had over the last five years " , but Stolar recounted that EA president Larry Probst wanted " exclusive rights to be the only sports brand on Dreamcast " , which Stolar could not accept due to Sega 's recent \$ 10 million purchase of sports game developer Visual Concepts . While the Dreamcast would have none of EA 's popular sports games , " Sega Sports " titles developed mainly by Visual Concepts helped to fill that void .

The Dreamcast launched in North America on September 9 , 1999 at a price of \$ 199 ? which Sega 's marketing dubbed " 9 / 9 / 99 for \$ 199 " . Eighteen launch titles were available for the Dreamcast in the U.S. Sega set a new sales record by selling more than 225 @, @ 132 Dreamcast units in 24 hours , earning the company \$ 98 @. @ 4 million in what Moore called " the biggest 24 hours in entertainment retail history " . Within two weeks , U.S. Dreamcast sales exceeded 500 @, @ 000 . By Christmas , Sega held 31 percent of the North American video game marketshare . Significant launch titles included Soul Calibur , an arcade fighting game that was graphically enhanced for the system and went on to sell one million units , and Visual Concepts ' high @-@ quality football simulation NFL 2K . On November 4 , Sega announced it had sold over one million Dreamcast units . Nevertheless , the launch was marred by a glitch at one of Sega 's manufacturing plants , which produced defective GD @-@ ROMs .

Sega released the Dreamcast in Europe on October 14 , 1999 , at a price of GB ? 200 . By November 24 , 400 @, @ 000 consoles had been sold in Europe . By Christmas of 1999 , Sega of Europe reported selling 500 @, @ 000 units , placing it six months ahead of schedule . Sales did not continue at this pace , and by October 2000 , Sega had sold only about 1 million units in Europe . As part of Sega 's promotions of the Dreamcast in Europe , the company sponsored four European football clubs : Arsenal F.C. (England) , AS Saint @-@ Étienne (France) , U.C. Sampdoria (Italy) , and Deportivo de La Coruña (Spain) .

== = Competition = = =

Though the Dreamcast launch had been successful , Sony still held 60 percent of the overall video game market share in North America with the PlayStation at the end of 1999 . On March 2 , 1999 , in what one report called a " highly publicized , vaporware @-@ like announcement " Sony revealed the first details of its " next generation PlayStation " , which Ken Kutaragi claimed would allow video games to convey unprecedented emotions . The center of Sony 's marketing plan and the upcoming PlayStation 2 itself was a new CPU (clocked at 294 MHz) jointly developed by Sony and Toshiba ? the " Emotion Engine " ? which Kutaragi announced would feature a graphics processor with 1 @,@ 000 times more bandwidth than contemporary PC graphics processors and a floating @-@ point calculation performance of 6 @.@ 2 gigaflops per second , rivaling most supercomputers . Sony , which invested \$ 1 @.@ 2 billion in two large @-@ scale integration semiconductor fabrication plants to manufacture the PlayStation 2 's " Emotion Engine " and " Graphics Synthesizer " , designed the machine to push more raw polygons than any video game console in history . Sony claimed the PlayStation 2 could render 75 million raw polygons per second with absolutely no effects , and 38 million without accounting for features such as textures , artificial intelligence , or physics . Even with such effects , Sony estimated the PlayStation 2 could render 16 million polygons per second , whereas independent estimates ranged from 3 million to 20 million , compared to the Dreamcast 's roughly 3 million . The system would also utilize the DVD @-@ ROM format , which could hold substantially more data than the Dreamcast 's GD @-@ ROM format . Because it could connect to the Internet while playing movies , music , and video games , Sony hyped PlayStation 2 as the future of home entertainment . Rumors spread that the PlayStation 2 was a supercomputer capable of guiding missiles and displaying Toy Story @-@ quality graphics , while Kutaragi boasted its online capabilities would give consumers the ability to " jack into ' The Matrix ' ! " In addition , Sony emphasized that the PlayStation 2 would be backwards compatible with hundreds of popular PlayStation games . Sony 's specifications appeared to render the Dreamcast obsolete months before its U.S. launch , although reports later emerged that the PlayStation 2 was not as powerful as expected and distinctly difficult to program games for . The same year , Nintendo announced that its next generation console would meet or exceed anything on the market , and Microsoft began development of its own console .

