

## 2016

The first videogame-related news of the year occurred on January 6 at the annual CES in Las Vegas. After years of speculation and delays, Oculus finally announced a release price and date for its long-awaited Oculus Rift virtual reality headset. On that day, the company began accepting preorders for the unit, which would begin shipping on March 28. The Oculus Rift would cost \$599 and would come with the VR headset that slipped over the head and connected to the PC; an Oculus Sensor, which would track the player's head movements; and a wireless Xbox One controller. The company also announced that an Oculus Remote would be included in the introductory package, but was very vague about the device's purpose. The company merely described it as a "new input device we designed to make it simple and intuitive to navigate VR experiences." Oculus was also vague concerning the future of the Oculus Remote, saying only that it was available "for now." The introductory package would also ship with two games, *EVE: Valkyrie* and *Lucky's Tale*.

While many people were shocked at the \$599 price, especially since the company had been saying for years that the price would be in the \$300-\$400 range, many went ahead and preordered a set. The initial batch of headsets sold out within a half-hour. A second batch of headsets was expected to ship in April, around the same time that the units would start appearing in retail stores, although Oculus would not disclose which stores would carry the unit.

People who thought the price of the Oculus Rift was high may have changed their opinion on February 29, when Valve Corporation began taking pre-orders for the Rift's first serious competition, the *HTC Vive*. The suggested retail price for the *HTC Vive* was \$799, and it was planned to be released on April 5.<sup>1</sup> Like the Oculus Rift, the HTC Vive was designed to interact with high-end PCs.

Because of the two VR helmets' dependencies on expensive PCs, the Oculus Rift and HTC Vive were expected to appeal to die-hard gamers and not to the general public, who would have to wait for the first VR headset designed to work with an existing gaming console. On March 15, two weeks after Valve<sup>2</sup> announced the release date for the *HTC Vive*, SCE used the Game Developers Conference to announce its specifics for the PlayStation VR (PSVR), which would be available on October 13.

The PSVR would only cost \$399 and would work on all existing PS4 consoles. The headset would be packaged with a pair of stereo headphones and the cables to connect the unit to the console. However, it would not come with a \$60 PlayStation Camera, which would be required to play any PSVR game, or Move controllers, which would be needed by some of the virtual reality games.<sup>3</sup>

The purchase of a PlayStation Camera reduced the difference in price between the PSVR and the Oculus Rift to \$140. However, to compare the two headsets by price was unfair, because the two certainly were not equal in quality. SCE never claimed that the PSVR was a high-end VR headset like the Oculus Rift. And even if people thought that the \$200 difference between the Oculus Rift and the PS4 was negligible, the Rift still required a high-end computer that cost about \$1,000 dollars.<sup>4</sup>

The Rift would include two 1080 x 1200-pixel OLED displays, whereas the resolution of the PSVR would be lower, at 960 x 1080 pixels. And the Oculus Rift would run with a rate of 90 frames per second (fps), which most developers felt was the minimum frame rate for a comfortable VR experience. The PSVR would only run at 60 fps. When Oculus tested its headset with the lower frame rate, testers were able to perceive some flickers and were prone to motion sickness. SCE didn't plan to raise the frame rate on the headset, because the PS4 console wouldn't be able to handle it.

However, on March 18, during GDC, *Kotaku* had published a story from undisclosed sources that revealed that SCE was going to release a new PS4 model that would feature increased graphical power and games that were capable of running at 4K resolution.<sup>5</sup> A new graphics processing unit would be included in the machine that would allow it to support the higher-resolution games, as well as add processing power to better play the PSVR games. Although SCE declined to talk publicly about this new console, dubbed the "PS4.5," the company apparently showed it to developers at the GDC.

In April, SCE combined with Sony Network Entertainment to become Sony Interactive Entertainment (SIE). Andrew House, who had been CEO of SCE before the merge, retained the position.

On June 10, three days before the start of E<sup>3</sup>, House admitted to the *Financial Times* about the existence of the PS4.5, which by then was called by its second working title, the *PS4 Neo*. House confirmed what *Kotaku* had revealed nearly two months earlier and said, "The Neo) is intended to sit alongside and complement the standard PS4. We will be selling both [versions] through the life cycle." House did not provide any more details about the PS4 Neo, other than to say that it would not be shown at E<sup>3</sup>. Indeed, SIE's 6 PM press conference on June 13 concentrated mostly on the price and release date of the PSVR, details that had already been disclosed at GDC in March.

### *New From Microsoft*

Microsoft held its E<sup>3</sup> press conference earlier that same day, using its time to introduce two new consoles, one of which appeared to be similar to the PS4 Neo. This console was code-named *Project Scorpio* and wasn't scheduled to be released until the end of 2017. This model, which Microsoft called the "most powerful console ever," would feature 6 teraflops of processing power (compared to 1.31 teraflops on the Xbox One). It would run 4K games natively and support High Dynamic Range (HDR) lighting<sup>6</sup> and high-end virtual reality, although Microsoft wasn't planning a VR headset. Aaron Greenberg, Xbox's head of games marketing, called Project Scorpio the "beginning of the end of traditional console life cycles for Microsoft." Greenberg also stated that there wouldn't be any games exclusive to Project Scorpio. Any game that took full advantage of the console's capabilities would also have to play on an older Xbox One in a limited fashion.<sup>7</sup>

The other console that Microsoft introduced was the *Xbox One S*. This console, whose software was fully compatible with the current Xbox One, would be white and feature a sleek new design. It would also be 40% smaller than the current model and would, in fact, be the smallest and most compact Xbox console ever offered. It would support 4K video resolution from Blu-ray, and several streaming services such as Netflix and Amazon. In addition, older Xbox One 1080p games could be up-scaled to 4K. The Xbox

One S was scheduled to be released in several configurations in August, with preorders commencing the day of the E<sup>3</sup> press conference.

Microsoft actually introduced *three* consoles at the press conference that would play Xbox One games. The third was a PC with the *Windows 10* operating system. With *Xbox Play Anywhere*, gamers could download Xbox One games either from the Windows Store or the Xbox Games Store, and they would play directly on the PC. Previously, Xbox One games needed to be streamed from an Xbox One console in order to play on a PC with *Windows 10*. *Xbox Play Anywhere* was scheduled to launch in September.

Microsoft did introduce something at the E<sup>3</sup> press conference that was available right away. The *Xbox Design Lab* gave users the ability to customize the colors on their own Xbox One controllers, which were only available from the online Microsoft store. From the Xbox Design Lab website, users could select from several different colors to apply to several different parts of the controller, including the body, bumpers and triggers, D-pad, thumbstick and back. In addition, several different styles could be selected for the controller buttons. In all, Microsoft claimed that there were more than 8 million color combinations to choose from. The unique controller sold for \$79.99, and for an additional \$9.99, the controller could be personally laser-engraved.



*Xbox Design Lab controller*

### *Nintendo Steals the Show*

Like Microsoft and SIE, Nintendo did not display a new console at E<sup>3</sup>, although it too had one in the pipeline. The NX had been mentioned in March, 2015, but Nintendo revealed nothing about it during the remainder of the year. Finally, at an investor's meeting, the company mentioned that the unit would be released in March, 2017. The *Los Angeles Times* reported this news on April 27, with a headline that declared, "Nintendo dates its successor to the Wii U, the NX." Although it was known that the Wii U was doing poorly in the marketplace, no one at Nintendo ever said that the NX would replace it. Indeed, on the same day that the *Los Angeles Times* printed its story, *Geek.com* published a story with the headline, "Nintendo NX launches March 2017, won't simply replace Wii U and 3DS," echoing the words that Nintendo CEO Tatsumi Kimishima had stated at the meeting. He confirmed this during a May, 2016 interview with Japanese newspaper *Asahi Shimbun*, but added that the NX would "slow Wii U sales" when more information about it was revealed.

