Video game

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A **video game** is an electronic game that involves human interaction with a user interface to generate visual feedback on a video device. The word *video* in *video game* traditionally referred to a raster display device,[1] but it now implies any type of display device that can produce two or three dimensional images. The electronic systems used to play video games are known as platforms; examples of these are personal computers and video game consoles. These platforms range from large mainframe computers to small handheld devices. Specialized video games such as arcade games, while previously common, have gradually declined in use. Video games have gone on to become an art form and industry.

The input device primarily used to manipulate video games is called a game controller, and varies across platforms. For example, a controller might consist of only a button and a joystick, while another may feature a dozen buttons and one or more joysticks. Early personal computer games often needed a keyboard for gameplay, or more commonly, required the user to buy a separate joystick with at least one button.[2] Many modern computer games allow or require the player to use a keyboard and a mouse simultaneously. A few of the most common game controllers are gamepads, mouses, keyboards, and joysticks.

Video games typically use additional means of providing interactivity and information to the player. Audio is almost universal, using sound reproduction devices, such as speakers and headphones. Other feedback may come via haptic peripherals, such as vibration or force feedback, with vibration sometimes used to simulate force feedback.

In the early days of cartridge consoles, they were sometimes called **TV games**.

Contents

History

Main article: History of video games

See also: First video game

Early games used interactive electronic devices with various display formats. The earliest example is from 1947—a "Cathode ray tube Amusement Device" was filed for a patent on 25 January 1947, by Thomas T. Goldsmith Jr. and Estle Ray Mann, and issued on 14 December 1948, as U.S. Patent 2455992.[3]

Inspired by radar display tech, it consisted of an analog device that allowed a user to control a vector-drawn dot on the screen to simulate a missile being fired at targets, which were drawings fixed to the screen.[4]

Other early examples include:

Tennis for Two, an early analog computer game that used an oscilloscope for a display

- The Nimrod computer at the 1951 Festival of Britain
- *OXO* a tic-tac-toe Computer game by Alexander S. Douglas for the EDSAC in 1952
- *Tennis for Two*, an electronic interactive game engineered by William Higinbotham in 1958
- *Spacewar!*, written by MIT students Martin Graetz, Steve Russell, and Wayne Wiitanen's on a DEC PDP-1 computer in 1961.

Each game used different means of display: NIMROD used a panel of lights to play the game of Nim,[5] OXO used a graphical display to play tic-tac-toe[6] *Tennis for Two* used an oscilloscope to display a side view of a tennis court,[4] and *Spacewar!* used the DEC PDP-1's vector display to have two spaceships battle each other.[7]

In 1971, *Computer Space*, created by Nolan Bushnell and Ted Dabney, was the first commercially sold, coin-operated video game. It used a black-and-white television for its display, and the computer system was made of 74 series TTL chips.[8] The game was featured in the 1973 science fiction film *Soylent Green*. *Computer Space* was followed in 1972 by the Magnavox Odyssey, the first home console. Modeled after a late 1960s prototype console developed by Ralph H. Baer called the "Brown Box", it also used a standard

television.[4][9] These were followed by two versions of Atari's *Pong*; an arcade version in 1972 and a home version in 1975 that dramatically increased video game popularity.[10] The commercial success of *Pong* led numerous other companies to develop *Pong* clones and their own systems, spawning the video game industry.[11]

A flood of *Pong* clones eventually led to the video game crash of 1977, which came to an end with the mainstream success of Taito's 1978 shooter game *Space Invaders*,[12] marking the beginning of the golden age of arcade video games and inspiring dozens of manufacturers to enter the market.[12][13] The game inspired arcade machines to become prevalent in mainstream locations such as shopping malls, traditional storefronts, restaurants, and convenience stores.[14] The game also became the subject of numerous articles and stories on television and in newspapers and magazines, establishing video gaming as a rapidly growing mainstream hobby.[15][16] *Space Invaders* was soon licensed for the Atari VCS (later known as Atari

