

VIDEO LINK

[My FYP 1 Video Presentation](#)

(0)

SPATIAL AUDIO-BASED RHYTHM GAME FOR THE VISUALLY IMPAIRED

ECHO RUSH



WHAT IF GAMES DIDN'T NEED TO BE SEEN TO BE ENJOYED?



Inspired by Human-Computer Interaction (HCI)
(Final Exam – Semester I, 2022/2023)

Everyone loves gaming. Including *blind* players.

What can they play? What makes them enjoy playing?

THE PROBLEMS

Most games rely heavily on visuals

Lack of adaptive difficulty & immersive experience

Existing audio games are too simple or repetitive

Blind players are often excluded from game culture

(03)



ANALYSIS

Analyze needs through
literature & references

EchoRush

DESIGN

Design accessible sound-
based game mechanics

OBJECTIVES

System Development Life Cycle

DEVELOPMENT

Develop random pattern, DDA
& voice input

(03)

TESTING

Test with Society of the Blind
Malaysia (SBM)

A GAME BUILT ON ~~SIGHT~~ SOUND.

ONE THAT LISTENS BACK.

EchoRush is the answer for it. An adaptive audio-based game for blind players.

It adapts to players,
talks to them and
listens back.

(05)



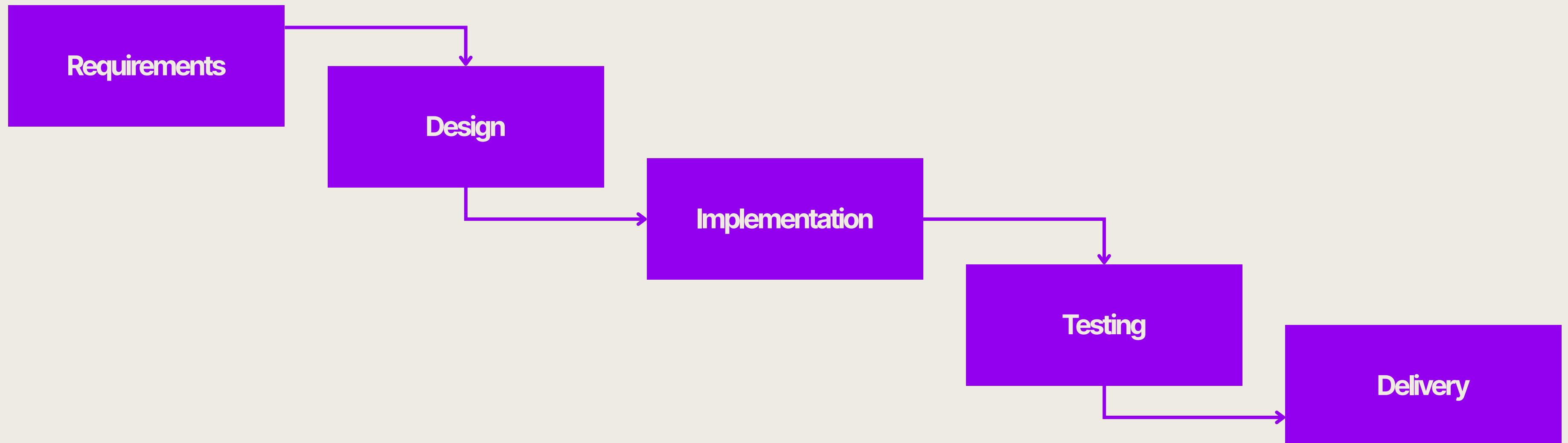
ADAPTIVE AUDIO-BASED GAMEPLAY

RANDOM SOUND OBSTACLES

SPATIAL AUDIO NAVIGATION

VOICE-CONTROLLED DIFFICULTY

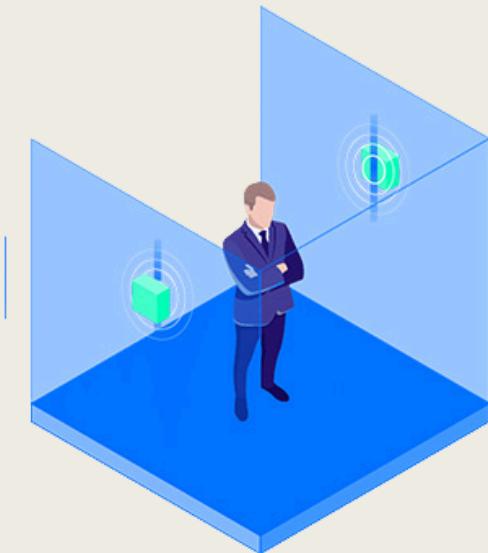
METHODOLOGY: THE WATERFALL MODEL



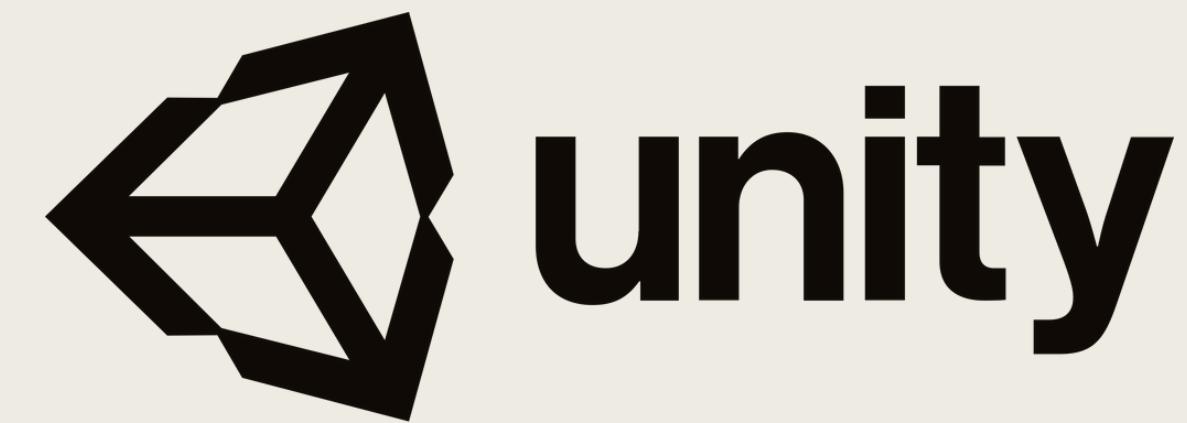
TECHNOLOGIES & TOOLS



MONO SOUND



STEREO SOUND



Game Development

5.1
DISCRETE CHANNEL
CONFIGURATION3D AUDIO
AMBISONICS

3D Sound Navigation



UML & Design Visuals



Voice Commands

(07)