Sega 's initial momentum proved fleeting as U.S. Dreamcast sales ? which exceeded 1 @.@ 5 million by the end of 1999 ? began to decline as early as January 2000 . Poor Japanese sales contributed to Sega 's ¥ 42 @.@ 88 billion (\$ 404 million) consolidated net loss in the fiscal year ending March 2000 , which followed a similar loss of ¥ 42 @.@ 881 billion the previous year and marked Sega 's third consecutive annual loss . Although Sega 's overall sales for the term increased 27 @.@ 4 % , and Dreamcast sales in North America and Europe greatly exceeded the company 's expectations , this increase in sales coincided with a decrease in profitability due to the investments required to launch the Dreamcast in Western markets and poor software sales in Japan . At the same time , increasingly poor market conditions reduced the profitability of Sega 's Japanese arcade business , prompting the company to close 246 locations . Knowing that " they have to fish where the fish are biting " , Sega of America president Peter Moore (who assumed his position after Stolar had been fired) and Sega of Japan 's developers focused on the U.S. market to prepare for the upcoming launch of the PS2 . To that end , Sega of America launched its own Internet service provider , Sega.com , led by CEO Brad Huang . On September 7 , 2000 Sega.com launched SegaNet , the Dreamcast 's Internet gaming service , at a subscription price of \$ 21 @.@ 95 per month . Although Sega had previously released only one Dreamcast title in the U.S. that featured online multiplayer (ChuChu Rocket ! , a puzzle game developed by Sonic Team) , the launch of SegaNet (which allowed users to chat , send email , and surf the web) combined with NFL 2K1 (a football game including a robust online component) was intended to increase demand for the Dreamcast in the U.S. market . The service would later support games including Bomberman Online , Phantasy Star Online , Quake III Arena , and Unreal Tournament . The September 7 launch coincided with a new advertising campaign to promote SegaNet , including via the MTV Video Music Awards of the same day , which Sega sponsored for the second consecutive year . Sega employed

aggressive pricing strategies with relation to online gaming . In Japan , every Dreamcast sold included a free year of Internet access , which Okawa personally paid for . Prior to the launch of SegaNet , Sega had already offered a \$ 200 rebate to any Dreamcast owner who purchased two years of Internet access from Sega.com. To increase SegaNet 's appeal in the U.S. , Sega dropped the price of the Dreamcast to \$ 149 (compared to the PS2 's U.S. launch price of \$ 299) and offered a rebate for the full \$ 149 price of a Dreamcast (and a free Dreamcast keyboard) with every 18 @-@ month SegaNet subscription .

Moore stated that the Dreamcast would need to sell 5 million units in the U.S. by the end of 2000 in order to remain a viable platform , but Sega ultimately fell short of this goal with some 3 million units sold . Moreover , Sega 's attempts to spur increased Dreamcast sales through lower prices and cash rebates caused escalating financial losses . Instead of an expected profit , for the six months ending September 2000 Sega posted a ¥ 17 @.@ 98 billion (\$ 163 @.@ 11 million) loss , with the company projecting a year @-@ end loss of ¥ 23 @.@ 6 billion . This estimate was more than doubled to ¥ 58 @.@ 3 billion , and in March 2001 Sega posted a consolidated net loss of ¥ 51 @.@ 7 billion (\$ 417 @.@ 5 million) . While the PS2 's October 26 U.S. launch was marred by shortages ? with only 500 @,@ 000 of a planned 1 million units shipped due to a manufacturing glitch ? this did not benefit the Dreamcast as much as expected , as many disappointed consumers continued to wait for a PS2 ? while the PSone , a remodeled version of the original PlayStation , was the best @-@ selling console in the U.S. at the start of the 2000 holiday season . According to Moore , " the PlayStation 2 effect that we were relying upon did not work for us ... people will hang on for as long as possible ... What effectively happened is the PlayStation 2 lack of availability froze the marketplace " . Eventually , Sony and Nintendo held 50 and 35 percent of the US video game market , respectively , while Sega held only 15 percent . According to Bellfield , Dreamcast software sold at an 8 @-@ to @-@ 1 ratio with the hardware , but this ratio " on a small install base didn 't give us the revenue ... to keep this platform viable in the medium to long term . "