Nolan Bushnell at the Game Developers Conference in 2011

2600), becoming the first "killer app" and quadrupling the console's sales.[17] This helped Atari recover from their earlier losses,[18] and in turn the Atari VCS revived the home video game market during the second generation of consoles, up until the North American video game crash of 1983.[19] The home video game industry was revitalized shortly afterwards by the widespread success of the Nintendo Entertainment System,[20] which marked a shift in the dominance of the video game industry from the United States to Japan during the third generation of consoles.[21]

Overview

Platforms

See also: History of video games

The term "platform" refers to the specific combination of electronic components or computer hardware which, in conjunction with software, allows a video game to operate.[22] The term "system" is also commonly used.

In common use a "PC game" refers to a form of media that involves a player interacting with an IBM PC compatible personal computer connected to a video monitor. A "console game" is played on a specialized electronic device that connects to a common television set or composite video monitor. A "handheld" gaming device is a self-contained electronic device that is portable and can be held in a user's hands. "Arcade game" generally refers to a game played on an even more specialized type of electronic device that is typically designed to play only one game and is encased in a special cabinet. These distinctions are not always clear and there may be games that bridge one or more platforms. In addition to personal computers, there are multiple other devices which have the ability to play games but are not dedicated video game machines, such as mobile phones, PDAs and graphing calculators.

With the advent of social networking and other online applications hubs, the term "platform" started being used to refer to the online service within which the game is played, regardless of the actual hardware on which it is executed. A game's platform could simply be "Facebook", whether it is played on a Windows PC, Mac, Smart TV, or smartphone.

Genres

A video game, like most other forms of media, may be categorized into genres based on many factors such as method of game play, types of goals, art style, interactivity and more. Because genres are dependent on content for definition, genres have changed and evolved as newer styles of video games have come into existence. Ever advancing technology and production values related to video game development have fostered more lifelike and complex games which have in turn introduced or enhanced genre possibilities (e.g., virtual pets), pushed the boundaries of existing video gaming or in some cases add new possibilities in play (such as that seen with titles specifically designed for devices like Sony's EyeToy). Some genres represent combinations of others, such as massively multiplayer online role-playing games, or, more commonly, MMORPGs. It is also common to see higher level genre terms that are collective in nature across all other genres such as with action, music/rhythm or horror-themed video games.

Classifications

Casual games

Casual games derive their name from their ease of accessibility, simple to understand gameplay and quick to grasp rule sets. Additionally, casual games frequently support the ability to jump in and out of play on demand. Casual games as a format existed long before the term was coined and include video games such as Solitaire or Minesweeper which can commonly be found pre-installed with many versions of the Microsoft Windows operating system.

Examples of genres within this category are hidden object, match three, time management, tetris or many of the tower defense style games. Casual games are generally sold through online retailers such as PopCap, Zylom, Vans Video Games and GameHouse or provided for free play through web portals such as Newgrounds.

While casual games are most commonly played on personal computers, cellphones or PDAs, they can also be found on many of the on-line console system download services (e.g., Xbox Live, PlayStation Network, or WiiWare).

Serious games

Serious games are games that are designed primarily to convey information or a learning experience of some sort to the player. Some serious games may even fail to qualify as a video game in the traditional sense of the term. Educational software does not typically fall under this category (e.g., touch typing tutors, language learning, etc.) and the primary distinction would appear to be based on the title's primary goal as well as target age demographics. As with the other categories, this description is more of a guideline than a rule.

Serious games are games generally made for reasons beyond simple entertainment and as with the core and casual games may include works from any given genre, although some such as exergames, educational games, or propaganda games may have a higher representation in this group due to their subject matter. These games are typically designed to be played by professionals as part of a specific job or for skill set improvement. They can also be created to convey social-political awareness on a specific subject.

