**General Introduction**

Games have become an important part of society, influencing entertainment, education, social interaction, and more. As technology continues to advance, it is likely that games will continue to evolve and have an even greater impact on society in the years to come.

Behind every great game is a team of game developers who work tirelessly to create immersive worlds, compelling characters, and challenging gameplay mechanics.

The video game practices of children and young people, but also increasingly of adults or seniors, concern us all: parents, educators, professionals, and researchers. Numerous works written by specialists (such as doctors, psychologists, teachers, and journalists) encourage caution in the use of video games. In contrast, these same games fascinate and are now an integral part of our cultural universe.

In recent years, mobile gaming has become an increasingly popular way to enjoy video games on the go. One type of mobile game that has seen significant growth in popularity is the role-playing game, or RPG. These games offer players a chance to explore immersive worlds, engage in exciting battles, and level up their characters over time.

Overall, mobile RPGs offer a convenient and accessible way for players to enjoy immersive gaming experiences on the go. As technology continues to evolve, it's likely that we will see even more exciting and innovative RPGs coming to mobile devices in the future.

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**Chapter 1**

# **Project Context**

## **1.1 Introduction:**

The study of the project is an important phase that allows for describing the company's environment and presenting the main objectives of the project. First, we will present the mobile video-games industry in a general manner, including the hosting organization. Then, we will detail the project, starting with the framework, followed by the problem, and analysing the games that provide the inspiration sources, as well as the proposed solution. Finally, we will explain the methodology used to carry out our project.

## **1.2 Mobile video-games Industry:**

The mobile games industry includes a diverse range of game genres, from casual puzzle games to immersive role-playing games and it has experienced significant growth over the past decade, driven by the widespread adoption of smartphones and tablets. Mobile games are now a major part of the video game market, with players of all ages and backgrounds enjoying games on their mobile devices.

In the span of a decade, mobile gaming has gone from the smallest segment of the gaming market in 2012 to one of the most successful industries in the world in 2020. As mobile penetration rates and smartphone usage continue to accelerate globally, mobile game revenues are on track to exceed $92.2 billion by 2022. According to a report by Newzoo.