= = = Decline = = =

On May 22 , 2000 Okawa replaced Iramajiri as president of Sega . Okawa had long openly advocated that Sega abandon the console business . His sentiments were not unique ; Sega co @-@ founder David Rosen had " always felt it was a bit of a folly for them to be limiting their potential to Sega hardware " , and Stolar had previously suggested that Sega should have sold their company to Microsoft . In September 2000 , in a meeting with Sega 's Japanese executives and the heads of the company 's major Japanese game development studios , Moore and Bellfield recommended that Sega abandon its console business and focus solely on software ? prompting the studio heads to walk out . Nevertheless , on January 31 , 2001 Sega announced the discontinuation of the Dreamcast after March 31 and the restructuring of the company as a " platform @-@ agnostic " third @-@ party developer . The decision was Moore 's . Sega also announced a Dreamcast price reduction to \$ 99 to eliminate its unsold inventory , which was estimated at 930 @,@ 000 units as of April 2001 . After a further reduction to \$ 79 , the Dreamcast was cleared out of stores at \$ 49 @.@ 95 . The final Dreamcast unit to be manufactured was autographed by the heads of all nine of Sega 's internal game development studios as well as the heads of Visual Concepts and Wave Master and given away with 55 first @-@ party Dreamcast games through a competition organized by GamePro magazine . Okawa , who had previously loaned Sega \$ 500 million in the summer of 1999 , died on March 16 , 2001 ; shortly before his death , he forgave Sega 's debts to him and returned his \$ 695 million worth of Sega and CSK stock , helping the company survive the third @-@ party transition . As part of this restructuring , nearly one @-@ third of Sega 's Tokyo workforce was laid off in 2001 .

9 @.@ 13 million Dreamcast units were sold worldwide . After the Dreamcast 's discontinuation , commercial games were still developed and released for the system , particularly in Japan . In the United States , game sales continued until the end of the first half of 2002 . Sega of Japan continued to repair Dreamcast units until 2007 . As of 2014 , the console is still supported through various MIL @-@ CD independent releases . After five consecutive years of financial losses , Sega finally

posted a profit for the fiscal year ending March 2003 .

Reasons cited for the failure of the Dreamcast include hype for the PS2 ; a lack of support from EA and Squaresoft , considered the most popular third @-@ parties in the U.S. and Japan respectively ; disagreement among Sega executives over the company 's future , and Okawa 's lack of commitment to the product ; Sega 's lack of advertising money , with Bellfield doubting that Sega spent even " half " the \$ 100 million it had pledged to promote the Dreamcast in the U.S. ; that the market was not yet ready for online gaming ; Sega 's focus on " hardcore " gamers over the mainstream consumer ; and poor timing . Perhaps the most frequently cited reason is the damage to Sega 's reputation caused by several previous poorly supported Sega platforms . Writing for GamePro , Blake Snow stated that " The much beloved console launched years ahead of the competition but ultimately struggled to shed the negative reputation [Sega] had gained during the Saturn , Sega 32X , and Sega CD days . As a result , casual gamers and jaded third @-@ party developers doubted Sega 's ability to deliver . " Eurogamer 's Dan Whitehead noted that the " wait and see " approach of consumers and the lack of support from EA were symptoms rather the cause of Sega 's decline , concluding " Sega 's misadventures during the 1990s had left both gamers and publishers wary of any new platform bearing its name . " According to 1UP.com 's Jeremy Parish , " While it would be easy to point an accusatory finger at Sony and blame them for killing the Dreamcast by overselling the PS2 ... there 's a certain level of intellectual dishonesty in such a stance ... [Sega] ' s poor U.S. support for hardware like the Sega CD , the 32X , and the Saturn made gamers gun shy . Many consumers felt burned after investing in expensive Sega machines and finding the resulting libraries comparatively lacking " .