One of the longest running serious games franchises would be Microsoft Flight Simulator first published in 1982 under that name. The United States military uses virtual reality based simulations, such as VBS1 for training exercises,[23] as do a growing number of first responder roles (e.g., police, fire fighter, EMT).[24] One example of a non-game environment utilized as a platform for serious game development would be the virtual world of *Second Life*, which is currently used by several United States governmental departments (e.g., NOAA, NASA, JPL), Universities (e.g., Ohio University, MIT) for educational and remote learning programs[25] and businesses (e.g., IBM, Cisco Systems) for meetings and training.[26]

Tactical media in video games plays a crucial role in making a statement or conveying a message on important relevant issues. This form of media allows for a broader audience to be able to receive and gain access to certain information that otherwise may not have reached such people. An example of tactical media in video games would be newsgames. These are short games related to contemporary events designed to illustrate a point.[27] For example, Take Action Games is a game studio collective that was co-founded by Susana Ruiz and has made successful serious games. Some of these games include *Darfur is Dying*, *Finding Zoe*, and *In The Balance*. All of these games bring awareness to important issues and events in an intelligent and well thought out manner.[28]

Educational games

See also: Educational software

On 23 September 2009, U.S. President Barack Obama launched a campaign called "Educate to Innovate" aimed at improving the technological, mathematical, scientific and engineering abilities of American students. This campaign states that it plans to harness the power of interactive games to help achieve the goal of students excelling in these departments.[29][30] This campaign has stemmed into many new opportunities for the video game realm and has contributed to many new competitions. Some of these competitions include the Stem National Video Game Competition and the Imagine Cup.[31][32] Both of these examples are events that bring a focus to relevant and important current issues that are able to be addressed in the sense of video games to educate and spread knowledge in a new form of media. www.NobelPrize.org uses games to entice the user to learn about information pertaining to the Nobel prize achievements while engaging in a fun to play video game.[33] There are many different types and styles of educational games all the way from counting to spelling to games for kids and games for adults. Some other games do not have any particular targeted audience in mind and intended to simply educate or inform whoever views or plays the game.
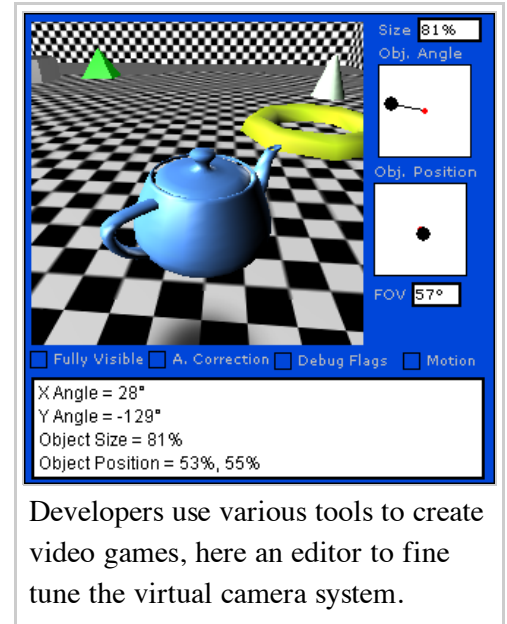
Development

Main article: Game development

See also: Video game industry practices

Video game development and authorship, much like any other form of entertainment, is frequently a cross-disciplinary field. Video game developers, as employees within this industry are commonly referred, primarily include programmers and graphic designers. Over the years this has expanded to include almost every type of skill that one might see prevalent in the creation of any movie or television program, including sound designers, musicians, and other technicians; as well as skills that are specific to video games, such as the game designer. All of these are managed by producers.

In the early days of the industry, it was more common for a single person to manage all of the roles needed to create a video game. As platforms have become more complex and powerful in the type of material they can present, larger teams have been needed to generate all of the art, programming, cinematography, and more. This is not to say that the age of the "one-man shop" is gone, as this is still sometimes found in the casual gaming and handheld markets,[34] where smaller games are prevalent due to technical limitations such as limited RAM or lack of dedicated 3D graphics rendering capabilities on the target platform (e.g., some cellphones and PDAs).[citation needed]

Developers use various tools to create video games, here an editor to fine tune the virtual camera system.

