Rhythm 101
Project Proposal

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Our **solution**

Executive presentation

Game objectives

- ➔ Teach the basic principles of percussion, including rhythm, cadence and pattern, through the simulation of a drum set.
- ➔ Gradually increase coordination, consistency, and motivation, and encourage the user to practice with a real instrument.

Database objectives

- Store data generated by the players while completing the game, and collect information about them for further analysis.
- Help PAS collect information from their players, including their opinion and knowledge of percussion instruments.

Data warehouse objective

The DWH is built to have the data generated by the game transformed into useful information, capable of being analyzed by PAS members, according to their interests. This information is presented on a visually attractive dashboard, in order to improve readability.

Webpage objectives

- Show data from real life users that have played our videogame with the help of Tableau directly from a website
- Allow PAS members to login from any network or device using their given credentials, allowing them to track the progress and effectiveness of the videogame in terms of the objectives mentioned above

Genre of the game

The main genre of the game is “Rhythm Games” while its main theme consists of a “Drumming Simulator” due to the emphasis that is given to the core skills required to play a Rhythm Game.

Story and characters

The story of the video revolves around the main character and his objective to win a “Battle of the Bands” in order to meet Ginger Baker, his favorite drum artist. The main character loves listening to music, but has never played an instrument before. After finding out the prize of the competition, he decides to start practicing the drums to reach his objective. Throughout this process, he will be accompanied and assisted by two other mentors (Mitch Mitchell and Sheila E.) who will teach him certain tips and techniques to help him improve as an artist.

Game mechanics

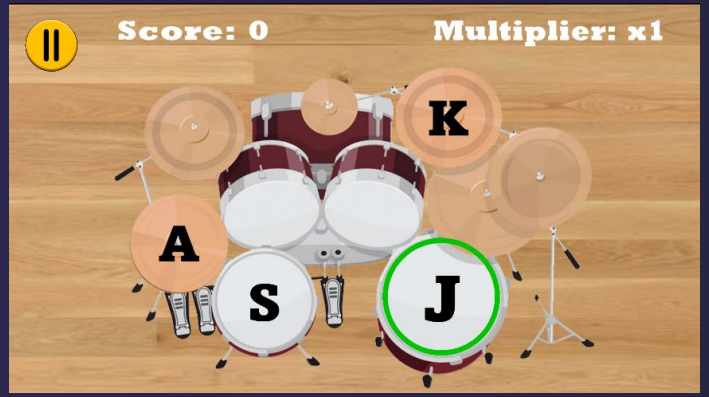
Pressing the correct keys according to the beat of the songs and visual cues.

- Circles reducing their size.
- Points depend on how close the circle matches the drum's diameter on impact.
- Speed and patterns change throughout each level.

And the most important thing: the difficulty increases each level.

Levels and world design

- ➔ Our game consists of three levels + a tutorial panel
- ➔ Each level has an increase in difficulty (speed) and a change in the background music, level three being the hardest one
- ➔ Levels are separated by interludes, that help tell and progress the character's story



Objectives met

According to our final product, we were able to reach the following of our original objectives:

- ➔ A video game that helps to increase coordination and motivation of the user to practice with a real instrument. The game is fully functional and can correctly collect information about the players during the game.
- ➔ Database and data warehouse that store information generated by the players, located in a web server. This allows any user around the world to generate and send data.
- ➔ An API that establishes the correct connection and communication between the video game and the database in the web server.
- ➔ A dashboard containing information coming from the data warehouse, helping PAS analyze players' habits, opinions, and interest in the video game and percussion.

Improvement suggestions

- ➔ A more precise match between the appearance of the circles and the drumbeats.
- ➔ Interactive “Player” dialogue boxes during the interludes to use the player’s username.
- ➔ Scroll down buttons to fill both the forms and the sign in information.
- ➔ Make it more noticeable when the player presses the correct keys.
- ➔ Add a “Recover password“ option.

02

Functional specifications and system architecture

Functional specifications

Video Game

- The system must be able to allow the user to replay both the levels and the game upon completion in their entirety respectively.
- The player must be able to use the system without adding any external components.

API

- The API must be able to transfer the information generated by the players through the game directly to the database to be stored correctly.
- The system must be able to connect to a data network to consult and store the local information of each player.