The announcement of Sega 's third @-@ party transition was met with widespread enthusiasm . According to IGN 's Travis Fahs , " Sega was a creatively fertile company with a rapidly expanding stable of properties to draw from . It seemed like they were in a perfect position to start a new life as a developer / publisher . " Former Working Designs president Victor Ireland wrote that " It 's actually a good thing ... because now Sega will survive , doing what they do best : software . " The staff of Newsweek remarked " From Sonic to Shenmue , Sega 's programmers have produced some of the most engaging experiences in the history of interactive media ... Unshackled by a struggling console platform , this platoon of world @-@ class software developers can do what they do best for any machine on the market " . Rosen predicted " they have the potential to catch Electronic Arts " . Game Informer , commenting on Sega 's tendency to produce under @-@ appreciated cult classics , stated : " Let us rejoice in the fact that Sega is making games equally among the current console crop , so that history will not repeat itself . "

= = Technical specifications = =

= = = Hardware = = =

Physically , the Dreamcast measures 190 mm × 195 @.@ 8 mm × 75 @.@ 5 mm (7 @.@ 48 in × 7 @.@ 71 in × 2 @.@ 97 in) and weighs 1 @.@ 5 kg (3 @.@ 3 lb) . The Dreamcast 's main CPU is a two @-@ way 360 MIPS superscalar Hitachi SH @-@ 4 32 @-@ bit RISC clocked at 200 MHz with an 8 Kbyte instruction cache and 16 Kbyte data cache and a 128 @-@ bit graphics @-@ oriented floating @-@ point unit delivering 1 @.@ 4 GFLOPS . Its 100 MHz NEC PowerVR2 rendering engine , integrated with the system 's ASIC , is capable of drawing more than 3 million polygons per second and of deferred shading . Sega estimated that the Dreamcast was theoretically capable of rendering 6 ? 7 million raw polygons per second , with the higher figure excluding textures and lighting , but the company conceded " game logic and physics reduce peak graphic performance . " Graphics hardware effects include trilinear filtering , gouraud shading , z @-@ buffering , spatial anti @-@ aliasing , per @-@ pixel translucency sorting and bump mapping . The system can output approximately 16 @.@ 77 million colors simultaneously and displays interlaced or progressive scan video at 640 × 480 video resolution . Its 67 MHz Yamaha AICA sound processor , with a 32 @-@ bit ARM7 RISC CPU core , can generate 64 voices with PCM or ADPCM

, providing ten times the performance of the Saturn 's sound system . The Dreamcast has 16 MB main RAM , along with an additional 8 MB of RAM for graphic textures and 2 MB of RAM for sound . The system reads media using a 12x speed Yamaha GD @-@ ROM Drive . In addition to Windows CE , the Dreamcast supports several Sega and middleware application programming interfaces . In most regions , the Dreamcast included a removable modem for online connectivity , which was modular for future upgrades . The original Japanese model and all PAL models had a transfer rate of 33 @. @ 6 kbit / s , while consoles sold in the US and in Japan after September 9 , 1999 featured a 56 kbit / s dial @-@ up modem .

= = = Models = = =

Sega constructed numerous Dreamcast models , most of which were exclusive to Japan . A refurbished Dreamcast known as the R7 was originally used as a network console in Japanese pachinko parlors . Another model , the Divers 2000 CX @-@ 1 , possesses a shape similar to Sonic 's head and includes a television and software for teleconferencing . A Hello Kitty version , limited to 2000 units produced , was targeted at Japanese female gamers . Special editions were created for Seaman and Resident Evil Code : Veronica . Color variations were sold through a service called " Dreamcast Direct " in Japan . Toyota also offered special edition Dreamcast units at 160 of its dealers in Japan . In North America , a limited edition black Dreamcast was released with a Sega Sports logo on the lid , which included matching Sega Sports @-@ branded black controllers and two games .

= = = Accessories = = =

The Dreamcast controller includes both an analog stick and a digital pad , four action buttons , and two analog triggers . The system has four ports for controller inputs , although it was bundled with only one controller . The design of the Dreamcast 's controller , described by the staff of Edge as " an ugly evolution of Saturn 's 3D controller , " was called " [not] that great " by 1UP.com 's Sam Kennedy and " lame " by Game Informer 's Andy McNamara . The staff of IGN wrote that " unlike most controllers , Sega 's pad forces the user 's hands into an uncomfortable parallel position . " In contrast to the Sega CD and Sega Saturn , which included internal backup memory , the Dreamcast uses a 128 kbyte memory card called the VMU (or " Visual Memory Unit ") for data storage . The VMU features a small LCD screen , audio output from a one @-@ channel PWM sound source , non @-@ volatile memory , a directional pad , and four buttons . The VMU can present game information , be used as a minimal handheld gaming device , and connect to certain Sega arcade machines . For example , players use the VMU to call plays in NFL 2K or raise virtual pets in Sonic Adventure . Sega officials noted that the VMU could be used " as a private viewing area , the absence of which has prevented effective implementation of many types of games in the past . " After a VMU slot was incorporated into the controller 's design , Sega 's engineers found many additional uses for it , so a second slot was added . This slot was generally used for vibration packs providing force feedback like Sega 's " Jump Pack " and Performance 's " Tremor Pack " , although it could also be used for other peripherals including a microphone enabling voice control and player communication . Various third @-@ party cards provide storage , and some contain the LCD screen addition . Iomega announced a Dreamcast @-@ compatible zip drive that could store up to 100 MB of data on removable discs , but it was never released .