With the growth of the size of development teams in the industry, the problem of cost has increased. Development studios need to be able to pay their staff a competitive wage in order to attract and retain the best talent, while publishers are constantly looking to keep costs down in order to maintain profitability on their investment. Typically, a video game console development team can range in sizes of anywhere from 5 to 50 people, with some teams exceeding 100. In May 2009, one game project was reported to have a development staff of 450.[35] The growth of team size combined with greater pressure to get completed projects into the market to begin recouping production costs has led to a greater occurrence of missed deadlines, rushed games and the release of unfinished products.[citation needed]

Downloadable content

Main article: Downloadable content

A phenomenon of additional game content at a later date, often for additional funds, began with digital video game distribution known as downloadable content (DLC). Developers can use digital distribution to issue new storylines after the main game is released, such as Rockstar Games with *Grand Theft Auto IV* (*The Lost and Damned* and *The Ballad of Gay Tony*), or Bethesda with *Fallout 3* and its expansions. New gameplay modes can also become available, for instance, *Call of Duty* and its zombie modes,[36][37][38] a multiplayer mode for *Mushroom Wars* or a higher difficulty level for *Metro: Last Light*. Smaller packages of DLC are also common, ranging from better in-game weapons (*Dead Space*, *Just Cause 2*), character outfits (*LittleBigPlanet*, or new songs to perform *SingStar*, *Rock Band*, *Guitar Hero*).

Modifications

Main article: Mod (computer gaming)

Many games produced for the PC are designed such that technically oriented consumers can modify the game. These mods can add an extra dimension of replayability and interest. Developers such as id Software, Valve Software, Crytek, Bethesda, Epic Games and Blizzard Entertainment ship their games with some of the development tools used to make the game, along with documentation to assist mod developers. The Internet provides an inexpensive medium to promote and distribute mods, and they may be a factor in the commercial success of some games.[39] This allows for the kind of success seen by popular mods such as the *Half-Life* mod *Counter-Strike*.

Cheating

Main article: Cheating (video games)

Cheating in computer games may involve cheat codes and hidden spots implemented by the game developers,[40][41] modification of game code by third parties,[42][43] or players exploiting a software glitch. Modifications are facilitated by either cheat cartridge hardware or a software trainer.[42] Cheats usually make the game easier by providing an unlimited amount of some resource; for example weapons, health, or ammunition; or perhaps the ability to walk through walls.[41][42] Other cheats might give access to otherwise unplayable levels or provide unusual or amusing features, like altered game colors or other graphical appearances.

Glitches

Main article: Glitch

Software errors not detected by software testers during development can find their way into released versions of computer and video games. This may happen because the glitch only occurs under unusual circumstances in the game, was deemed too minor to correct, or because the game development was hurried to meet a publication deadline. Glitches can range from minor graphical errors to serious bugs that can delete saved data or cause the game to malfunction. In some cases publishers will release updates (referred to as *patches*) to repair glitches. Sometimes a glitch may be beneficial to the player, these are often referred to as exploits.

Easter eggs

Easter eggs are hidden messages or jokes left in games by developers that are not part of the main game.

Theory

Main article: Game studies

Although departments of computer science have been studying the technical aspects of video games for years, theories that examine games as an artistic medium are a relatively recent development in the humanities. The two most visible schools in this emerging field are ludology and narratology. Narrativists approach video games in the context of what Janet Murray calls "Cyberdrama". That is to say, their major concern is with video games as a storytelling medium, one that arises out of interactive fiction. Murray puts video games in the context of the Holodeck, a fictional piece of technology from *Star Trek*, arguing for the video game as a

medium in which we get to become another person, and to act out in another world.[44] This image of video games received early widespread popular support, and forms the basis of films such as *Tron*, *eXistenZ* and *The Last Starfighter*.