That information was not revealed at E<sup>3</sup>. Instead, Nintendo used the massive trade show to finally show one of its most anxiously awaited titles, *The Legend of Zelda: Breath of the Wild*. Originally designed for the Wii U, the game would be released in March 2017 for the NX as well as the Wii U. It was the most talked-about game at E<sup>3</sup>, and attendees stood in lines for hours in order to play it. *GameSpot* called it "the most interesting and exciting game Nintendo has made in years."



*The Legend of Zelda: Breath of the Wild*

By announcing that *The Legend of Zelda: Breath of the Wild* would be available for the NX, Nintendo gave people a reason to purchase the new console without actually having to see it. At a shareholders' meeting that followed the exhibition, Shigeru Miyamoto explained that Nintendo couldn't yet tip its hand on what the NX was, because the company's competitors might copy ideas from it if it were shown off too soon. However, whether it was part of Nintendo's plan or not, information about what the NX was quickly began to surface.

On July 27, *Eurogamer* published an article from a "number of *well-placed* sources" that stated that the NX would be a portable, handheld console with detachable controllers. The controllers could then be attached to a docking unit, which could be connected to a TV or monitor, so games could be played on a big screen just as with a standard console. However, the unit would not be backward-compatible with the Wii U. Instead of optical discs, it would employ game cards similar to those used by the 3DS, even though it would not be compatible with that system's, either.<sup>8</sup> Sources also said that the NX would be powered by a new operating system, and not by Android as had been previously reported. When asked by *Eurogamer* to confirm the new rumors, Nintendo merely repeated that the only official information about the NX was its March, 2017 release. However, *NintendoLife* backed up *Eurogamer's* story on August 16, when it published information about a Nintendo handheld patent that had been recently updated to include detachable D-pads.

While Nintendo was remaining mum about its forthcoming console, a different, non-Nintendo platform could suddenly run Nintendo games. On March 17, Nintendo of Japan and DeNA released their first original application for iOS and Android devices. *Miitomo*, however, wasn't exactly a game. It was a social-networking app that allowed friends to communicate with one another through questions and answers. The user's onscreen personas were Miis that were created through the app.<sup>9</sup>

*Miitomo* was extremely popular. After three days, it became the most downloaded free app in Japan. But people weren't using it strictly for social media. They were also earning *Miitomo Coins* by making purchases within the app. The coins could be used to buy new clothes for the Mii. And with a daily change of clothes, players could earn *Miitomo Platinum Points*, which could then be exchanged for items on *My Nintendo*, Nintendo's successor to Club Nintendo. *My Nintendo* had been launched in Japan on the same day that *Miitomo* was released.<sup>10</sup>

*Miitomo* downloads started strong. The app boasted over one million users within three days of its Japanese launch. That number tripled within 24 hours, following its launch around the world on March 31. By the end of April, the app had over 10



*Miitomo*

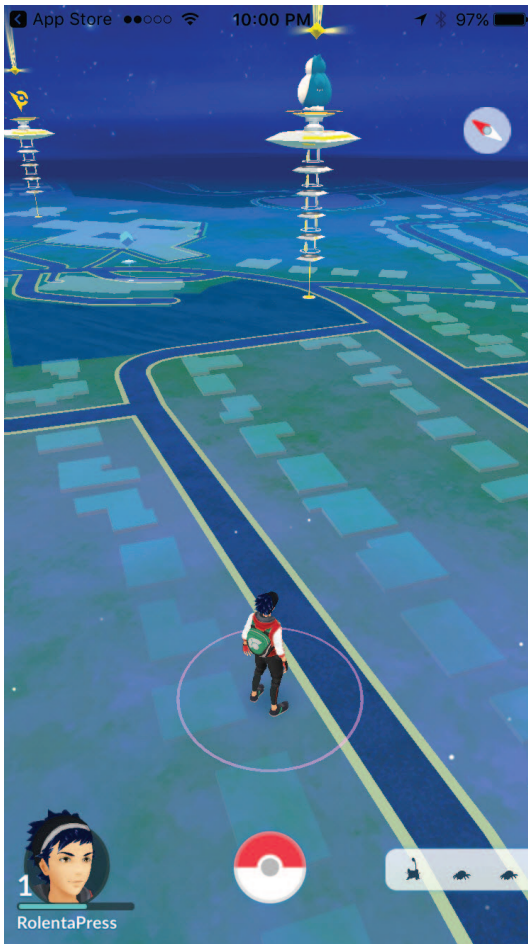
million users. However, by the time May arrived, the numbers began to turn around, and only about 25% of those 10 million were still using the app regularly.

### *Pokémon Go*

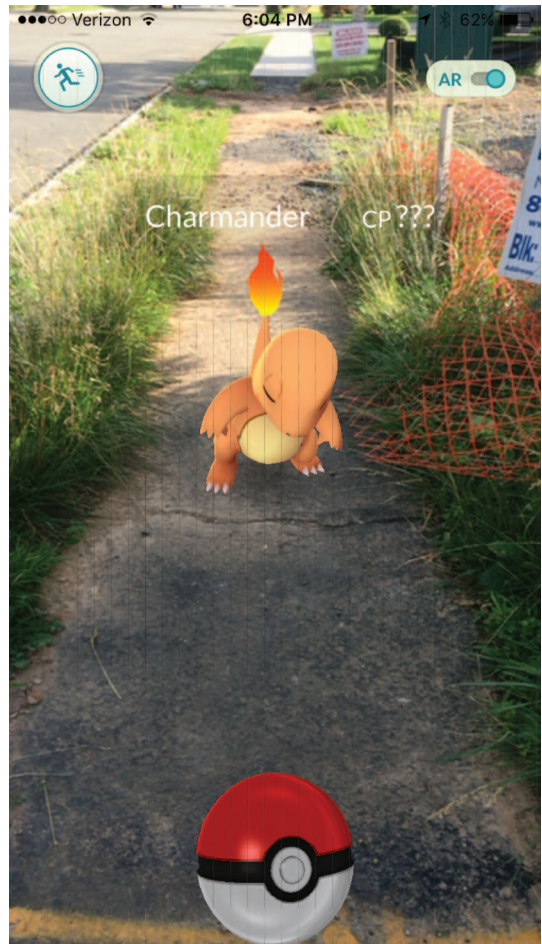
Nintendo's next app would ultimately have the same result, but it would initially be something that everybody talked about.

*Pokémon Go*, which was released on July 6 in the United States, Australia and New Zealand,<sup>11</sup> utilized augmented reality technology to cast animated Pokémon characters into the real world. Players became real-life Pokémon hunters as they used their smartphones to capture these Pokémon, which they could "see" imposed on the screens of their devices.

*Pokémon Go*, which had originally been conceived by Tsunekazu Ishihara, the president of The Pokémon Company, and Satoru Iwata, the late CEO of Nintendo, began as *Pokémon Challenge*, an April Fool's gag through *Google Maps*. The gag was so well-received that they decided to create a complete, fully playable version. As it turned out, Ishihara was a fan of *Ingress*, a mobile game that had been developed and released in late 2014 by Niantic, Inc.<sup>12</sup> *Ingress* combined augmented reality with a GPS to create a map of the surrounding area that displayed the locations of objects that players needed for the game. Ishihara felt that the background of *Ingress* was perfect



*Pokémon Go Map Mode*



*Pokémon Go Camera Mode*

for his game, so Niantic was contracted to create *Pokémon Go*, based upon *Ingress*.