Various third @-@ party controllers from companies like Mad Catz include additional buttons and other extra features ; third @-@ parties also manufactured arcade @-@ style joysticks for fighting games , such as Agatech 's Arcade Stick and Interact 's Alloy Arcade Stick . Mad Catz and Agatec created racing wheels for racing games . Sega decided against releasing its official light gun in the U.S. , but some third party light guns were available . The Dreamcast supports a Sega fishing " reel and rod " motion controller and a keyboard for text entry . Although it was designed for fishing games such as Sega Bass Fishing , Soul Calibur was playable with the fishing controller , which translated vertical and horizontal movements into on @-@ screen swordplay in a manner that was

retroactively cited as a predecessor to the Wii Remote . The Japanese Dreamcast port of Sega 's Cyber Troopers Virtual @-@ On Oratorio Tangram supported a " Twin Sticks " peripheral , but the game 's American publisher , Activision , opted not to release it in the U.S. The Dreamcast could connect to SNK 's Neo Geo Pocket Color , predating Nintendo 's GameCube ? Game Boy Advance link cable . Sega also produced the Dreameye , a digital camera that could be connected to the Dreamcast and used to exchange pictures and participate in video chat over the system 's Internet connection . Sega hoped developers would use the Dreameye for future software , as they later did with Sony 's similar EyeToy peripheral . In addition , Sega investigated systems that would have allowed users to make telephone calls with the Dreamcast , and discussed with Motorola the development of an Internet @-@ enabled cell phone that would have used technology from the console to enable quick downloads of games and other data .

The console can supply video through several different accessories . The console came with A / V cables , considered at the time to be the standard for video and audio connectivity . Sega and various third parties also manufactured RF modulator connectors and S @-@ Video cables . A VGA adapter allows Dreamcast games to be played on computer displays or Enhanced @-@ definition television sets in 480p .

= = Game library = =

Before the launch of the Dreamcast in Japan , Sega announced the release of its New Arcade Operation Machine Idea (NAOMI) arcade board , which served as a cheaper alternative to the Sega Model 3 . NAOMI shared the same technology as the Dreamcast ? albeit with twice as much system , video , and audio memory and an 160 Mbyte flash ROM board in place of a GD @-@ ROM drive ? allowing nearly identical home conversions of arcade games . Games were ported from NAOMI to the Dreamcast by several leading Japanese arcade companies , including Capcom (Marvel vs. Capcom 2 and Project Justice) , Tecmo (Dead or Alive 2) , Treasure (Ikaruga) , and Sega itself (F355 Challenge and Crazy Taxi) .

In what has been called " a brief moment of remarkable creativity " , in 2000 Sega restructured its arcade and console development teams into nine semi @-@ autonomous studios headed by the company 's top designers . Studios included United Game Artists (UGA) (headed by former Sega Rally Championship producer Tetsuya Mizuguchi) , Hitmaker (headed by Crazy Taxi creator and future Sega president Hisao Oguchi) , Smilebit (headed by Shun Arai and including many former Panzer Dragoon and future Yakuza developers from Team Andromeda) , Overworks (headed by Noriyoshi Oba and composed of developers from Sega franchises including Sakura Wars , Shinobi and Streets of Rage) , Sega AM2 (Sega 's most famous arcade studio and the developer of Sega 's Virtua Fighter fighting game series , headed by the company 's top developer , Yu Suzuki) , and Sonic Team (the developer of Sega 's flagship series , Sonic the Hedgehog , headed by Yuji Naka) . Sega 's design houses were encouraged to experiment and benefited from a relatively lax approval process , resulting in titles such as Rez (an attempt to simulate synaesthesia in the form of a rail shooter) , The Typing of the Dead (a version of The House of the Dead 2 remade into a touch typing trainer) , Seaman (a pet simulator in which players use a microphone to interact with a grotesque humanoid fish whose growth is narrated by Leonard Nimoy) , and Segagaga (a Japan @-@ exclusive role @-@ playing @-@ game employing commentary on the perceived over @-@ abundance of sequels produced by the video game industry , in which players are tasked with preventing Sega from going out of business) . Sega also revived franchises from the Genesis era , such as Ecco the Dolphin . Sega 's internal studios were consolidated starting in 2003 , with Mizuguchi leaving the company following the merger of UGA with Sonic Team .