Ludologists break sharply and radically from this idea. They argue that a video game is first and foremost a game, which must be understood in terms of its rules, interface, and the concept of play that it deploys. Espen J. Aarseth argues that, although games certainly have plots, characters, and aspects of traditional narratives, these aspects are incidental to gameplay. For example, Aarseth is critical of the widespread attention that narrativists have given to the heroine of the game *Tomb Raider*, saying that "the dimensions of Lara Croft's body, already analyzed to death by film theorists, are irrelevant to me as a player, because a different-looking body would not make me play differently... When I play, I don't even see her body, but see through it and past it."[45] Simply put, ludologists reject traditional theories of art because they claim that the artistic and socially relevant qualities of a video game are primarily determined by the underlying set of rules, demands, and expectations imposed on the player.

While many games rely on emergent principles, video games commonly present simulated story worlds where emergent behavior occurs within the context of the game. The term "emergent narrative" has been used to describe how, in a simulated environment, storyline can be created simply by "what happens to the player."[46] However, emergent behavior is not limited to sophisticated games. In general, any place where event-driven instructions occur for AI in a game, emergent behavior will exist. For instance, take a racing game in which cars are programmed to avoid crashing, and they encounter an obstacle in the track: the cars might then maneuver to avoid the obstacle causing the cars behind them to slow and/or maneuver to accommodate the cars in front of them and the obstacle. The programmer never wrote code to specifically create a traffic jam, yet one now exists in the game.

Social aspects

Demographics

The November 2005 Nielsen Active Gamer Study, taking a survey of 2,000 regular gamers, found that the U.S. games market is diversifying. The age group among male players has expanded significantly in the 25–40 age group. For casual online puzzle-style and simple mobile cell phone games, the gender divide is more or less equal between males and females. Females have also been found to show an attraction to online multi-player games where there is a communal experience.[*citation needed*] More recently there has been a growing segment of female players engaged with the aggressive style of games historically considered to fall within traditionally male genres (e.g., first-person shooters). According to the ESRB almost 41% of PC gamers are women[47] (see Girl gamer).

When comparing today's industry climate with that of 20 years ago, women and many adults are more inclined to be using products in the industry. While the market for teen and young adult men is still a strong market, it is the other demographics which are posting significant growth. The Entertainment Software Association (ESA) provides the following summary for 2011 based on a study of almost 1,200 American households carried out by Ipsos MediaCT:[48]

- The average gamer is 30 years old and has been playing for 12 years. Eighty-two percent of gamers are 18 years of age or older.
- Forty-two percent of all players are women and women over 18 years of age are one of the industry's

fastest growing demographics.

- Today, adult women represent a greater portion of the game-playing population (37 percent) than boys age 17 or younger (13 percent).
- Twenty-nine percent of game players are over the age of 50, an increase from nine percent in 1999.
- Sixty-five percent of gamers play games with other gamers in person.
- Fifty-five percent of gamers play games on their phones or handheld device.

A 2006 academic study, based on a survey answered by 10,000 gamers, identified the gaymers (gamers that identify as gay) as a demographic group.[49][50][51] A follow-up survey in 2009 studied the purchase habits and content preferences of people in the group.[52][53][54]

Based on the study by NPD group in 2011, about 91 percent of kids aged 2–17 play games.[55]

Multiplayer

Main article: Multiplayer video game

Video gaming has traditionally been a social experience. Multiplayer video games are those that can be played either competitively, sometimes in Electronic Sports, or cooperatively by using either multiple input devices, or by hotseating. *Tennis for Two*, arguably the first video game, was a two player game, as was its successor *Pong*. The first commercially available game console, the Magnavox Odyssey, had two controller inputs.

Since then, most consoles have been shipped with two or four controller inputs. Some have had the ability to expand to four, eight or as many as 12 inputs with additional adapters, such as the Multitap. Multiplayer arcade games typically feature play for two to four players, sometimes tilting the monitor on its back for a top-down viewing experience allowing players to sit opposite one another.