The game began in *Map Mode*, where a map displayed the player's immediate location. If there were any nearby, the map would also show the location of *PokéStops*, which were used by players to obtain needed supplies such as berries, potions and Pokéballs. Large tower-like structures might also appear, and these were the locations of gyms, which were used for team battles.<sup>13</sup> And if there were any nearby, the map would also disclose the location of Pokémon, which had to be captured.<sup>14</sup>

Once a player found himself in the vicinity of a Pokémon, he could switch to *Camera Mode*, which would show the actual creature augmented into the real world. By swiping the Pokéball at the bottom of the screen in the direction of the Pokémon, the monster could be "captured" and added to the player's Pokédex. There were 151 Pokémon to be captured in all, and some were easier to obtain than others.<sup>15</sup> In fact, four could only be found on specific continents, which meant that capturing them all required a lot of traveling. Still, it wasn't impossible, and on August 4, it was revealed that Nick Johnson of Brooklyn, NY had become the first person to capture all 142 Pokémon that were available in the United States. Fortunately, Marriott and Expedia sponsored his trips to Paris, Hong Kong and Australia, where he was able to complete his set.

On August 8, *Pokémon Go* achieved over 100 million downloads through Google Play alone. Two days later, it was awarded five *Guinness World Records*, including one for being the most downloaded mobile game within its first month. It became the fastest game to reach the #1 downloaded-app spot on both Google Play and the App Store. The gaming and mainstream press marveled at the game's phenomenal success.

Unfortunately, not all of the press was good, since the game was burdened with problems right from the beginning. For example, on the day of its American launch, the servers became so overloaded that many people couldn't gain access, and some who did experienced freezing or crashing. The CEO of Niantic, John Hanke, apologized by saying that they "weren't provisioned for what happened." This wasn't restricted to the U.S., and similar problems occurred around the world whenever the game was launched.

But the worst publicity wasn't caused by glitches in the system. Rather, it was caused by the success of the app. Some people were concentrating so intently on the game that they didn't pay attention to their surroundings. They fell into holes or wandered into the paths of oncoming cars. One teenager in Guatemala was ambushed and killed while playing the game. In Japan, a woman crossing a street was killed when a car, driven by a man playing the game, rammed into her. Even the locations of the Pokéspots and gyms caused problems, as they appeared in sensitive areas such as the Korean Demilitarized Zone and the United States Holocaust Memorial Museum. Another PokéSpot was found on an Indonesian military base, causing a major incident when a player tried to illegally access it.

Nintendo had planned to sell a device at the end of July that would have avoided many of the calamities caused by people looking at their screens instead of where they were going. However, the release of the \$35 *Pokémon Go Plus* was delayed until September 16, to be absolutely sure that the game properly worked with it. The Pokémon Go Plus was a small device that could be pinned to a player's shirt or attached to a wrist band and worn like a watch, and it communicated with the mobile device that

was playing *Pokémon Go* via Bluetooth. Once the device was paired with the game, the phone could be put away. The Pokémon Go Plus alerted the player through pulsing vibrations and blinking colored lights that a Pokémon or PokéStop was in the vicinity. Once the player was upon it, all he had to do was press a button on the Pokémon Go Plus in order to capture the creature or receive goods from the shop.

The Pokémon Go Plus sold out the day it was released, showing that there was still major interest in *Pokémon Go*. The number of possible consumers for the device had been in question, because participation in the game had peaked on July 15. By the time the Pokémon Go Plus was released, the game had lost 79% of its players. However, this still left approximately 21 million active players who were keenly committed to the game and who were probably interested in the Pokémon Go Plus.



*Pokémon Go Plus*

Nintendo's stock dropped dramatically around the same time that the public began leaving the game, but there wasn't any relationship between the two events. The stock had risen by 10% upon the initial launch of *Pokémon Go* and didn't stop there. Within a week of the launch, the company's shares had risen by 50%, with trading of Nintendo shares amounting to 25% of all trades on the Tokyo Stock Exchange. By July 22, Nintendo's net worth had risen by ¥1.8 trillion (\$17.6 billion). However, the stock dropped abruptly on July 25, when it was revealed that Nintendo had nothing to do with *Pokémon Go*, and that whatever it earned was through the 32% of The Pokémon Company that it owned. This had hardly been top-secret news; nevertheless, Nintendo's value fell 17% or approximately \$6.4 billion, the highest drop that the company had experienced since 1990. However, even after the decline of *Pokémon Go*, the game continued to be one of the top-earning mobile games.

Despite Nintendo's non-involvement in *Pokémon Go*, many investors stuck with the company because it was involved in other mobile games that were expected to be released before the end of the year, including games based on *Animal Crossing* and *Fire Emblem*. Both had the potential to make a lot of money if they were done right.

### ***Super Mario Run***

The first actual mobile game to emerge from Nintendo's partnership with DeNA was released worldwide for iOS devices on December 15.<sup>16</sup> *Super Mario Run* was a mobile version of *Super Mario Bros.* Just as in the original console game, the on-screen Mario had to avoid enemies, jump over obstacles and collect coins. The player controlled Mario's jumps by tapping the device's screen. The longer the screen was touched, the higher Mario jumped. No other input was required by the player.

The game broke iOS records by scoring more than 50 million downloads during its initial week. Before its release, Nintendo's stock prices had risen to the levels that

*Super Mario Run*

it had enjoyed during the peak of *Pokémon Go*. Investors liked the fact that Nintendo owned all of *Super Mario Run* instead of just a percentage, so the company would take in 100% of the game's revenue. But the gravy train that investors expected to keep rolling came to a halt five days after *Super Mario Run*'s release, when Nintendo's shares dropped by 11%.<sup>17</sup> This was caused by bad publicity from the users themselves.

Like many mobile games, *Super Mario Run* was free to download and try out. However, after the third level, players had to pay a one-time fee of \$10 to continue. Many felt that this was an astronomical amount to pay for a mobile game when others generally cost only a few dollars, and some were even free because of built-in ads. Other games, such as the acclaimed *Candy Crush Saga*, used a *freemium* model that gave players the option to purchase low-cost items that could help them continue in the game.<sup>18</sup> However, players weren't forced to buy these options and could continue without them. So even though the game was widely loved, many were infuriated by the fact that Nintendo was charging them so much to continue. They complained about

this in the only way they could--by giving the game bad reviews on *iTunes*. Before long, there were 50,000 reviews of the game on *iTunes*, approximately half of which sported one star out of five, simply because the reviewers were upset about Nintendo's pricing. The average rating of 2.5 dissuaded many people from trying the game out, and



*Nintendo Switch inside Switch Dock with Joy-Con controllers in front attached to the Grip*

completely scared investors, who hadn't expected such a response. By the end of the year, out of 78 million downloads, only 5% of the trial users had gone on to pay for the complete game.<sup>19</sup>

### *New Nintendo Consoles*

*Super Mario Run* wasn't the only Nintendo product that consumers were complaining about at the end of the year.

On October 20, the company finally revealed information about its secretive NX console, and most of the rumors that *Eurogamer* had reported in July proved to be true. The system would be called the *Switch*, which was appropriate, because it was a hybrid system that switched between a console and a handheld. The Switch resembled a 7-inch tablet with wireless controllers, called *Joy-*



*Nintendo Switch with Joy-Cons attached*

*Cons*, which slid into each end of the unit. The unit could be played like a handheld with the Joy-Cons attached, or it could sit on its own and the gamer could play with the unattached Joy-Cons in his hands. In that event, the system could also be inserted into a “Switch Dock,” which connected to a television, and then a game could be played uninterrupted on a TV, just as with a standard console. For this television play, the unit would be packed with an accessory called the *Grip* that the Joy-Cons could be attached to, and which was held like a standard controller. It would be debatable whether the Switch could be considered a console or a handheld, but for game media, it would follow the lead of Nintendo’s handheld:<sup>20</sup> Like the 3DS, the Switch would utilize game cards instead of discs.