UGA created the music game Space Channel 5 , in which players help a female outer space news reporter named Ulala fight aliens with " groove energy " by dancing . Intended for a " female casual " audience , Space Channel 5 is considered one of Sega 's " most daring and beloved " original properties , combining a " defiantly retro " and " uplifting " soundtrack with " dazzling " and " colorful " visual presentation ? despite " a lack of real gameplay substance . " Neither Space Channel 5 nor UGA 's Rez were commercially successful , and the latter title was only available in the U.S. market

through a PS2 port released in limited quantities . Hitmaker 's arcade ports included Crazy Taxi ? an open world arcade racing game known for its addictive gameplay , which sold over one million copies and has been frequently cited as one of the best Dreamcast games ? and Virtua Tennis ? which revitalized the tennis game genre with a simple two @-@ button control scheme and use of minigames to test the player 's technique . Smilebit 's Jet Set Radio ? in which players control a Tokyo @-@ based gang of youthful , rebellious inline skaters called the " GGs " , who use graffiti to claim territory from rival gangs while evading an oppressive police force ? has been cited as a major example of Sega 's commitment to original game concepts during the Dreamcast 's lifespan . Lauded for composer Hideki Naganuma 's " punchy , psychedelic " soundtrack incorporating elements of " J @-@ pop and electro @-@ funk " as well as its message of " self @-@ expression and non @-@ violent dissent " , the game also popularized cel shaded graphics . Despite wide praise for its style , some criticized Jet Set Radio 's gameplay as mediocre , and it failed to meet Sega 's sales expectations . Produced by Rieko Kodama , the Overworks @-@ developed traditional role @-@ playing game Skies of Arcadia was acclaimed for its surreal Jules Verne @-@ inspired fantasy world of floating islands and sky pirates , charming protagonists , unique emphasis on the environmental properties of weapons , exciting airship battles , and memorable plot (including a sequence viewed from multiple perspectives) .

AM2 developed what Sega hoped would be the Dreamcast 's killer app , Shenmue , a " revenge epic in the tradition of Chinese cinema . " The action @-@ adventure title involved the quest of protagonist Ryo Hazuki to avenge his father 's murder , but its main selling point was its rendition of the Japanese city of Yokosuka , which included a level of detail considered unprecedented for a video game . Incorporating a simulated day / night cycle with variable weather , non @-@ player characters with regular schedules , and the ability to pick up and examine detailed objects (also introducing the Quick @-@ time event in its modern form) , Shenmue went over budget and was rumored to have cost Sega over \$ 50 million . Originally planned as the first installment in an 11 @-@ part saga , Shenmue was eventually downsized to a trilogy ? and only one sequel was ever released . While Shenmue was lauded for its innovation , visuals and music , its critical reception was mixed ; points of criticism included " invisible walls " which limited the player 's sense of freedom , boredom caused by the inability to progress without waiting for events scheduled to occur at specific times , excessive in @-@ game cutscenes and a lack of challenge . According to Moore , Shenmue sold " extremely well " , but the game had no chance of making a profit due to the Dreamcast 's limited installed base . Shenmue II " was completed for a much more reasonable sum " , while Sato defended Shenmue as an " investment [which] will someday be recouped " because " the development advances we learned ... can be applied to other games " . In addition to the mixed reception for Shenmue , IGN 's Travis Fahs stated that " the [Dreamcast] era wasn 't as kind to [AM2] as earlier years " ? citing (among others) F355 Challenge as an " acclaimed " arcade title that " didn 't do much at home " , and Genki 's port of Virtua Fighter 3 as inferior to the arcade version , " which was already a couple years old and never as popular as its predecessors . " The Virtua Fighter series would experience a " tremendous comeback " with the universally acclaimed Virtua Fighter 4 ? which saw a console release exclusively on PS2 .