Many early computer games for non-PC descendant based platforms featured multiplayer support. Personal computer systems from Atari and Commodore both regularly featured at least two game ports. PC-based computer games started with a lower availability of multiplayer options because of technical limitations. PCs typically had either one or no game ports at all. Network games for these early personal computers were generally limited to only text based adventures or MUDs that were played remotely on a dedicated server. This was due both to the slow speed of modems (300-1200-bit/s), and the prohibitive cost involved with putting a computer online in such a way where multiple visitors could make use of it. However, with the advent of widespread local area networking technologies and Internet based online capabilities, the number of players in modern games can be 32 or higher, sometimes featuring integrated text and/or voice chat. MMOs can offer extremely high numbers of simultaneous players; *Eve Online* set a record with 54,446 players on a single server in 2010.[56]

Behavioral effects

Main article: Video game behavioral effects

It has been shown that action video game players have better hand-eye coordination and visuo-motor skills, such as their resistance to distraction, their sensitivity to information in the peripheral vision and their ability to count briefly presented objects, than nonplayers.[57]

Researchers found that such enhanced abilities could be acquired by training with action games, involving challenges that switch attention between different locations, but not with games requiring concentration on single objects. It has been suggested by a few studies that online/offline video gaming can be used as a therapeutic tool in the treatment of different mental health concerns.

In Steven Johnson's book, *Everything Bad Is Good for You*, he argues that video games in fact demand far more from a player than traditional games like *Monopoly*. To experience the game, the player must first determine the objectives, as well as how to complete them. They must then learn the game controls and how the human-machine interface works, including menus and HUDs. Beyond such skills, which after some time become quite fundamental and are taken for granted by many gamers, video games are based upon the player navigating (and eventually mastering) a highly complex system with many variables. This requires a strong analytical ability, as well as flexibility and adaptability. He argues that the process of learning the boundaries, goals, and controls of a given game is often a highly demanding one that calls on many different areas of cognitive function. Indeed, most games require a great deal of patience and focus from the player, and, contrary to the popular perception that games provide instant gratification, games actually delay gratification far longer than other forms of entertainment such as film or even many books.[58] Some research suggests video games may even increase players' attention capacities.[59]

Learning principles found in video games have been identified as possible techniques with which to reform the U.S. education system.[60] It has been noticed that gamers adopt an attitude while playing that is of such high concentration, they do not realize they are learning, and that if the same attitude could be adopted at school, education would enjoy significant benefits.[61] Students are found to be "learning by doing" while playing video games while fostering creative thinking.[62]

The U.S. Army has deployed machines such as the PackBot and UAV vehicles, which make use of a game-style hand controller to make it more familiar for young people.[63]

According to research discussed at the 2008 Convention of the American Psychological Association, certain types of video games can improve the gamers' dexterity as well as their ability to problem-solve. A study of 33 laparoscopic surgeons found that those who played video games were 27 percent faster at advanced surgical procedures and made 37 percent fewer errors compared to those who did not play video games. A second study of 303 laparoscopic surgeons (82 percent men; 18 percent women) also showed that surgeons who played video games requiring spatial skills and hand dexterity and then performed a drill testing these skills were significantly faster at their first attempt and across all 10 trials than the surgeons who did not play the video games first.[64]

The research showing benefits from action games has been questioned due to methodological shortcomings, such as recruitment strategies and selection bias, potential placebo effects, and lack of baseline improvements in control groups.[65] In addition, many of the studies are cross-sectional, and of the longitudinal interventional trials, not all have found effects.[65] A response to this pointed out that the skill improvements from action games are more broad than predicted, such as mental rotation, which is not a common task in action games.[66]

Controversy

Main article: Video game controversy

Like related forms of media, computer and video games have been the subject of frequent controversy and censorship, due to the depiction of graphic violence, sexual themes, advergaming (a form of advertising in games), consumption of drugs, consumption of alcohol or tobacco, propaganda, or profanity in some games. Among others, critics of video games often include parents' groups, politicians, organized religious groups, and other advocacy groups. Various games have been accused of causing addiction and even violent behavior,[67][68] though how much ground this holds is debatable.[69][70] "Video game censorship" is defined as the use of state or group power to control the playing, distribution, purchase, or sale of video games or computer games. Video game controversy comes in many forms, and censorship is a controversial subject. Proponents and opponents of censorship are often very passionate about their individual views. However, there has not been substantial evidence against or in favor of showing a positive correlation between video games and acts such as killing.