Tatsumi Kimishima’s vague statement in May, in which he’d said that the new console would “slow Wii U sales,” now made sense. In the eyes of many, the Switch was what the Wii U should have been: a console that could double as a handheld. The Wii U was such a device, albeit in a very limited capacity. Unfortunately, not all games supported the separate Wii U Gamepad, and those that did still had to be near the console in order to work.

However, revealing what the Switch was didn’t slow Wii U sales as Kimishima had predicted, because sales for the Wii U were already very slow. By the end of the year, Nintendo had sold less than 14 million units worldwide, making the Wii U the company’s worst-selling console. Its second worst, the GameCube, had sold almost 23 million units. The Wii U numbers weren’t bound wasn’t bound to change in the new year. Nintendo had announced that it wouldn’t be manufacturing or shipping any more Wii Us after the current fiscal year, which ended on March 31, 2017. By the end of 2016, store shelves had already been emptied of the unwanted console.<sup>21</sup>

Historically, the weeks leading up to Christmas are the most profitable for retailers and manufacturers alike. With the Switch not yet available and the Wii U practically dead in the water, Nintendo was still prepared for the holidays with a new console that it had announced in July. The *NES Classic Edition* was a plug-and-play version of the original NES, but on a much smaller scale. While looking exactly like an NES to the smallest detail, the unit could literally fit in the palm of someone’s hand. The console did not accept the original NES cartridges, or in fact any cartridges at all, but it had 30 classic NES titles built in. The unit had an HDMI output to TV and included a

controller that looked like the original, but could also plug into the Wii Remote and be used with the Virtual Console on the Wii and Wii U. A second controller was available for purchase separately. Nintendo stressed that the NES Classic could not connect to the Internet, and that games from the Virtual Console could not be downloaded onto it.

Nintendo also released the small NES plug-and-play in Europe, where it was called the *Nintendo Classic Mini*. It was also called the *Nintendo Classic Mini* in Japan, but that version of the console resembled a handheld version of the Famicom. It was packaged with two controllers, whereas the NES models only came with one.

The \$60 NES Classic was released during the second week of November. In general,



*Nintendo NES Classic Edition*



*Nintendo Classic Mini*

those who purchased it were very happy with it, with the one exception that the controller cable was too short and players had to sit directly in front of their TVs to play. That problem was quickly solved by third-party vendors, who began selling extension cables. However, this problem hadn't been experienced by most people who wanted NES Classics because they hadn't been able to find any; the units sold out almost as quickly as they had been made available.

This seemed to be a problem every time Nintendo released new hardware: limited supply and huge demand. It had last besieged the company two months earlier, during the release of the *Pokémon Go Plus*. However, the absent NES Classics affected many more people than the *Pokémon Go Plus*, especially considering that the shortage of this perfect Christmas present occurred close to the holidays. And as with so many console launches, the NES Classic began appearing on eBay at prices zeroing in on the \$200 mark. Although Nintendo promised a "steady flow of additional systems through the holiday shopping season and into the new year," these shipments were few and far between. It just became a matter of being in the right place at the right time. Some people complained that they had attempted to purchase the units online from sources such as Amazon and Best Buy as soon as they'd become available, only to receive a message that they were sold out before the ordering process was even completed. As the holidays grew closer and the units were nowhere to be found, more and more people gave in to the scalpers.<sup>22</sup>

### *Portable Plug-And-Plays*

While the NES Classic, might have been the most desirable, it was not the only new

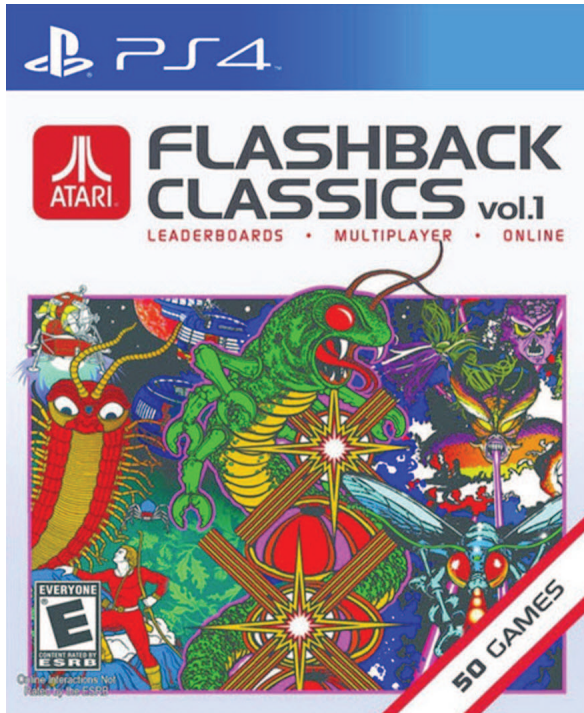
plug-and-play that came out near Christmas. On October 4, AtGames continued its yearly tradition of releasing a new Atari Flashback. The latest edition, the *Flashback 7*, was identical to its predecessor, except that it included one additional game, bringing the total to 101. The new game was *Frogger*, although it was neither the Parker Brothers nor the Starpath version that had been released for the original VCS in the early eighties. This new version was a faithful translation the original arcade game.<sup>23</sup> The Flashback 7 was sold with two wireless joystick controllers, although a deluxe edition with two hard-wired controllers was released a month later.

AtGames also offered a new MegaDrive/Genesis console featuring 80 games. As in the previous Sega consoles that AtGames had produced, half of the contents were original Sega games, while the other half were generic titles, trite games that had never been part of the Sega catalog. Unlike the NES Classic, neither the Atari nor Sega unit from AtGames had an HDMI output to a modern television. However, the Sega console did accept the original game cartridges.

AtGames also released a new edition of its Arcade Ultimate Portable, the Sega Genesis unit that had built-in games and also accepted additional games that were stored on an SD card. Like the AtGames console, the Arcade Ultimate Portable contained 40 legitimate games and 40 generics. The company also offered, for the first time ever, a portable unit that played Atari VCS games. The *Atari Flashback Portable* looked exactly like the Arcade Ultimate Portable, except that 60 Atari VCS games were built in. And unlike the console members of the Atari Flashback series, the Atari Flashback Portable allowed for adding more games via an SD card. Atari



AtGames Atari Flashback Portable



Atari Flashback Classics

VCS fans had been hoping for a portable version of the console ever since the release of the first Flashback in 2004. Now they finally got their wish.

People who wanted to try out VCS games weren't limited to the new Flashback units. Atari and AtGames made the games available for the PS4 and Xbox One as well. Two sets, *Atari Flashback Classics Volume 1* and *Atari Flashback Classics Volume 2*, were released on October 12 for both consoles. Each \$20 volume featured 50 games, with the majority from the VCS and a handful being arcade ports.

