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Learning Aim A

Investigate technologies used in computer gaming.

Unit 08 Computer games development

Assignment 1

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# Introduction

In the modern day there are many current and emerging technologies that are constantly evolving. This evolution has led to stark change in social and technological trends in computer gaming, regarding user requirements and the larger gaming industry. Furthermore, the current and emerging technologies also have, and are likely to continue to have an impact on game development now and in the future. Throughout this paper I will discuss how the different technologies and user requirements can impact game development and design.

# Social trends in computer gaming

There are many variables and factors to consider when discussing and evaluating social trends in computer gaming. This section will aim to cover all these points that can determine several factors within the social trends of computer gaming, while discussing how these factors affect each other and the significance of each one individually.

## Popular genres

There are many genres of games, however there are primarily 17 popular genres. These are

* Role Playing Games (RPGs)
* Massively Multiplayer Online (MMO)
* Massively Multiplayer Online Role-Playing Games (MMORPG)
* Simulation Games
* First Person Shooter Games (FPS)
* Strategy games
* Action Games
* Action Adventure Games
* Real Time Strategy (RTS)
* Sports Games
* Educational Games
* Adventure Games
* Puzzle Games
* Multiplayer Online Battle Games (MOBA)
* Survival Games
* City Building Games
* Racing Games

(Andrea, 2022)

The genres available to people have changed over the last few decades, with the introduction of completely knew genres that people might have not thought possible, such as the popularization of multiplayer games and widespread internet access shifting the trend from pixelated single player games, to “First Person Shooter, Real Time Strategy, Survival Horror and MMO” in the 1990s. (Fandom, 2022) This is evidence of how with the introduction of new genres and ability to play new games on newer systems can impact game development, as more games will be designed around those systems and user requirements to play online, further impacting the trends.

An example of a difference between multiplayer and single player would be the “Call of Duty” game series, released by Activision, and “The Elder Scrolls” game series, developed and released by Bethesda, most notable The Elder Scrolls V: Skyrim, and The Elder Scrolls IV: Oblivion.

“The Elder Scrolls” has sold over 58 million copies worldwide with only five games in the series (Wikipedia, 2022), while “Call of Duty” has sold over 425 million copies with nineteen games. Both games are widely successful, with the last three games of The Elder Scrolls series collecting multiple Game of the Year awards from different outlets, and the substantial number of figures sold with the Call of Duty series. Even though these are two completely different genres, one being single player RPG, and the other an FPS multiplayer game, they both produce successful results, and therefore are both consider heavyweight franchises within the gaming scene, with a large and loyal fanbase following each game, respectively. This leads to more investment within both games, including many more resources, even though these are two completely different games therefore have completely different player bases.

## Player base

The player base also has a crucial role in deciding the social trends regarding computer games and their development and design. An example of this is that while some people are more inclined to play multiplayer games, there are those who prefer single player games where they do not have to interact with other users. Similarly, this can be applied to every genre of video game, and even franchises specifically, leading to certain game genres being developed more and franchises having more resources invested into them.

Furthermore, there are many kinds of players in video games, such as hardcore fans or the more lighthearted casual gamer. Due to this, and other factors such as age rating for the game or the players sex, games may be developed for specific users and will naturally not appeal to all users.

An example of this could be Stardew Valley, which is a farming simulator game that is easy going and much simpler compared to an FPS like Call of Duty which requires intense focus and includes a large skill gap between users. Therefore, games for more casual gamers will not appeal to those who prefer the high action fast paced nature of an FPS game like Call of Duty.

## Production

There are many different ways to produce a game, from indie game development which refers to the production of games without large financial backing like a big company i.e. Bethesda as previously mentioned. Another way a game can be produced is a AAA title, which is often the result of big corporations like Activision, Ubisoft, Blizzard, and Bethesda to name a few. These games often have large teams working on them with individual duties and responsibilities, unlike solo or small team indie game developers. Furthermore, another factor that can affect production is whether a game will be free to play or not, as this leads to other factors being considered during development such as whether or not to include microtransactions.

## Multiplayer

As previously mentioned in popular genres, multiplayer is a crucial feature when considering social trends in computer game development and design, as games that allow users to interact with each other and play with their friends have much more possibility than a single player game. Furthermore, if users are able to interact with each other then they have the possibility of creating further friendships and other relationships, likely leading to increased playtime and more time overall on the game. This directly shows how important it is for certain games to be multiplayer in order to fully take advantage of all social trends and remain popular.

It is also important to consider the fact that it is much easier for companies to allow users to play their games online due to popular mainstream services like PlayStation and Xbox which host users on their systems and allow them to play the games created for them.

## Artificial intelligence

AI has grown exponentially in the last few years, with machine learning and complex algorithms developed constantly to help improve the logic and decision-making ability of the AI. This leads to an enhanced user experience as it allows users to play against stronger and better opponents (bots). As a result of hardware advances in recent times there are even some machines that have dedicated hardware for this purpose, machine learning.

The examples of AI in video games are vast and endless, however some notable examples to consider include:

* AI pathfinding algorithms, where the AI decides the best possible path to the destination and then executes it.
* NPC development, where the world development is built up through the use of Non playable characters that the player can interact with.
* Computer simulation board games, where the player can play against the opponent, a computer, and enjoy the same experience as playing against a player.
* Similarly, in most sports and shooting games there exist options to play against bots in order to practice or play the game regularly.

While artificial intelligence is incredibly important in games development, as it opens many more doors and possibilities for the games that can be made, it is not uncommon to find that artificial intelligence is not well known or misrepresented and misunderstood leading to general animosity towards AI and can be devastating for the development of machine learning in the future.

## Emerging technologies

Technological innovation is constantly progressing forward, evolving our idea of the latest technology and what it is possible in the modern day and age.

## Security of integrated services and multiplayer environments

# Technologies used in computer gaming

## Benefits and limitations of different platforms for development

### Personal computers

### Consoles

### Mobile devices

### Web based

## Hardware options and their involvement in development

### CPU

### GPU

### Memory, RAM/ROM

### Output

### Input

### Storage

### New technologies

## Software options and their effect on development

### Operating system

### Programming languages

### Device drivers

### Graphic options

### Audio options

## Use of game engines and how they aid computer game development

### Rendering engines

### Physics engines

### Collision detection

### Scripting

### Animation

# Comparison on how current and emerging technologies computer game development

# Comparison on how different technologies impact the game industry and requirements and expectations

# How current technologies are impacting game development and design

## How emerging technologies impact game development

## How games are developed to meet the requirements of users

## How games are developed to meet the requirements of the larger game industry

# Evaluation

## The impact of current and emerging technologies on development

# Bibliography

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