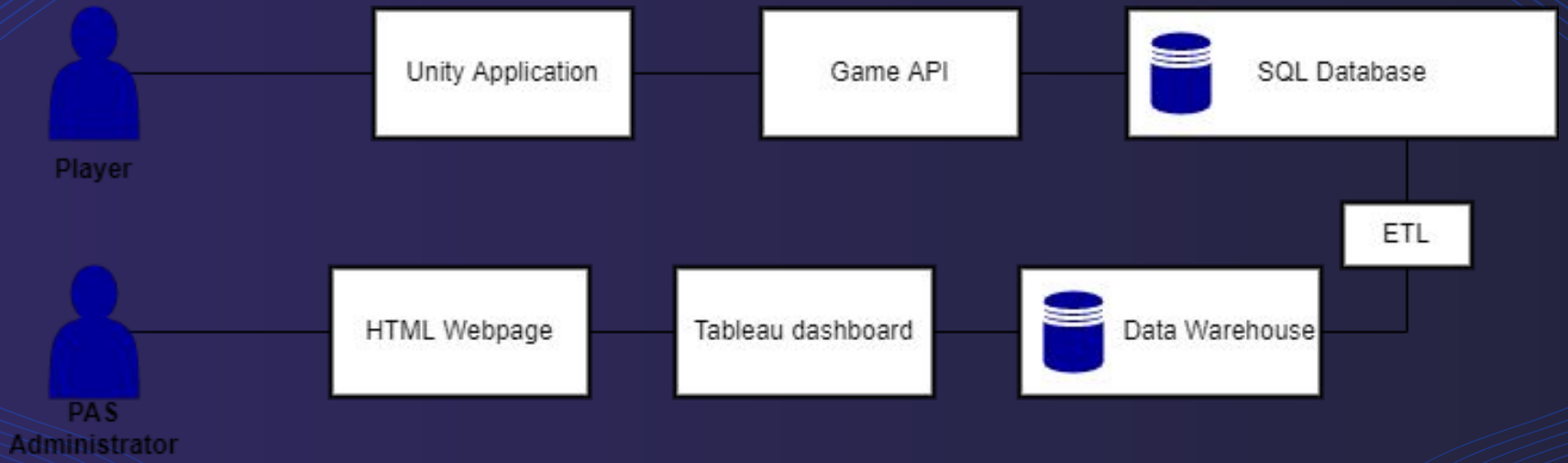
Tableau on website

- The website must be able to connect to the database at any time to obtain the data requested by the user through tableau.
- The system must allow the administrator to access the statistics generated by the game.
- The website validates the administrator credentials, allowing them access from any device

Database

- The database has the capacity to store the personal information of each player (Name, birthday, country, city, username and password).
- The administrator must be able to give maintenance to the database at any given time.

Architecture diagram



Architecture specifications

Videogame (Unity)

Local files downloaded in each player's computer

Video Game API

NestJS project written in TypeScript + Unity Networking API on digital server

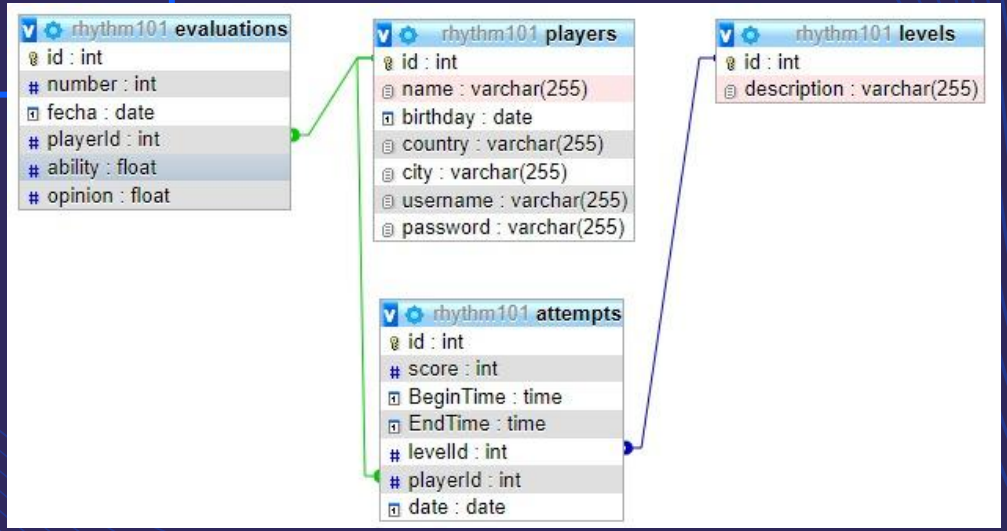
SQL database

Mysql + phpmyadmin database on digital server

Tableau on Website

Visualization software hosted and visible on an HTML and CSS website

Database design



03

Effort **summary**

Total hours invested on the project

Each team member carried out specific tasks, that put together, helped create and build this project as a whole.

The process of inception, design, construction, testing, and release of our final product took an approximate amount of time of:

Inception	15 hours
Design	30 hours
Construction	150 hours
Testing	15 hours
Release	10 hours

220 HOURS

04

Video

Project features and information flows for each user type.

https://youtu.be/IlzWWekMCUA