### *New Consoles and Features*

By the time the *Atari Flashback Classics* were released, some consumers were able to play them on brand-new consoles. On August 2, Microsoft had released a \$399 "special edition" of its Xbox One S, which contained 2 TB of storage. Two "standard" models followed on August 23, a 500 GB model that sold for \$299, and a 1 TB model that retailed at \$349. As promised earlier in the year, the consoles were much smaller than the Xbox One and were capable of playing 4K videos from either their 4K Ultra HD Blu-ray players or Netflix streams. While 4K games could not be played, HDR games were supported. The only problem was that there weren't any HDR games available at the time of the Xbox One S's release.<sup>24 25</sup> Despite its smaller size (or perhaps because of it), the new console did not require an external power supply as had its predecessor, which had used a power supply that was the size of a brick.



### *Microsoft Xbox One S*

One thing that didn't come with the Xbox One S was the nearly forgotten Kinect. In fact, the peripheral that Microsoft had wanted to be constantly joined to the original Xbox One could not even connect directly to the Xbox One S. For those who still intended to use their Kinects with their new consoles, Microsoft made available a \$40 adapter that could be used to attach a Kinect to either an Xbox One S or a PC.

The controller that came with the Xbox One S was slightly smaller than the one that was packaged with the Xbox One. The controller was white<sup>26</sup> to match the console, and its plastic was textured on the bottom to provide an improved feel. The D-pad was more responsive and it supported Bluetooth, which made the controller easier to pair up to a computer without the need of an adapter. This was especially important for people who wanted to download Xbox One games directly to their PCs. And they were able to do so shortly after the debut of the Xbox One S consoles. On September 12, Microsoft officially launched *Xbox Play Anywhere*, the service that permitted digital games to be played not only on an Xbox One, but also directly on a *Windows 10* PC without the need to stream them from the console. The console and PC both required special updates to enable the activation of Xbox Play Anywhere. The console update

occurred on July 30, and the PC one happened a few days later, on August 2.<sup>27</sup>

The press loved the Xbox One S, with many writing that it should have been the console that Microsoft originally released. However, they cautioned their readers about buying them. They wrote that there was no reason for an original Xbox One owner to purchase one. But if the new console was desired as a replacement, the reader was advised to wait for the release of Project Scorpio, whenever that might be. However, they encouraged people who were buying their first Xbox One console to go and purchase them.

On September 7, SIE unveiled its rivals to the Xbox One S and Project Scorpio. A new, smaller version of the PS4, dubbed the *PS4 Slim*, was released on September 15. Like the Xbox One S, the new PS4 was 40% smaller than the console that it replaced, and it shipped with a slightly updated DualShock 4 controller. Other than that, it was basically the same as the prior PS4, right down to the price. Like the model that had been introduced in 2015, the new PS4 retailed at \$300 and came with a 500 GB hard drive.



#### *SIE PS4 Slim*

The critics weren't as enthusiastic about the PS4 Slim as they had been about the Xbox One S. However, they provided the same advice. The PS4 Slim was good for people looking to buy PS4s for the first time, but PS4 owners didn't need to go out and replace them. If they were dead set about replacing them, they should wait for the PS4 Neo. And the wait for the PS4 Neo would be a lot shorter than the wait for Project Scorpio.

At its September 7 meeting, SIE announced that the official name of the PS4 Neo would be the *PS4 Pro*. Details about the new console were also revealed. It was scheduled for a November 10 release, with a \$400 price tag. The console would have a graphics-processing speed of 4.2 teraflops, which was more than twice the speed of what the PS4 Slim offered and slightly less than what Project Scorpio was rumored to provide. And unlike Project Scorpio and even the Xbox One S, the PS4 Pro would not include a 4K Ultra HD Blu-ray player. This meant that the console could not support 4K movies from physical sources. It was, however, capable of playing back 4K movies



### *SIE PS4 Pro*

streamed from Netflix and YouTube. Games were another story. The same games that had been designed for the PS4 could be used with the PS4 Pro, and special hardware and rendering techniques would upgrade them to 4K. SIE's excuse for not including the high-def Blu-ray player was that the PS4 Pro was a game machine, first and foremost. For the first time in many years, SIE was promoting its product as a gaming console, and not a general entertainment machine.

The PS4 Pro also supported HDR right out of the box, but HDR wasn't limited strictly to that console. On September 13, SIE issued an update to the firmware of the PS4 and PS4 Slim that provided HDR support. At that time, however, there weren't any games yet available that supported HDR. SIE was using the same approach as Microsoft: All games had to be playable on all formats of the PS4. However, games could be enhanced to maximize the new features on the PS4 Pro, as long as they were still playable on the PS4 and PS4 Slim. SIE didn't want people to have to repurchase games that they already owned just to get copies that had the 4K or HDR enhancements. So, when the PS4 Pro was released, patches for several games were also sent out to include the enhancements. SIE didn't require that games be enhanced, leaving that decision to the individual developers and publishers, which could issue patches to enhance just the resolution, just the high dynamic range or both.

Within three weeks of its release, SIE claimed that sales for the PS4 Pro were much higher than the company had anticipated. And it looked like first-time PS4 buyers were selecting the PS4 Pro over the PS4 Slim. One thing that was not known was whether another PlayStation platform that SIE released on October 13 was contributing to those PS4 Pro sales

This other platform was the \$400 PlayStation VR (PSVR), which SIE referred to as a console, and not an expensive peripheral. Upon its release, there was trepidation over whether the unit would succeed or not. The Oculus Rift and HTC Vive had both had hearty launches early in the year. But due to their success, they sold out quickly, and this led to a long period during which they were simply unavailable, causing consumer interest to greatly subside. Since Oculus and HTC wouldn't disclose their sales figures, a research firm called SuperData Research estimated that 243,000 Oculus Rift units and 420,000 HTC Vive headsets had been sold by the end of the year. SIE's goal was to sell

1 million PSVRs within six months; but because Andrew House, the head of SIE, was conservative about how many units should be initially manufactured, SIE ran into the same shortage problems as Oculus and HTC.<sup>28</sup>

Naturally, comparisons were made between the PSVR and its two more-expensive PC adversaries. While people found the quality of the graphics to be better on the Oculus Rift and the HTC Vive, they also felt that the PSVR was the lightest and most comfortable. One thing that made the PSVR light was that it didn't have built-in headphones. Instead, it included an audio jack, so players could plug in their own headphones, or use the set of earbuds that was included with the unit. The PSVR headset was also incapable of its own tracking, so it required the PlayStation Camera to assist in this feature. Additionally, the PSVR was designed so a player who wore glasses could also use the headset with ease.

The PSVR completely immersed people into the games. The DualShock 4 controllers that they held in their hands were simulated on their headset screen, so they could actually see what their in-game counterparts were holding. Some games required PlayStation Move controllers, and they too were simulated on the screen. But the resolution of the world that the gamers were immersed in was less than astounding, and those who were expecting graphics that equaled what the PS4 output to traditional displays may have been disappointed. While SIE was pushing the envelope with 4K games on its upcoming PS4 Pro, the standard PS4 delivered games in 1080p resolution. However, the PSVR only displayed them in 720p resolution.<sup>29</sup> And HDR, the latest new acronym in the console handbook, was non-existent. This lack of HDR caused problems for people who owned HDR-compliant televisions. This was because the PSVR was packaged with a *PSVR Processor Unit*, which was placed between the PS4 and the display devices. It was basically a splitter through which the video sent from the console was passed along to the TV and the VR headset. The only problem was that unlike the consoles themselves, the PSVR Processor Unit didn't support HDR. This was not a problem for people who didn't have HDR-compliant TVs. But it was a big deal for those who did. While it didn't matter that the headset could not receive an HDR signal, the fact that the TV couldn't either eliminated any reason to own an HDR-supported television in the first place. The only way these people could take advantage of the HDR enhancement, which was something that SIE was pushing by making it available for all of its PS4 consoles, was by disconnecting the PSVR Processor Unit and having the console send the signal directly to the television. Of course, the PSVR Processor Unit would have to be connected again when the gamer wanted to play virtual reality games.