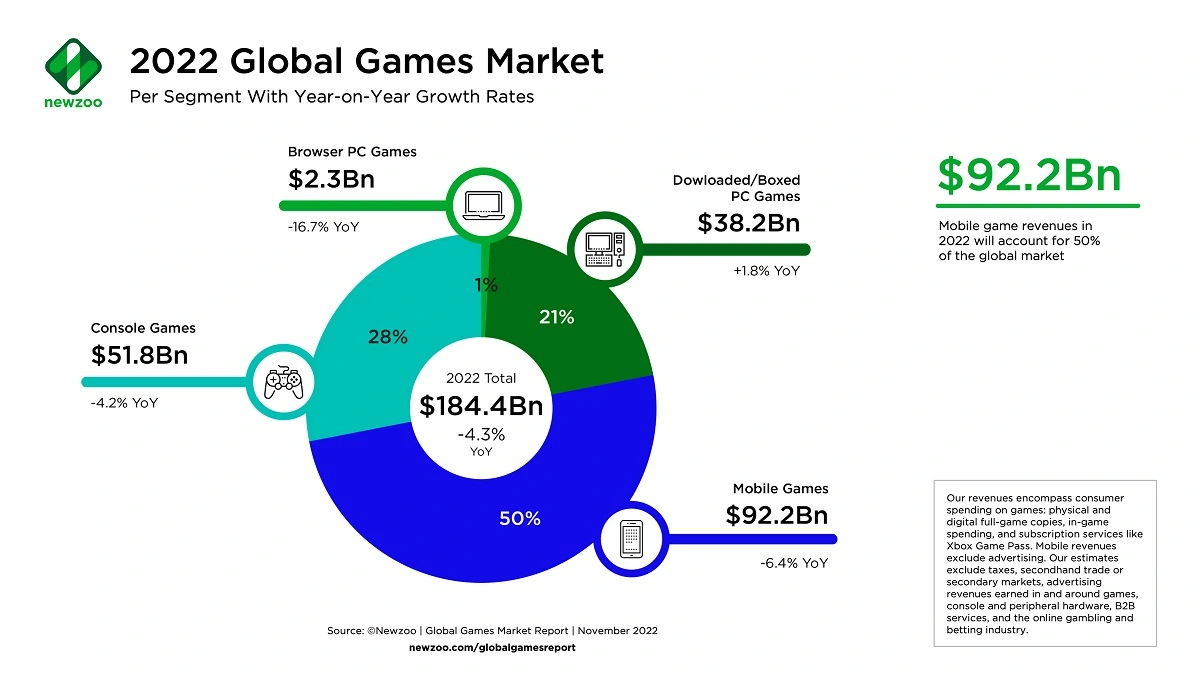


Figure 1- 2022 Global Games Market

## **1.3 Presentation of host organization:**

### **1.3.1 Host organization:**

The internship takes place within the company CGI Studio, a professional computer office specializing in developing PC and mobile video-games, it’s located in Menzel Temime, Nabeul. It was founded in 2018 by Mr. Amen Allah Ben Achour.

Table 1 provides an information sheet on CGI STUDIO.

**

Figure 2- CGI Studio Logo

### **1.3.2 Business Area:**

CGI STUDIO is an IT company that operates in the video game industry and the economic sector of designing, producing, and marketing video games. Its areas of activity:

|  |  |
| --- | --- |
| **Company Name** | CGI STUDIO |
| **Creation Date** | 05/07/2018 |
| **Legal Status** | Individual company |
| **Activity Area** | IT Activities |
| **Activities Headquarters** | 1 Moussa Ben Noussair Menzel Temime 8080  Mobile APPS, 3D Animation, AR, VR, Video-games development, Architecture, design, AI. |
| **E-mail** | cgistudio.contact@gmail.com |

Tableau 1 - Information Sheet of host organization

Table 1- Information Sheet of host organization

— Creation and development of PC and Mobile video games.

— Creation of 3D movies.

— Creation of advertisements.

— Creation of Android and IOS mobile applications.

— Creation of augmented reality and virtual reality applications

### **1.3.3 Company Organizational chart:**

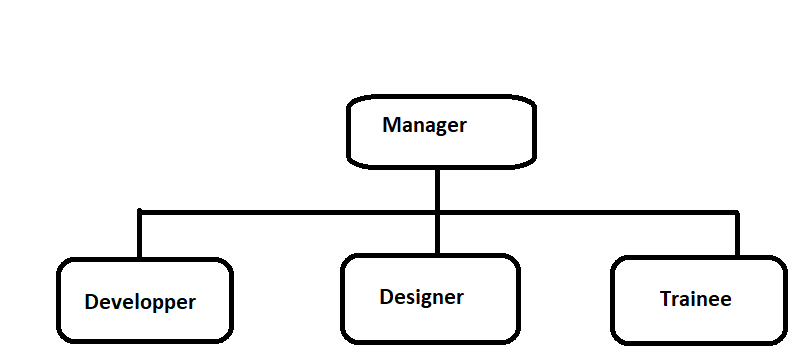
The company is composed of two main hierarchical components described in the figure 3

Figure 3 Organizational chart

**The Manager's mission:**

* The preparation of work and the implementation of decisions made by the board of directors.
* Representing the company to third parties and taking responsibility for the signature of civil, administrative, and legal documents.
* Having authority over all personnel.

**The Developer's mission:**

* Creating the specifications document.
* Translating the specifications into code with the goal of making them faster and more efficient.
* Programming interfaces and associated tools, menus, and actions.
* Correcting errors and making necessary modifications.

**The Designer's mission:**

* Interpreting requests made verbally or in writing in the specifications document.
* Imagining the potential for transforming submissions.
* Creating digital 3D models, animations, and image processing.
* Making projects visually understandable.
* Proposing solutions for improving the submissions.

## **1.4 Project Presentation:**

### **1.4.1 General Context:**

We aim to create an open-world 3D mobile game in a third-person perspective. It is in this context that our end-of-year project finds its essence which are:

design, development, and realization of a 3D video game.

### **1.4.2 Problematic:**

**…**

### **1.4.3 Inspiration:**

Like any other form of creation, it is impossible to create a video game without inspiration. Therefore, we conducted in-depth research on existing games similar to our future product. Our goal is to create a 3D open-world third-person mobile video game under the themes of adventure and combat.

Research has been conducted to assist us in our project.

**Magica.io**

Magica.io is a mobile Battle Royale game for true leaders! Smash other players on the battle arena and conquer the leaderboard charts! Fight for survival in great battles, collect epic loot, improve your character's fighting skills

****

Figure 4 - Magica.io Game

**Clash Royale**

Clash Royale is a free-to-play real-time strategy video game developed and published by Supercell. The game combines elements from collectible card games, tower defence, and multiplayer online battle arena. The game was released globally on March 2, 2016.