As the first fully 3D platforming game starring Sega 's mascot , Sonic the Hedgehog , Sonic Team 's Sonic Adventure was considered " the centerpiece of the [Dreamcast] launch " . Adventure garnered criticism for technical problems including erratic camera angles and glitches , but was praised for its " luscious " visuals , " vast , twisting environments " and iconic set pieces ? including a segment in which Sonic runs down the side of a skyscraper ? and has been described as the Sonic series ' creative apex . However , it failed " to catch on with players in nearly the way that [Nintendo 's] Mario 64 had done " , perhaps due to a perceived lack of gameplay depth . Distinguished by its innovative use of multiple storylines with varied forms of play , Adventure sold 2 @.@ 5 million copies , making it the Dreamcast 's best @-@ selling title . Sonic Team also developed the Dreamcast 's first online game ? ChuChu Rocket ! ? which was widely complimented for its addictive puzzle gameplay and " frantic " multiplayer matches , and the critically successful music game Samba de Amigo , which was noted for its expensive maracas peripheral and colorful aesthetic . Perhaps the most influential of Sonic Team 's Dreamcast releases was Phantasy Star Online , the

first online console RPG . Developed after Okawa requested an online game from Sonic Team , PSO was heavily influenced by the PC action RPG Diablo , but refined and simplified its style of gameplay to appeal to console audiences .

In sports , Visual Concepts ' NFL 2K football series and its NBA 2K basketball series were critically acclaimed . NFL 2K was considered an outstanding launch game for its high @-@ quality visuals and " insightful , context @-@ friendly , and , yes , even funny commentary " , while NFL 2K1 featured groundbreaking online multiplayer earlier than its chief competitor , EA 's Madden NFL series . Madden and 2K continued to compete on other platforms through 2004 ? with the 2K series introducing innovations such as a first person perspective new to the genre , and eventually launching ESPN NFL 2K5 at the aggressively low price point of \$ 19 @.@ 95 ? until EA signed an exclusive agreement with the National Football League , " effectively putting every other pro @-@ football game out of business . " After Sega sold Visual Concepts for \$ 24 million in 2005 , the NBA 2K series continued with publisher Take @-@ Two Interactive . During the Dreamcast 's lifespan , Visual Concepts also collaborated with Sonic the Hedgehog level designer Hirokazu Yasuhara on the action @-@ adventure game Floigan Bros. and developed the critically successful action game Ooga Booga .

To appeal to the European market , Sega formed a French affiliate called No Cliché , which developed titles such as Toy Commander . Sega Europe also approached Bizarre Creations to develop the critically successful racing game Metropolis Street Racer , which featured detailed recreations of London , Tokyo , and San Francisco ? complete with consistent time zones and fictional radio stations ? and 262 individual race tracks .

Although Acclaim , SNK , Ubisoft , Midway , Activision , Infogrames , and Capcom supported the system during its first year , third @-@ party developer support proved difficult to obtain due to the failure of the Sega Saturn and the profitability of publishing for the PlayStation . Namco 's Soul Calibur , for example , was released for the Dreamcast because of the relative unpopularity of the Soul series at the time ; Namco 's more successful Tekken franchise was associated with the PlayStation console and PlayStation @-@ based arcade boards . Nevertheless , Soul Calibur received overwhelming critical acclaim and has been frequently described as one of the best games for the system . Capcom produced a number of fighting games for the system , including the Power Stone series , in addition to a temporary exclusive in the popular Resident Evil series called Resident Evil Code : Veronica . The Dreamcast is also known for several shoot ' em ups , most notably Treasure 's Bangai @-@ O and Ikaruga .