In North America, 32 games that could use the PSVR were released on the same day that it launched, either in physical form or as digital downloads. Games that could be played on the PSVR came in three formats, and the packaging of the physical games easily let the consumer know which was which. First there were games that could only be played with the PSVR, and these were each designated as a "PLAYSTATION VR GAME" on the front of the packaging, beneath the PS4 logo. Then there were some titles that could be played on a TV in standard 2D, but featured a "VR mode". When this was activated, the game was played using the PSVR, and it took on a whole new dimension. Games with a VR mode were specified via the text "PLAYSTATION VR

MODE INCLUDED” beneath the PS4 logo. While many of the games that included the VR mode used it as a way to introduce people to virtual reality, one of the launch titles, *Rez Infinite*, was actually a fully blown VR game that could also be played on a TV. However, this update to the game, which had come out for the PS2 and Dreamcast in 2001, really shone in VR. Tetsuya Mizuguchi, the game’s producer, said that his original vision of the game was to “let players have the ability to look up, down and behind them, but the technology of 2001 prevented that.” Indeed, *Polygon* called *Rez Infinite* “one of the first masterpieces of VR.”



PlayStation VR Game

PlayStation VR Mode Included

The third type of game that could be played using the VR headset was a standard PS4 game. The PSVR included a “Cinematic Mode”, in which anything that could be displayed on the TV screen, including a Blu-ray or Netflix movie, could display through the VR headset. This would give the viewer the impression that he was watching the display on a very large screen that was right in front of him.<sup>30</sup> However, as the size of the displayed image increased, the gaps between the pixels would increase as well, causing the display to be more distorted than normal.<sup>31</sup>

One misconception about virtual reality was that it cut people off from the rest of the world. While that might have been somewhat true, since the player wasn’t aware of his actual surroundings while in a virtual world, he was still connected to the world. The PSVR included a feature called the “PSVR Social Screen.” This displayed everything that the player viewed through his VR glasses on the television that the PS4 was connected to, in full high resolution. Not only could others view what the PSVR player was seeing, but they could play against him if the game had been written for more than one player. And someone didn’t even have to be in the same room to compete with the virtual reality player. If it was an online game, then the player in the VR headset could play against anyone on the planet, even another person playing in virtual reality. One of the launch titles, *EVE: Valkyrie*, took this even one step further. It had originally been released for the Windows PC in March as an Oculus Rift launch title, but its developers, CCP Games, said later that the original plan was that the game could be played online between all three VR platforms. The release of the PSVR version achieved this goal. CCP Games then went the final mile by releasing the game for the HTC Vive on November 17.

### *History In Person*

Although the PSVR represented the first commercial virtual reality add-on for an existing videogame console, it was not the first virtual reality device created by a videogame company. Both Sega and Atari had attempted years earlier to release such products. Unfortunately, for various reasons, neither Sega’s VR headset nor Atari’s Jaguar VR had made it beyond the prototype stage.

These VR prototypes have fallen into private hands and are occasionally shown to the public. Some places where people showed off their exclusive, rare consoles and

games were at videogame conventions, such as *Classic Gaming Expo*, which had a room set aside for its popular *Videogame History Museum*. Eventually, this temporary exhibit, which was also shown at industry events such as E<sup>3</sup> and the GDC, finally transformed into a permanent brick-and-mortar structure. After several years in the planning stage, the *National Videogame Museum* in Frisco, Texas finally opened its doors on April 2.

Although there were other videogame museums in the country, such as the *International Center for the History of Electronic Games (ICHEG)*, they were each part of something else. The ICHEG was part of the Strong Museum, and while it could boast a large collection of videogame artifacts available for research, only a small percentage of its collection was on display for viewing on the museum floor. The National Videogame Museum had 10,400 square feet dedicated to its massive collection of videogame memorabilia on display. Among the features of the museum was the world's largest *Home Pong* console, a wall displaying a time-line of 50 consoles sold in North America, a section devoted to handheld games, another section exhibiting board games that had been inspired by videogames, and an arcade featuring games from the '70s and '80s. Finally, the museum had on display dozens of prototypes, including the Sega Neptune and the Atari Mindlink.



*NVM - World's Largest Home Pong Console*



*NVM - Videogame Inspired Boardgames*

### **Record Breaker**

While the National Videogame Museum claimed the world's largest *Home Pong* console, Bandai-Namco revealed its world's largest *Pac-Man* arcade machine in May. The \$11,000 machine consisted of two parts. One was a screen that measured 5.6' x 8.8' and was made up of thousands of multi-color LEDs. The second was a podium that stood 5¼' in front of the screen. This podium featured a pair of joysticks, to allow for two-player games. However, in addition to the classic game, in which the players alternated turns in order to try achieving the higher score, it also featured a unique cooperative mode, in which the two players worked together, with each controlling his own Pac-Man around the maze.

This new version of *Pac-Man* had an added attraction that wasn't available anywhere else. Bandai-Namco called it an interactive billboard. While the game was in the attract mode, the arcade operator could display up to three advertisements on the screen.



*World's Largest Pac-Man*

## *Rock Band Recovery*

Bandai-Namco figured out how to breathe new life into an old game. Mad Catz was not as fortunate. Its involvement in the rebirth of the *Rock Band* franchise did not help the company at all. Besides the suffering it underwent, due to poor sales of *Rock Band 4*, the money and attention that Mad Catz threw into the game caused other areas of its business to underperform. In February, following the game's disappointing sales, Mad Catz posted a quarterly net loss that was 75% greater than the same quarter's loss in 2014. Even worse, its six-month loss was 157% higher than during the same period in 2014. In monetary terms, Mad Catz went from a \$4.7-million-dollar profit in fiscal 2015 to a \$11.6-million-dollar loss during fiscal 2016, which ended on March 31.

Prior to the public announcement of this news, three of Mad Catz's top executives resigned from the company. In an attempt to save \$5 million a year, the company then laid off 37% of its employees.

Meanwhile, it was business as usual at Harmonix, which had been routinely providing patches for *Rock Band 4*. On March 1, the company announced that it wanted to produce the first-ever version of *Rock Band* for PCs, and started a 35-day crowd-funding campaign on *Fig*, in order to raise \$1.5 million dollars.<sup>32</sup> Harmonix also planned to have a new line of instrument controllers available in time for the 2016 holiday season, and the company expected that Mad Catz would create them. Unfortunately, Mad Catz, strapped for cash, couldn't undertake this assignment, especially since it had \$8.3 million of *Rock Band 4* inventory remaining in its warehouses.

On March 7, Harmonix terminated its contract with Mad Catz and signed a deal with peripheral manufacturer, Performance Designed Products (PDP), the company that had released the *Rock Band Stage Kit* in 2008. The termination of the Harmonix contract gave Mad Catz a 120-day wind-down period to sell its remaining inventory. After September 6, it would no longer have the license to do so.

