



Game Development

Prof. Dhanashree, Rahil Akhtar Mansuri, Farhan Shaikh, Riyaz Choudhry

dhanashree.kangane@eng.rizvi.edu.in, rahilrex@eng.rizvi.edu.in, farhan07@eng.rizvi.edu.in,
riyazali@eng.rizvi.edu.in,

B.E Computer Engineering,
Rizvi College of Engineering, Mumbai, India

Abstract : This project presents a wave type game. Video games have become an important part of our culture in a relatively short period of time. The industry is also developing into a major pillar of many modern economies, with game development tax schemes being introduced into many developed countries. These are coinciding with a period of time where it has never been easier to release a game into the commercial market. For the last two decades, game development teams have required financial backing and a level of expertise to pass stringent tests by platform holders to be allowed access to their development hardware. Today, anyone with a mobile phone or a tablet and a computer, even a laptop, can build a game and have it for sale with a minimum of time and financial backing. This does not mean that every game is successful: it is still essential to have a good understanding of the technical aspects involved in making games and the considerations involved in designing games which people will want to play. Sometimes the best way to develop this knowledge is to begin at the very beginning, so we'll look at some video game history.

Keywords: Game Development, Sales, Unreal.

I. Introduction

Game Development is the art of creating games and describes the design, development and release of a game. It may involve concept generation, design, build, test and release. While you create a game, it is important to think about the game mechanics, rewards, player engagement and level design. A game developer could be a programmer, a sound designer, an artist, a designer or many other roles available in the industry. Game Development can be undertaken by a large Game Development Studio or by a single individual. It can be as small or large as you like. As long as it lets the player interact with content and is able to manipulate the game's elements, you can call it a 'game'.

Typical Game Engines

- CryEngine
- Unreal Engine
- Unity Game Engine
- Game Maker
- Construct 2 or 3
- Twine
- Source
- Frostbite
- Buildbox

Types Of Games

Mainly Industry is divided into two parts

2D games and 3D games

II. PROBLEM STATEMENT AND OBJECTIVE

Replay ability of a video game really sets it out and makes it stand out from all the other games, with specific replay options so while keeping everything in order and as well as to fit in time, we are trying to make a fun game with replay ability to maximize the user experience. Since the members of this project are very few and a big team is required to make a large scale game, since working on a game like this we had to make sure that it would run on medium end systems too and everyone would be able to play it. In order to do that we reduced animations and used baked lighting as well as low res textures for less VRam usage, Blend Spaces in Animation to reduce CPU power and only 1 level for making the game under 4GB of Ram.

III. LITERATURE SURVEY

The history of video games began in the 1950s and 1960s as computer scientists began designing simple games and simulations on minicomputers and mainframes. Spacewar! was developed by MIT student hobbyists in 1962 as one of the first such games on a video display. The first consumer video game hardware was released in the early 1970s. The first home video game console is the Magnavox Odyssey, and the first arcade video games are Computer Space and Pong. After its home console conversions, numerous companies sprang up to capture Pong's success in both the arcade and the home by cloning the game, causing series of boom and bust cycles due to oversaturation and lack of innovation.

CASE STUDY 1: RESIDENT EVIL

AUTHORS: SHINJI MIKAMI, OLEKSII TOKURO

METHODOLOGY:

The Resident Evil franchise began as a series of video games from Japanese game developers Capcom in 1996. Resident Evil, known in Japan as Biohazard, is a Japanese horror video game series and media franchise created by Capcom. It consists of survival horror, third-person shooter, and first-person shooter games. The franchise has expanded into a live-action film series, animated films, television series, comic books, novels, audio dramas, and other media and merchandise.

The first Resident Evil was created by Shinji Mikami and Tokuro Fujiwara and released for the PlayStation in 1996. It is credited for defining the survival horror genre and returning zombies to popular culture. With Resident Evil 4 (2005), the franchise shifted to more dynamic shooting action; it influenced the evolution of the survival horror and third-person genres, popularizing the "over-the-shoulder" third-person view. Resident Evil 7: Biohazard (2017) moved the series to a first-person perspective.

The *Resident Evil* franchise has had a variety of control schemes and gameplay mechanics throughout its history. Puzzle-solving has figured prominently throughout the series.

Third-person shooter gameplay

Resident Evil 4 saw significant changes to the established gameplay, including switching from fixed camera perspectives to a tracking camera, and more action-oriented gameplay and mechanics. This was complemented by an abundance of ammunition and revised aiming and melee mechanics. Some critics claimed that this overhauled control scheme "made the game less scary." [41] The next two games in the franchise furthered the action-oriented mechanics: Resident Evil 5 featured cooperative play and added strafing, while Resident Evil 6 allowed players to move while aiming and shooting for the first time, fully abandoning the series' signature tank controls. [41]

Case Study 2: Silent Hill

Authors: Lawrence Ang, Francis Arthur Buttle

Methodology:

Silent Hill is a 1999 survival horror game developed by Team Silent, a group in Konami Computer Entertainment Tokyo, and published by Konami. The first installment in the Silent Hill series, the game was released from February to July, originally for the PlayStation. Silent Hill uses a third-person view, with real-time rendering of 3D environments. To mitigate limitations of the console hardware, developers liberally used fog and darkness to muddle the graphics. Unlike earlier survival horror games that focused on protagonists with combat training, the player character of Silent Hill is an "everyman".