Figure 5 - Clash Royale Game

### **1.4.4 Proposed solution**

The company has assigned us the tasks of designing, developing, and producing this video game. The modeling, design, and prototyping of this game must be done before the development phase.

this is a 3D multiplayer combat game in third-person perspective, with the theme of adventure and survival.

We will work on both the technological and artistic aspects of the game, including the creation of the environment, characters, animations, and more. Development is one of the most important stages in the process. To complete these tasks, we will primarily need Unity, which is a game engine, as well as the C# programming language.

We have chosen the name "……." for this video game.

## **1.5 Planning methodology**

Methodologies impose discipline on software development processes with the goal of making the project more predictable and efficient. This goal is theoretically achieved by following a strict sequence of tasks and adhering to a detailed plan, which we will present below. In this section, we will introduce the methodology that we have carefully chosen for the development of our project, as well as the reasons why we have chosen it and its advantages specific to our project.

### **1.5.1 Methodology Adopted: Agile**

Agile methodology is a project management process that is primarily used in software development. It’s used where demands and solutions emerge through the collaborative effort of self-organizing and cross-functional teams and their customers.

The Agile methodology is a collection of principles that value adaptability and flexibility. Agile aims to provide better responsiveness to changing business needs and therefore focuses on enabling teams to deliver in workable increments.

### **1.5.2 SCRUM**

Scrum is an agile process that focuses on delivering valuable results, emphasizing teamwork and accountability. Typically, the size of a Scrum team consists of 5 to 9 experts who work together on a project.

The Scrum method has a product owner, a Scrum master, and a development team.

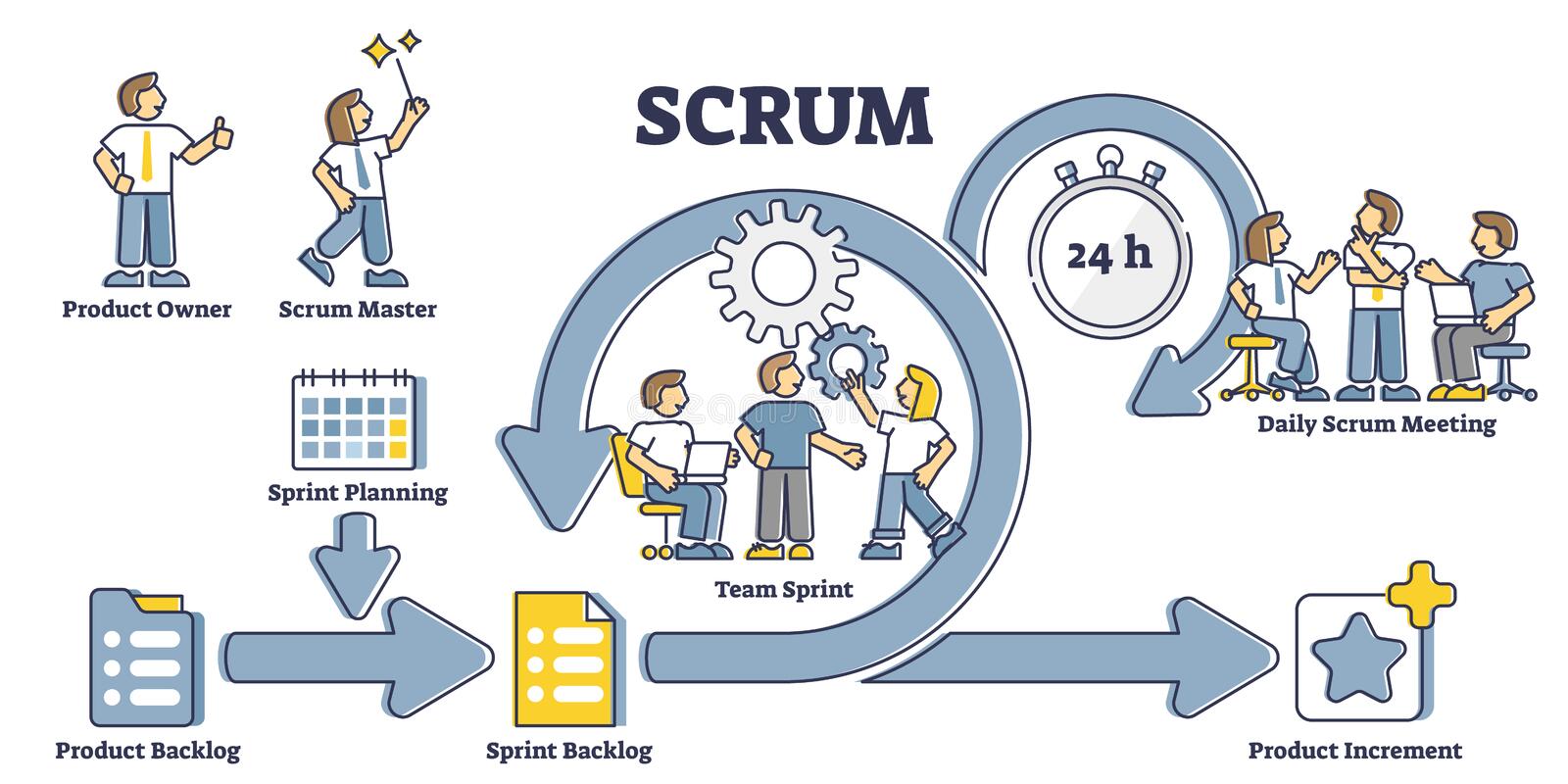
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Figure 6 - How SCRUM works