In January 2000 , three months after the system 's North American launch , Electronic Gaming Monthly offered praise for the game library , stating , " ... with triple @-@ A stuff like Soul Calibur , NBA 2K , and soon Crazy Taxi to kick around , we figure you 're happy you took the 128 @-@ bit plunge . " In a retrospective , PC Magazine 's Jeffrey L. Wilson referred to Dreamcast 's " killer library " and emphasized Sega 's creative influence and visual innovation as being at its peak during the lifetime of the system . The staff of Edge agreed with this assessment on Dreamcast 's original titles , as well as Sega 's arcade conversions , stating that the system " delivered the first games that could meaningfully be described as arcade perfect . " GamePro writer Blake Snow referred to the library as being " much celebrated " . Damien McFerran of Retro Gamer praised Dreamcast 's NAOMI arcade ports , opining " The thrill of playing Crazy Taxi in the arcade knowing full well that a pixel @-@ perfect conversion (and not some cut @-@ down port) was set to arrive on the Dreamcast is an experience gamers are unlikely to witness again . " Nick Montfort and Mia Consalvo , writing in Loading ... The Journal of the Canadian Game Studies Association , argued that " the Dreamcast hosted a remarkable amount of videogame development that went beyond the odd and unusual and is interesting when considered as avant @-@ garde ... it is hard to imagine a commercial console game expressing strong resistance to the commodity perspective and to the view that game production is commerce . But even when it comes to resisting commercialization , it is arguable that Dreamcast games came closer to expressing this attitude than any other console games have . " 1UP.com 's Jeremy Parish favorably compared Sega 's Dreamcast output , which included some of " the most varied , creative , and fun [games] the company had ever produced " , with its " enervated " status as a third @-@ party . Fahs noted " The Dreamcast 's life was fleeting ,

but it was saturated with memorable titles , most of which were completely new properties . " According to author Steven L. Kent , " From Sonic Adventure and Shenmue to Space Channel 5 and Seaman , Dreamcast delivered and delivered and delivered . "

= = Reception and legacy = =

In December 1999 , Next Generation rated the Dreamcast 4 out of 5 stars and stated , " If you want the most powerful system available now , showcasing the best graphics at a reasonable price , this system is for you . " However , Next Generation rated the Dreamcast 's future prognosis as 3 stars out of 5 in the same article , noting that Sony would ship a superior hardware product in the PlayStation 2 in the next year , and that Nintendo had said it would do the same with the GameCube . At the beginning of 2000 , Electronic Gaming Monthly had five reviewers score the Dreamcast 8 @. @ 5 , 8 @. @ 5 , 8 @. @ 5 , 8 @. @ 0 , and 9 @. @ 0 out of 10 points . By 2001 , the reviewers for Electronic Gaming Monthly gave the Dreamcast scores of 9 @. @ 0 , 9 @. @ 0 , 9 @. @ 0 , 9 @. @ 0 , and 9 @. @ 5 out of 10 . BusinessWeek recognized the Sega Dreamcast as one of the best products of 1999 .

In 2009 , IGN named the Dreamcast the 8th greatest video game console of all time , giving credit to the innovations and software for the system . According to IGN , " The Dreamcast was the first console to incorporate a built @-@ in modem for online play , and while the networking lacked the polish and refinement of its successors , it was the first time users could seamlessly power on and play with users around the globe . " In 2010 , PC Magazine 's Jeffrey L. Wilson named the Dreamcast the greatest video game console , emphasizing that the system was " gone too soon " . In 2013 , Edge named the Dreamcast the 10th best console of the last 20 years , highlighting innovations that it added to console video gaming , including in @-@ game voice chat , downloadable content , and second screen technology through the use of VMUs . Edge explained the system 's poor performance by stating , " Sega 's console was undoubtedly ahead of its time , and it suffered at retail for that reason ... [b] ut its influence can still be felt today . " Writing in 1001 Video Games You Must Play Before You Die , Duncan Harris noted " One of the reasons that older gamers mourned the loss of the Dreamcast was that it signaled the demise of arcade gaming culture ... Sega 's console gave hope that things were not about to change for the worse and that the tenets of fast fun and bright , attractive graphics were not about to sink into a brown and green bog of realistic war games . " Parish , writing for USgamer , contrasted the Dreamcast 's diverse library with the " suffocating sense of conservatism " that pervaded the gaming industry in the following decade . Dan Whitehead of Eurogamer , discussing the Dreamcast 's portrayal " as a small , square , white plastic JFK " , commented that the system 's short lifespan " may have sealed its reputation as one of the greatest consoles ever " : " Nothing builds a cult like a tragic demise " . According to IGN 's Travis Fahs , " Many hardware manufacturers have come and gone , but it 's unlikely any will go out with half as much class as Sega . "