Various national content rating organizations, such as the Entertainment Software Ratings Board or ESRB in North America, rate software for certain age groups and with certain content warnings. Some of these organizations are optional industry self-regulation (such as the ESRB), while others are part of national government censorship organizations(such as the BBFC). Most video games display their rating on the front side of their packaging. However, parents are not always aware of the existence of these ratings. Not all ratings are considered accurate. Organizations such as *What They Play* and *Common Sense Media* aim to provide guidance and advice for parents.[71]

Ratings and censorship

ESRB

The Entertainment Software Rating Board (ESRB) gives video games maturity ratings based on their content. For example, a game might be rated *T* for *Teen* if the game contained obscene words or violence. If a game contains explicit violence or sexual themes, it is likely to receive an *M* for *Mature* rating, which means that no one under 17 should play it. There is a rated "A/O" games for "Adults Only" these games have massive violence or nudity. There are no laws that prohibit children from purchasing "M" rated games in the United States. Laws attempting to prohibit minors from purchasing "M" rated games were established in California, Illinois, Michigan, Minnesota, and Louisiana, but all were overturned on the grounds that these laws violated the First Amendment.[72] However, many stores have opted to not sell such games to children anyway. Of course, video game laws vary from country to country. One of the most controversial games of all time, *Manhunt 2* by Rockstar Studios, was given an AO rating by the ESRB until Rockstar could make the content more suitable for a mature audience.

Video game manufacturers usually exercise tight control over the games that are made available on their systems, so unusual or special-interest games are more likely to appear as PC games. Free, casual, and browser-based games are usually played on available computers, mobile phones, or PDAs.

PEGI

Pan European Game Information (PEGI) is a system that was developed to standardize the game ratings in all of Europe (not just European Union, although the majority are EU members), the current members are: all EU members, except Germany and the 10 accession states; Norway; Switzerland. Iceland is expected to join soon,

as are the 10 EU accession states. For all PEGI members, they use it as their sole system, with the exception of the UK, where if a game contains certain material,[73] it must be rated by BBFC. The PEGI ratings are legally binding in Vienna and it is a criminal offence to sell a game to someone if it is rated above their age.[74]

Germany: BPjM and USK

Stricter game rating laws mean that Germany does not operate within the PEGI. Instead, they adopt their own system of certification which is required by law. The Unterhaltungssoftware Selbstkontrolle (*USK* or Voluntary Certification of Entertainment Software) checks every game before release and assigns an age rating to it – either none (white), 6 years of age (yellow), 12 years of age (green), 16 years of age (blue) or 18 years of age (red). It is forbidden for anyone, retailers, friends or parents alike, to allow a child access to a game for which he or she is underage. If a game is particularly violent, it may be referred to the BPjM (*Bundesprüfstelle für jugendgefährdende Medien* – Federal Verification Office for Child-Endangering Media) who may opt to place it on the *Index* upon which the game may not be sold openly or advertised in the open media. Unofficially, the titles are not "banned" – adult gamers are still technically free to obtain the titles by other means, although it is still considered a felony to supply these titles to a child

Commercial aspects

Game sales

See also: Video game industry, List of best-selling video games, and Golden age of arcade video games

The three largest producers of and markets for computer and video games (in order) are North America (US and Canada), Japan and the United Kingdom. Other significant markets include Australia, Spain, Germany, South Korea, Mexico, France and Italy.[75] Both India and China are considered emerging markets in the video game industry and sales are expected to rise significantly in the coming years. Irish are the largest per capita consumers of video games.[76]

A typical retail display (in Geneva, Switzerland) with a large selection of games for several major consoles