### **1.5.3 The scrum actors in our project:**

The actors of our project are:

**Product Owner and Scrum Master:** AmenAllah BenAchour

**Development team:** Souhail Mihoubi, Abderrahmen Ben Aissa

### **1.5.4 Implementation of Scrum in our project**

**…..**

## **1.6 Working environment:**

In this section, we look at the selection of hardware tools and different software and technical tools to carry out this project.

### **1.6.1 Hardware environment**

To carry out our project, we used our personal laptops and our smartphones with the configuration in table 2:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **RAM** | **CPU** | **GPU** | **Screen** |
| Laptop  DELL G-15 5511 | 32Go | 11th Gen Intel™  I5-11400H @2.70GHz | NVIDIA GeForce RTX3050 | 15.6"  FHD 120Hz |
| Smartphone  REDMI Note 10S | 8Go | Octa-core (2x2.05 GHz Cortex-A76 & 6x2.0 GHz Cortex-A55) | Mali-G76 MC4 | 6.3" |
| Laptop  HP-Pavillion Gaming | 12Go | 8th Gen Intel™  I5-8300H | NVIDIA GeForce  GTX1050 | 15.6"  FHD 120Hz |

Tableau 2 - Hardware environment

### **1.6.2 Software environment**

**Unity:**

Unity is a cross-platform game engine developed by Unity Technologies, first announced and released in June 2005 at Apple Worldwide Developers Conference as a Mac OS X game engine. The engine has since been gradually extended to support a variety of desktop, mobile, console and virtual reality platforms.



Figure 7 - Unity logo

**Visual studio :**

Visual Studio is an integrated development environment from Microsoft. It is used to develop computer programs including websites, web apps, web services and mobile apps.

It supports multiple languages such as C#, C++, Java Script, Python, etc.