The objective of the player is to guide main protagonist and player character Harry Mason through a monster-filled town as he searches for his lost daughter, Cheryl. Silent Hill's gameplay consists of combat, exploration, and puzzle-solving. [3] The game uses a third-person view, with the camera occasionally switching to other angles for dramatic effect, in pre-scripted areas. This is a change from older survival horror

games, which constantly shifted through a variety of camera angles. Because Silent Hill has no heads-up display, the player must consult a separate menu to check Harry's "health".[4] If a DualShock controller is used, a heart beat rhythm can be felt signifying that the player is at low health.

IV. LIMITATIONS OF EXISTING SYSTEM

It takes time and cost to deploy the game. Since we're on a tight budget and no prior experience in Sculpting, we rely on open source models for our game to work, We used animations from Mixamo for enemies and our Main Player

- For small game development projects, Unreal Engine is not a good choice and would not be suitable.
- It is generally a somewhat old-fashioned game development tool when compared to the other kinds of leading game development engines in the world.
- It has some complicated tools which also give a hard time to a learner.
- The costing platform is also too high for many game developers. Once your gross annual revenue has reached \$3,000, you are required to pay Unreal Engine 5% of that revenue

V. PROPOSED SYSTEM

5.1 Unreal Engine:

Unreal Engine (UE) is a game engine developed by Epic Games, first showcased in the 1998 first-person shooter game Unreal. Initially developed for PC first-person shooters, it has since been used in a variety of genres of three-dimensional (3D) games and has seen adoption by other industries, most notably the film and television industry. Written in C++, the Unreal Engine features a high degree of portability, supporting a wide range of desktop, mobile, console and virtual reality platforms.

The latest generation, Unreal Engine 5, was launched in April 2022. As its predecessor released in March 2014, its source code is available on GitHub after registering an account, and commercial use is granted based on a royalty model. Epic waives their royalties margin for games until developers have earned US\$1 million in revenue and the fee is waived if developers publish on the Epic Games Store. Epic has included features from acquired companies like Quixel in the engine, which is seen as helped by Fortnite's revenue.

5.2 METHODOLOGY:

5M methodology for games The 5M classification is often used in the engineering industry and can be applied to video game development as follows:

- Method: general organization of the different production steps, including the inflow of material production and the intervention of human actors
- Milieu: all the elements involved in serious game production, for example domain experts (teachers, doctors, engineers, etc.), independent subcontractors (sound technicians, graphic designers, etc.) and students and tutors (testing and feedback)
- Manpower: the team of human actors involved in the production chain. For reasons of comprehension, these actors are described by their roles (pedagogical expert, programmer, etc.) although these roles can be assigned to a single person.
- Machine: set of tools that help the human actors produce the serious game
- Materials: documents, prototype models, executable files, databases and other devices used to produce the final serious game

Methodology based on Westera levels This approach combines three different levels [22] for the system integration, framework and structure of the video game:

- on a conceptual level, a game is considered to be a system (i.e. a set of interrelated elements). A game is designed by specifying certain relevant factors, taking into account the two fundamental dimensions of space and time: the space dimension covers the static configuration of gaming locations (virtual) and includes associated objects, attributes and relationships, and its evolution over time covers the game dynamics.
- on a technical level, the framework describes the basic architecture of the game development system which describes the system and its tools for developing the places, objects, actor roles and scenarios of the video game.
- on a practical level, i.e. the structure of the game, the options offered to the players and the multimedia representation of the game environment

SUM methodology SUM is an agile methodology for game development that adapts the Scrum structure and roles [1]. SUM suits small multidisciplinary teams (three to seven components) and short-term projects (less than a year). The methodological definition is based on SPEM 2.0 (Software and Systems Process Engineering Metamodel Specification). The main advantage of SPEM is its flexibility and adaptability since it is not necessary to mention specific practices.

- Roles: The methodology defines four roles: development team, internal producer, customer and beta tester.

VI: CONCLUSION

Video games are a form of media that is often associated with negative health consequences. However, when games are played in moderation and with mindfulness, they are a viable source of stress relief as well as a catalyst for mental health improvement and development of social skills. Video games themselves are a relatively modern form of entertainment. They are engaging and immersive on a level different from that of traditional board games and other forms of entertainment. The player actively contributes to the level of satisfaction he/she attains from this medium and thus is more invested and willing to engage in the elements of the video game. The amount of play time is also an important factor in the effects of gaming. Although excessive playtime can have negative consequence, gaming in moderation can be healthy, fun, and educational.

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