Sales of different types of games vary widely between these markets due to local preferences. Japanese consumers tend to purchase much more console games than computer games, with a strong preference for games catering to local tastes. Another key difference is that, despite the decline of arcades in the Western world (see Golden age of video arcade games), arcade games remain the largest sector of the Japanese gaming industry. As of 2009, the Japanese gaming industry is worth $20 billion, including $6 billion from arcades, $3.5 billion from console game sales, and $2 billion from mobile game sales.[77] In South Korea, computer games are generally preferred over console games, especially MMORPG games and real-time strategy games. There are over 20,000 Internet cafés in South Korea where computer games can be played for an hourly charge. Computer games are also popular in China, which has a PC gaming industry worth $6 billion, the largest in the world.[78] Arcade games are also still a thriving industry in China, though console games have been banned in the country since the early 2000s.[79]

The NPD Group tracks computer and video game sales in the United States. It reported in 2004 that:

- Console and portable software sales: $6.2 billion, up 8% from 2003[80]
- Console and portable hardware and accessory sales: $3.7 billion, down 35% from 2003[80]
- PC game sales: $1.1 billion, down 15% from 2006[81]

PC games that are digitally distributed either directly or by networks such as Steam are not tracked by the NPD, and Valve does not list sales numbers for games downloaded through their service. Unauthorized distribution is also rampant on the PC.[82] Another growing factor that is difficult to account for is the expansion and popularity of independent games, which typically bypass traditional developer/publisher relationships to instead market directly to the consumer.

These figures are sales in dollars, not units, Unit shipments for each category were higher than the dollar sales numbers indicate, because more software and hardware was discounted than in 2003. But with the release of the next-generation consoles in 2006, these numbers increased dramatically. The game and film industries are also becoming increasingly intertwined, with companies like Sony having significant stakes in both. A large number of summer blockbuster films spawn a companion game, often launching at the same time to share the marketing costs.

The global market for console games has seen an average of 6.9 percent compound annual growth rate and is expected to become a $34.7 billion market in 2012.Online game sales are expected to grow at a larger rate of 16.9 percent, escalating from $6.6 billion in 2008 to $14.4 billion by 2012. The largest channel for growth, however, is in mobile gaming with a growth rate of 19 percent; estimated to grow from $5.6 billion in 2008 to $13.5 billion in four years.[83]

Criticism

See also: Video game criticism

Video games have the problem of regional lockout. In Australia, while most DVD players are sold region-free to accommodate local consumer rights legislation,[84] video game consoles are still sold fully region protected. Some effort has been made to increase awareness of the issue, specifically to Nintendo of Australia,[85] in the form of a formal report outlining the issues, published by Aaron Rex Davies.[86] The report has gone on to gain a lot of attention in the public media.[87]

Museums

There are many video game museums around the world, including the Museum of Soviet Arcade Machines in Moscow[88][89] and the Computer Game Museum in Berlin.[90] The Museum of Art and Digital Entertainment in Oakland, California is a dedicated video game museum focusing on playable exhibits of console and computer games.[91] The Video Game Museum in Rome is also dedicated to preserving videogames and their history.[92] The International Center for the History of Electronic Games at The Strong in Rochester, New York contains one of the largest collections of electronic games and game-related historical materials in the world, including a 5,000-square-foot (460 m^2) exhibit which allows guests to play their way through the history of video games.[93][94][95]

In 2012, the Smithsonian American Art Museum ran an exhibition on "The Art of Video Games".[96] However, the reviews of the exhibit were mixed, including questioning whether video games belong in an art museum.[97][98]

See also

- Outline of video games
- Video game etiquette
- Field of view in video games

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External links

- Video Games (http://www.dmoz.org/Games/Video_Games/) on the Open Directory Project
- The Virtual Museum of Computing (VMoC) (http://archives.icom.museum/vlmp/computing.html)
- Tom Chatfield writes (http://www.prospectmagazine.co.uk/2008/06/rageagainstthemachines/) on the culture and future of video games for *Prospect*
- CBC Digital Archives: The Arcade Age (http://archives.cbc.ca/arts_entertainment/media/topics/3607/)
- An interactive video game history timeline (http://www.mauriciogiraldo.com/vgline/beta/)
- Video Game museum in Paris (http://www.museedujeuvideo.com/)
- Off Book: Video Games (http://video.pbs.org/video/2160226443) Documentary produced by Off Book