Mad Catz did manage to sell all of the remaining *Rock Band 4* inventory before the end of the wind-down period, but the game didn't bring in as much revenue as the company had expected. On September 16, it announced that it had sold its Saitek division to Logitech for \$13 million. Saitek, which Mad Catz had purchased in 2007 for \$30 million, specialized in flight sticks and steering-wheel controllers for simulation games. On November 3, the company announced its fiscal 2017 second-quarter results, and exhibited optimism about its future.<sup>33</sup>

*Rock Band 4*'s new controllers from PDP were released on October 18, along with a \$30 expansion pack called *Rock Band Rivals*, which featured two new modes: a competitive mode called *Rivals* and a story mode called *Rockudrama*. The expansion set could be purchased alone, and the instruments that worked with *Rock Band 4* could be used. Or it could be purchased with the new controllers from PDP. This included a



### *PDP Rock Band Wired Legacy Adapter*

wireless drum kit that responded better than previous models to different strike strengths. The new *Fender Jaguar* guitar controller was also somewhat better than the Fender Stratocaster that Mad Catz had supplied. The controller buttons were redesigned so they didn't accidentally get pressed during game-play. And the neck folded over to make storage of the guitar easier, a first for a *Rock Band* instrument. However, many people may have preferred to keep their fake Fender Jaguars out on display when they weren't being used, so PDP sold a stand for the guitar to sit on, and which could recharge the guitar's batteries at the same time. The \$30 *Rock Band Fender Jaguar Guitar Controller Charger* was designed exclusively for that controller. Included with the charger was a battery pack, which replaced the two AA batteries normally required by the guitar. The charger connected to the battery pack, and LED lights in the charger indicated whether the unit was charging or completely charged.

On November 25, PDP released its \$30 *Rock Band Wired Legacy Adapter*. This item finally allowed people with the Xbox One version of *Rock Band 4* to use their wired legacy-instrument controllers, which couldn't be used with Mad Catz' Legacy Adapter. The Rock Band Wired Legacy Adapter was designed to work specifically with the Drum Rocker from ION.<sup>34</sup> It also supported the Xbox 360 Rock Band Midi Adapter, so any MIDI drum kits that worked with it could also be used with *Rock Band 4*. Finally, the Rock Band Wired Legacy Adapter supported PDP's own Rock Band Stage Kit.

The release of the Rock Band Wired Legacy Adapter was welcome news to people who had spent hundreds of dollars on equipment, only to discover that *Rock Band 4* had made it obsolete. However, not everyone who needed the adapter was happy. It was only available in North America, so anyone outside the continent who owned the wired Xbox 360 controllers appeared to be out of luck. But after December 19, less than a month after the adapter came out, they were joined by Americans, who soon



*PDP Rock Band Fender Jaguar with  
Rock Band Fender Jaguar Guitar  
Controller Charger*

discovered that the adapter was sold out everywhere. This wasn't widely reported by the press, especially since potential customers of the more popular NES Classic Edition were going through the same problem at the same time. But to those who had expected to easily find the adapter, this was of major concern.

A reason for the shortage was finally explained in an email from a PDP customer representative to a consumer who had inquired about the adapter being sold out: "The Rock Band Legacy Adapters will no longer be produced, as they were produced in limited quantity, per our agreement with Harmonix." Unfortunately, this had never been publicized. Many who missed out immediately went to the Harmonix forum sites to complain, and to promise that they would never again purchase another product from Harmonix or PDP.<sup>35</sup>

### *To Infinity and Be Gone!*

Mad Catz was not alone in experiencing poor sales. Even the mega-company Disney was feeling a pinch. On May 10, it reported its second-quarter and six months earnings for fiscal 2016, which had ended on April 2. Although the company's net revenues were higher than they had been for the same period a year earlier, the growth did not meet the company's expectations. And even though they thought that they had a good product in *Disney Infinity*, they were also very concerned about the volatile toys-to-life market. Disney didn't have enough confidence that the market would remain stable. The company announced that it would release two final playsets, *Alice Through the Looking Glass* and *Finding Dory*, and close its doors in June. *Finding Dory*, and the final *Disney Infinity* figure, Nemo, were released on June 24.

Along with the cancelation of *Disney Infinity*, Disney closed down the studio that had produced it, Avalanche Software, resulting in the loss of 300 jobs. Avalanche Software had been in business since 1995, and Disney had acquired them in 2005. But this was also the last remaining studio that was part of the Disney Interactive Studio umbrella that developed console games. Between 2008 and 2012, the company had lost over \$200 million per year and shut down three other studios under its control: Propaganda Games, Black Rock Studio and Junction Point Studios. And these closures all followed the shuttering of LucasArts, soon after Disney had purchased Lucasfilm. The sudden success of *Disney Infinity* merely postponed Avalanche Software's fate, and once Disney felt that the party was over, it abandoned ship as soon as possible. However, this didn't mean the end of all console games based on Disney properties. Once Disney Interactive Studio and Avalanche Software were shuttered, Disney announced that it would license out its properties for future games.

Avalanche Software wasn't the oldest software company that shut down during 2016. On December 8, Majesco closed its doors after more than 30 years in business. The company that had started by reissuing old games at discount prices, and which later manufactured the Sega Genesis 3, had found success with the Wii, thanks to the Cooking Mama series and a string of exercise games using licensed properties such as Jillian Michaels and Zumba. Unfortunately, as the Wii audience disappeared, so did Majesco's profits. In 2013, while the company geared itself to the mobile and digital market, it invested approximately \$4 million to purchase Orid Media Limited and Pariplay Limited, two online gambling companies. It was thus able to establish

a subsidiary called GMS Entertainment, which was set up to look into “emerging growth opportunities in the social and online casino gaming industry to supplement [the company’s] existing business.” Majesco also started another subsidiary called Midnight City, which was a publishing label that distributed downloadable content from independent developers.

In early 2014, Majesco announced a 64% drop in revenue and severed its relationship with Zumba, which left it without any forthcoming physical games. Instead, the company planned to concentrate on the digital releases from Midnight City, along with GMS Entertainment-based casino. However, Majesco continued to bleed cash and, in November of 2014, announced that its future was questionable after it had suffered major losses during the quarter that ended on July 31, 2014. The company sold its share of GMS Entertainment to raise much needed cash.

In March, 2015, it was revealed that development for *Gone Home*, a PC game that Midnight City had planned to release for consoles, was canceled because of Majesco’s financial problems. In August, 2015, Majesco replaced its CEO and trimmed its workforce down from 16 employees to only 5. It announced at that time that it would only distribute games digitally. Things began to turn around for the company after that. In January 2016, Midnight City released two new games, high-definition versions of *A Boy and His Blob* and *Gone Home*. The latter had been reported as cancelled nearly a year earlier. These would wind up being the final games of Majesco’s long history. On December 12, the company suddenly abandoned the videogame business when it merged with PolarityTE, a medical company that developed tissue-regeneration technology.

### ***Shown At the Show***

A company whose name had last been seen on a gaming console one year before Majesco was even established was all set to do it again. While the Coleco name had been licensed for several hand-held devices since 2005, the last time it had appeared on a console was in 1985, the ColecoVision’s was cancelled. That was alleged to change in 2016, with the release of the Coleco Chameleon, the revamped version of the Retro VGS that had caused much trepidation among retro-gamers in 2015. Although little had been said about the Chameleon, aside from its announcement, Mike Kennedy, whose company, Retro VGS, Inc. was developing the console, assured patrons that the Kickstarter campaign would begin following the console’s debut at the New York Toy Fair in February.

As promised, beginning on February 13, a working model of the Coleco Chameleon was shown at the Toy Fair, where it was seen by many people in the toy industry, including buyers from Toys ‘R’ Us, who had expressed an interest in carrying the \$150 console. However, a video of Mike Kennedy displaying the prototype was shown on his Facebook page, and the AtariAge forums became abuzz again. In the video, Kennedy was seen playing a multicart that included several SNES games. It was also noted that he was using an SNES controller. This led to speculation that there was an SNES 2 board hidden inside the Chameleon shell, rather than a unique, original board. One viewer also noticed that the power light on the “prototype” did not light up, even though the unit was obviously on. On February 26, the Kickstarter campaign scheduled to begin

on that day was suddenly canceled, as people demanded to see photos showing the inside of the console.

