TDT71 - Game Development

A Brief History of Computer Games

Game Changes the past fifty years

- Changes in hardware for playing games
- Changes in interaction devices
- Changes in the software tools available
- Changes in game business
- Changes in the demographics of the players
- Diversification
- Changes in the design of games

Game History

1950-1959

- First computer game **OXO**, a version of **tic-tac-toe** (1952)
- People consider the first interactive computer game to be **Tennis for two** (1958). Effects of gravity.
- The first game developers didnt understand the potetial of games because of the hardware/equpment needed.

1960-1969

- **Spacewar** (1961)
- Companies started to consider the commercial explotation of computer games.
- 1966 Sega released the **arcade game Periscope**

1970-1979

- The golden age for arcade games
- The first commercial explotation of computer games came through arcade machines.
- The arcade machines costed money, making it commercially feasible to exploit computer games.
- The first arcade computer game **computer Space** appeard in 1971, but was not a commercial success
- **Pong** was a big commercial success created by **Atari**(1972). Following commercial successes was **Breakout** and **Space Wars**.
- **Space Wars** was the first game using vector graphics
- in 1978 color was introduced
- **Space Invanders** and **Asteroids**
- **Death Race** (1976) led to a lot of controversy which led to its end.
- Research on interactive televison resulted in the **Odyssy game console** (1972). Could only move some dots on the screen and needed plastic overlays to the TV to add colered playfields.
- **Channel F** (1976) making it possible to play different games on the same system.
- The big step was when Atari introduced the **VCS system**. The console did not sell well becuase it was expencive and the games was not impressive. It became a success when they introduces Space Invanders. This shows that it is not the hardware that counts, but the games.
- The hardware on the CVS was limited (1 kb of memory for program and data) and program was written in assembly. This made it hard to program interesting games. Since there was limited memory, the playing fields was often symmetric. This saved data.

1980-1989

- **Pack-Man** (1980), led to coin shortage in Japan.
- Many interesting games was introduced in this period: **Pack-Man** (1980), **Donkey Kong** (1981), **Mario Bros** (1983), **The leged of Zelda** (1986), **Final Fantasy** (1987), **Prince of Persia** (1989).
- Because of the success of Atari, others followed, as well as companies appeard creating games for the different game consoles.
- Atari failed when making the game **E.T**. Many game companies went bakrupt or stepped out of the game business. Game production moved to Japan.

- Another reason for **the crash** was the introduction of new game computers. Cheap **PC's** appeard and was suited for games because of memory, graphics and sound capabilities. **Commadore 64**.
- Games for computers was **easy to copy** because of the floppy disks or cassette tapes.
- The pc games made it possible to **save game progress**.
- The crash of the console market made it possible for other companies to enter the market, like **Nintendo NES** (1985) and **Sega Master System** (1986).
- **Super Mario Bros** on NES was a huge success. The NES was more popular, not because of its hardware, but because of its uniqeness of its games.
- The **D-pad** was introduced and replaced the joystick.
- Nintendo introduced the first handheld gaming system **Game Boy** (1989). Came bundled with **Tetris** that became a huge success. For a long time Nintendo was the prime producer of handhelds.

1990-1999

- New game consoles was introduced **Mega Drive/Genesis** and **Nintendo Super NES**. They had better hardware. Special hardware for drawing sprites. Higher screen resoultions.
- Nintendo had **Mario** as their main character, Sega introduced **Sonic the Hedgedog**.
- There were other systems around, but Sega and Nintendo had the Majority of the market.
- The newcomer was in the game console was **Sony** who relesed **PlayStation** (1994). PlayStation had faster processor, more memory and special hardware for 3D.
- Games for PlayStation were easier to programming. Resulted in higher game production.
- Players wanted more complex games and it resulted in a **change in the game business**. Huge game budgets became common.
- PC became mature. Many great games were produced like **Sim City**.
- PC's could stream video and music from CD. This led to a **new generation of games** that relied on good integration of video and sound.
- PC's had the advantages with the mouse and keyboard.
- PC's had **modem**. This led to the rise of the many massive multiplayer online role playing games **MMORPG**.
- **The nerds takes over!** The games on the PC was hard to install making the most interested nerds the only ones playing.

- PC's had **different hardware specs**, making it hard to program games for all the different hardware specs.
- Windows 95 and the release of **DirectX** (1995) abstracted away underlying hardware.
- **Doom** "the first" first-person shooter game with fake 3D.
- Because of the success of the 3D like game Doom, there was an increased interest in 3D graphics cards for PC.
- Handhelds got a new generation, **Game Boy Color** (1998). It had better spec than the older one, and it could communicate wither other devices.
- **Pokemon** became a important game for the Game Boy Color. Pokemon added the important collecting aspects. Nintendo introduced different colors, and players had to communicate with other players in order to collect all possible pokemons.