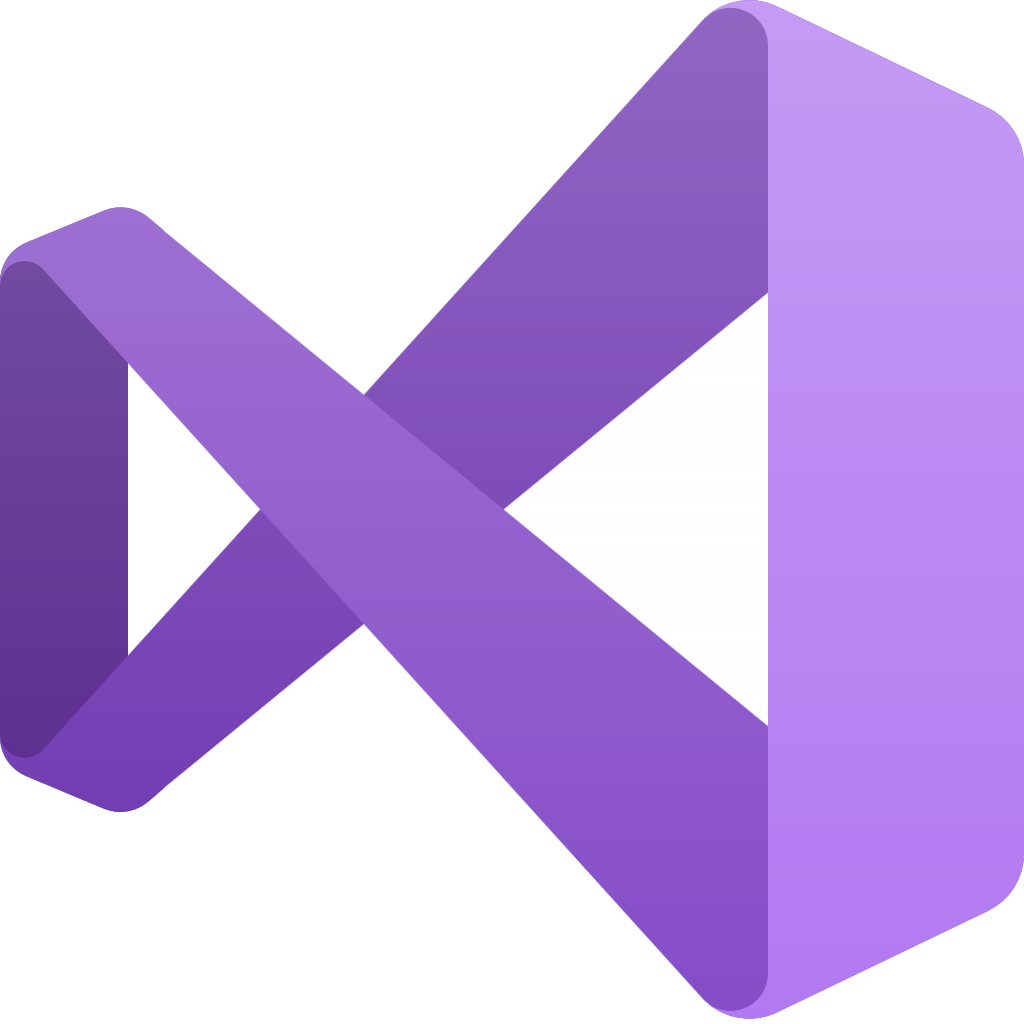


Figure 8 - Visual Studio logo

**Blender :**

Blender is a free and open-source 3D computer graphics software tool set used for creating animated films, visual effects, art, 3D-printed models, motion graphics, interactive 3D applications, virtual reality, and, formerly, video games.



Figure 9 - Blender logo

**Mixamo :**

Mixamo is a 3D computer graphics technology company. Based in San Francisco, the company develops and sells web-based services for 3D character animation. Mixamo's technologies use machine learning methods to automate the steps of the character animation process, including 3D modeling to rigging and 3D animation.



Figure 10 - Mixamo logo

**StarUML :**

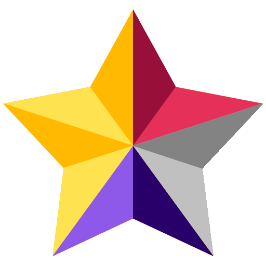
StarUML is a software engineering tool for system modeling using the Unified Modeling Language, as well as Systems Modeling Language, and classical modeling notations. It is published by MKLabs and is available on Windows, Linux and MacOS.

Figure 11 - StarUML logo

### **1.6.3 Programming and modeling languages:**

**C Sharp:**

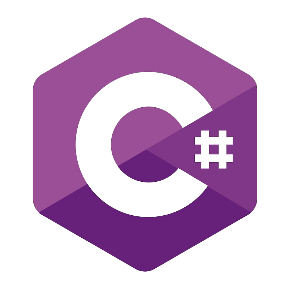
C# is a general-purpose high-level programming language supporting multiple paradigms. C# encompasses static typing, strong typing, lexically scoped, imperative, declarative, functional, generic, object-oriented, and component-oriented programming disciplines.

Figure 12 - C# logo

**UML**

The Unified Modeling Language is a general-purpose, developmental modeling language in the field of software engineering that is intended to provide a standard way to visualize the design of a system.

Figure 13 - UML logo

## **1.7 Conclusion**

In this chapter, we have provided an overview of the project and its goals, as well as the methodology that we will be using. We have also discussed the general working environment. In the next chapter, we will outline the functional and non-functional requirements that the project must meet.