As with the Retro VGS, observers believed that the postponement of the campaign was due to Kickstarter's requirement of a working prototype. In answer to the accusations on AtariAge, the Chameleon team released a photo of a clear-shelled console with a circuit board inside. However, one sharp-eyed viewer actually recognized the "circuit board" as a capture card, which is normally used to record video onto a hard disk. Following this debacle, Coleco issued an ultimatum to Kennedy that if its own independent engineer couldn't verify a working prototype within seven days, it would wash its hands of the Chameleon altogether. Before the end of the seven-day period, Chris Cardillo, a partner with Coleco Holdings, announced that Retro VGS, Inc. had told him that they wouldn't provide a prototype "because it [was] not sufficient to demonstrate at [that] time." Coleco Holdings amicably terminated its agreement with Retro VGS, Inc., and the Retro VGS/Chameleon saga came to an end once and for all.

Nintendo completely dominated videogame news as the year came to an end. Its mobile games had begun with a bang, but before long, they sputtered. Its first entry in the plug-and-play market was an enormous success by all accounts, except that it couldn't be found anywhere. And the company was only months away from launching a totally new product that it hoped would have as big an impact as the Wii had.

The first VR headset for a console had been released, and now everybody looked ahead to what Microsoft would offer. What was in the pipeline with Project Scorpio and how would that play into SIE's future plans? And if it embraced virtual reality and most expected it would, would its VR system be competitive against SIE's?

Whatever the answers to these questions might have been, one thing was for certain: The videogame industry would continue to make more history.

# ENDNOTES

<sup>1</sup> Retailers such as Amazon sold the HTC Vive for a hundred dollars less than the suggested price.

<sup>2</sup> The HTC Vive was co-developed by HTC, a Chinese electronics company, and Valve.

<sup>3</sup> SCE announced on March 18 that it would offer a \$500 bundle that would include the camera and two Move controllers along with the headset.

<sup>4</sup> According to SCE, 36 million PS4 consoles had been sold to date, and all were capable of playing virtual reality games with the PSVR. Although there was no estimate of the number of high-end computers in use that could handle the Oculus Rift or the HTC Vive, most experts agreed that the number couldn't come close to that of the PS4s.

<sup>5</sup> 4K resolution is approximately four times the pixel size of 1080p, the current display standard for games. In 2016, as 4K Ultra High Definition monitors and televisions became more affordable, the console manufacturers scrambled to ensure that their systems were compatible. As it turned out, both the Xbox One and PS4 already supported the new standard, somewhat. Both systems could output data in 4K resolution, but only for personal contents, such as photos and videos -- not for games.

<sup>6</sup> HDR expanded the visual range of on-screen colors and contrasts. However, a monitor or television that supported the technology had to be used.

<sup>7</sup> This was, however, later retracted by Shannon Loftis, Microsoft's general manager of game publishing, who stated that exclusivity would be up to the individual game developers.

<sup>8</sup> Nintendo initially wanted to create a system that would only accept digital downloads, but later decided against it.

<sup>9</sup> *Miitomo* was similar to an earlier DS game called *Tomodachi Collection*, which had been released solely in Japan in 2009. Many of the developers who had worked on *Tomodachi Collection* were also involved with *Miitomo*.

<sup>10</sup> *Miitomo* and *My Nintendo* were launched outside of Japan in sixteen Western countries, including the United States and the United Kingdom, on March 31.

<sup>11</sup> The rest of the world received *Pokémon Go* between mid-July and early August.

<sup>12</sup> Niantic was an independent developer that was founded in 2010 as part of Google.

<sup>13</sup> A player could only enter a gym if he had reached Level 5 in the game and joined a team.

<sup>14</sup> The locations of PokéStops were determined by the locations of portals in Niantic's previous game, *Ingress*.

<sup>15</sup> Six of the 151 were originally thought to be unattainable, so a perfect set meant capturing 145 Pokémon. On July 24, Niantic's CEO, John Hanke, said at the San Diego Comic-Con, "There are some rare ones that haven't shown up yet that will be showing up." This presumably referred to the missing six Pokémon.

<sup>16</sup> An Android version was released worldwide on March 22, 2017.

<sup>17</sup> Nintendo wasn't alone in the fallout. DeNA's stock fell by 14% during the same period.

<sup>18</sup> One of the most successful freemium games, *Clash of Clans*, grossed nearly \$1 billion throughout the year.

<sup>19</sup> Nintendo's next mobile game, *Fire Emblem Heroes*, which was released on February 2, 2017, followed the freemium model.

<sup>20</sup> Nintendo officially stated that the Switch was a "home gaming system first and foremost."

<sup>21</sup> The Wii U was officially discontinued on January 31, 2017.

<sup>22</sup> Nintendo continued to issue sporadic, limited releases of the NES Classic well into April, 2017. Suddenly on April 13, Nintendo of America unexpectedly announced that it was discontinuing the console immediately.

This caused the selling price of the unit on eBay to rise sharply. The only reason given by Nintendo was that the unit was “never meant to be a ‘long-term product’” and that the “production of it was always meant to be limited.” Speculation of the cancelation presumed that Nintendo wanted to concentrate on Switch production, and that the company would be releasing an SNES Classic at the end of 2017. Nintendo confirmed neither of these rumors. Within days of the Nintendo of America announcement, Nintendo of Europe and Nintendo of Japan made similar announcements regarding their respective versions of the console. Nintendo disclosed that 2.3 million consoles had been sold worldwide during the six months of availability.

<sup>23</sup> The Flashback 7 version of *Frogger* did not include the familiar *Frogger* background music, because Konami had never owned the rights to it.

<sup>24</sup> The first Xbox One game that supported HDR was *NBA 2K17*, which was released on September 20.

<sup>25</sup> Another potential problem was that the HDR standard that Microsoft selected was HDR10, which was a relatively new standard that wasn’t yet found on many television sets.

<sup>26</sup> Microsoft called the color *Robot White*.

<sup>27</sup> Xbox Play Anywhere didn’t just permit Xbox One games to play on a PC. It also allowed for cross-console play. A game played on the console could be continued on a PC and *vice versa*.

<sup>28</sup> SIE eventually met its initial sales goal. It had sold 915,000 PSVRs by February 19, 2017.

<sup>29</sup> The PS4 Pro would be able to increase the PSVR’s resolution to 1080p. However, not all games could achieve this resolution, even when played on the PS4 Pro. Only PS4 Pro-supported PSVR titles could improve the resolution, frame rates and textures, and provide clearer text.

<sup>30</sup> Users could choose from three sizes for their virtual screens in Cinematic Mode: large resolution simulated a 226-inch screen, medium simulated a 163-inch display, and the small setting simulated a 117 inch TV.

<sup>31</sup> This is known as the *screen door effect*.

<sup>32</sup> The campaign ended on April 5 after raising only 52% of its goal.

<sup>33</sup> Mad Catz filed for Chapter 7 bankruptcy on March 30, 2017.

<sup>34</sup> The Drum Rocker was a professional, high-quality, \$300 drum kit manufactured by Ion Audio for the PS3 and Xbox 360 versions of *Rock Band* and *Rock Band 2*. In 2008, it was named the Best Peripheral/Hardware at the Game Critics Awards.

<sup>35</sup> PDP again offered the Rock Band Wired Legacy Adapter in mid-April, 2017 through its website. However, only 150 were available and they sold out within two hours. Afterwards, PDP received sporadic shipments until May 10.