2000-2009

- Sega decided to stop the production of game consoles in 2001, but continued to make games for other game consoles.
- In 2000 the **PlayStation 2** was released. Better specs, excellent sound qualities, network adapter, DVD player.
- The DVD feature in in PS2 was responsible for a quite early sales because PS2 was cheaper than other DVD players. The problem was that people that bought PS2 as a DVD player did not buy any games. PS2 had backwards compatible with PS1. PS2 games was hard to program, but a huge amout of popular games was lauched and the PS2 became popular.
- Nintendo followed in 2000 with its **GameCube**. They did not focus on specs and was weaker than its competition, but a huge amount of great games (casual games) and the low prize made it popular.
- In 2001 Microsoft entered the market with **Xbox**. It is rumored that Microsoft started their own console after Sony refused to use DirectX. The Xbox was a powerful machine that basicly was a PC in a console box. One of the top titles was **Halo**. Good in the **online domain**.
- Xbox was lauched late, and had a hard competion with the available SP2 with a lot of available games.
- Creating games became for new consoles became a more complicated and expensice. Players wanted better graphics, movies, sound tracks, and increased playing time. **Game budget increased** because they needed bigger teams with programmers, artists, and much more.
- PC's was getting better specs and the hardcore gamers prefered the PC over the game consoles. This araised the problem to fit the different specs on the different computers.

- Another problem with PC games was that they was easily cracked and it became harder to make money on PC games.
- **The sims** (2000)
- The rise of MMORPG. **World of Warcraft** (2004).
- The rise of casual games. Faster internet connection and free games making money on advertisement. Easy to learn and short game play. **Bejeweled** (2001).
- The rise of social networking and games. **Farmville**.
- **Game Boy Advance** (2001) and **Game Boy Advance SP** and **Nintendo DS** with double screen, and **PlayStation Portable (PSP)**, and **PSP Go** with downloadable content (App store approach).
- People started playing games on mobile devices. The release of Iphone in 2007 had a huge effect on mobile gaming. Touch screen and accelerometer raised new game types. Revenue to developers, individual small teams could make games. Not dependent on big publishers.
- **Xbox 360** (2005) and **PlayStation 3** (2007)
- Xbox with online achievement system **Gamescore and ranking**.
- **Nintendo Wii** (2006) took a different direction. Weak machine, but the controllers was reveloutionary buy registering movements and the machine was cheap. They later releaset **Wii fit**.

0.0.1 2010-2011

- Microsoft and Sony responded to the success of Wii. Sony introduced **Kinect**
- The big companies have big launch costs because they sell the consoles lower than the production cost, making a lot of time for recovering. They are looking at **cloud** for future gaming. The broadband are not capale for this at this point.
- Mobile gaming is getting increased attention.
- The new hype is tablets.
- **Stereostopic 3D**. Modern televisions are now capable of displaying 3D. The use of glasses are not feasible.
- Games are now played by different genders and ages, not just by the nerds.

Example: Tennis

- Graphics
- Opponents AI

- Storyline and setting
- Internet connectivity
- Interface and control

Changes in Graphics

- Probably the most dominant change in games over the past 50 years is the change in graphics.
- Sprites are small bitmaps that is initially the standard way to draw objects on the screen.
- Consoles had special hardware to quickly draw sprites.
- Parallax scrolling was a trick in simulating 3D. images in the background moved slower than the images in the foreground.
- Isometric projections. look at the game from a andgle of 45 degrees.
- Graphics looked nice, but they didnt spend a lot of money on AI. When the player sees very realistic graphics he/she expects also very realistic behaviour.

Changes in interaction devices

0.1 Changes in demographics

Changes in gameplay

- Adrenaline rush
- Highscore list
- difficulty level. Gradually get harder.
- The internet.

Changes in business

- Game design is becomming a art, and are getting more complex
- Artists, music, pictures, graphics, sound, effects, history, programmers, marketing, etc.
- Growth in games for smartphones and other mobile devices.
- Business models: advertisements, buying benefits with money.

An Evaluation of a Mobile Game Concept for Lectures

- Evaluation of "Lecture Quiz"
- Used in lectures for higher education to promote strong student participation and variation in how lectures are taught.
- Multiplayer quiz game
- Useful for testing the knowledge level and rehearsing theory
- Evaluated in a architecture class with students answering a questionnaire
- Focus was usability and usefulness
- The results showed that the Lecture Quiz was easy to use and contributed to increased learning. The Lecture quiz was percived as entertaining and half the students claimed they would attend more lectures if such system were used regulary.
- Video games can be used insted of traditional exercises. This approach should motivate the students to put extra effort into the exercises and gives the teachers an oppertunity to monitor the students while they are doing the exercises. Second, video games can be used within lectures to improve the participation and motivation of students.
- Initial main goal of the Lecture Quiz was to develop a game concept that could be used in any course that would:
  - test, motivate and engage the students
  - The game should be using existing equipment and infrastructure available in the lecture halls at the university
- The game concept was a variant of the Sony PS2 quiz-game Buzz!
- Studies shows that wireless technology used in educational setting can increase mental activity, facilitate interactivity, and promote social interaction.
- Characteristics that makes game fun to learn:
  - should promote the approperiate level of challenge
  - should use fantasy and abstractions to make it more interesting

– trigger the players curiosity

The game supported curiosity, provide challenge, but not fantasy. The lack of fantasy can be compensated by making a multipplayer game were the social interaction becomes an important motivating factor.