HARDWARE



PC/Laptop



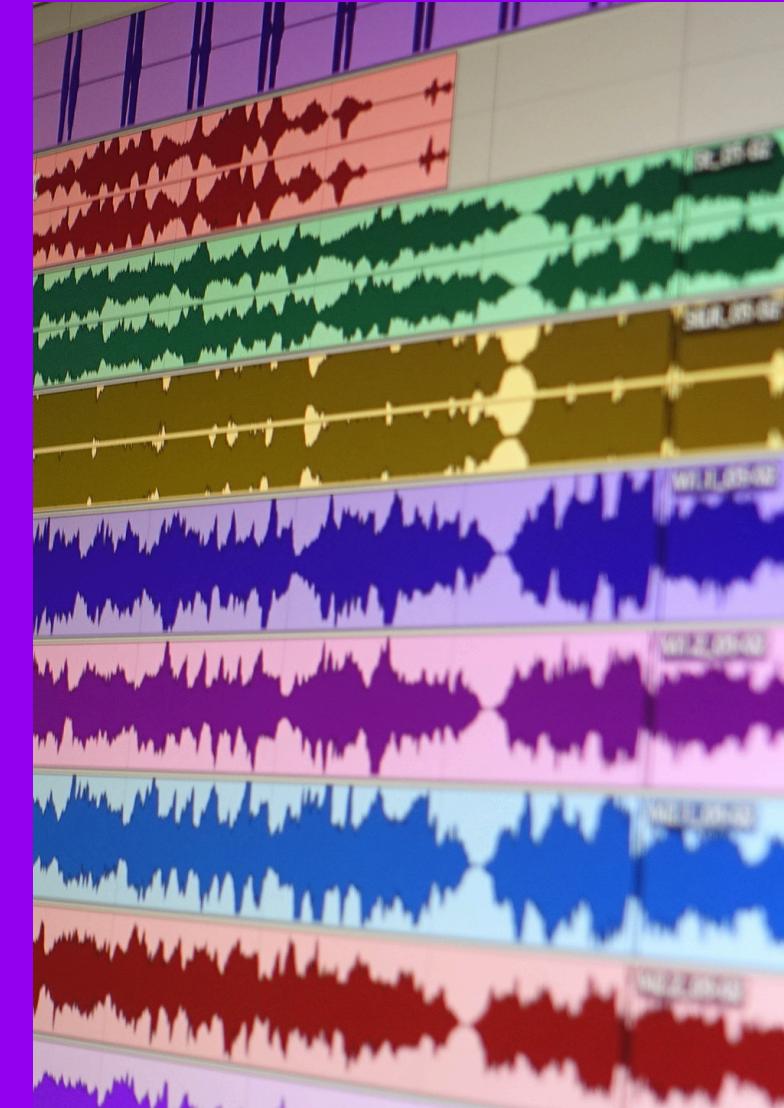
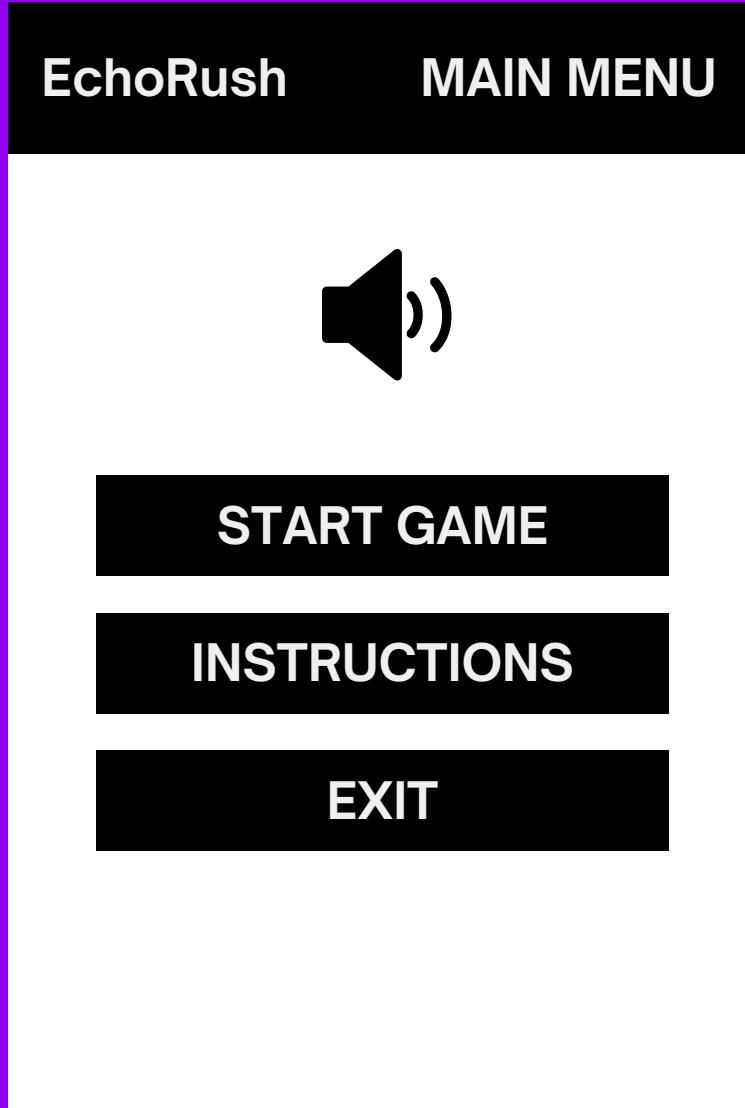
Headphones



Microphone

(08)

ARCHITECTURE



USER INTERFACE

Menu & Instructions

GAME LOGIC

Scoring, Gameplay &
DDA

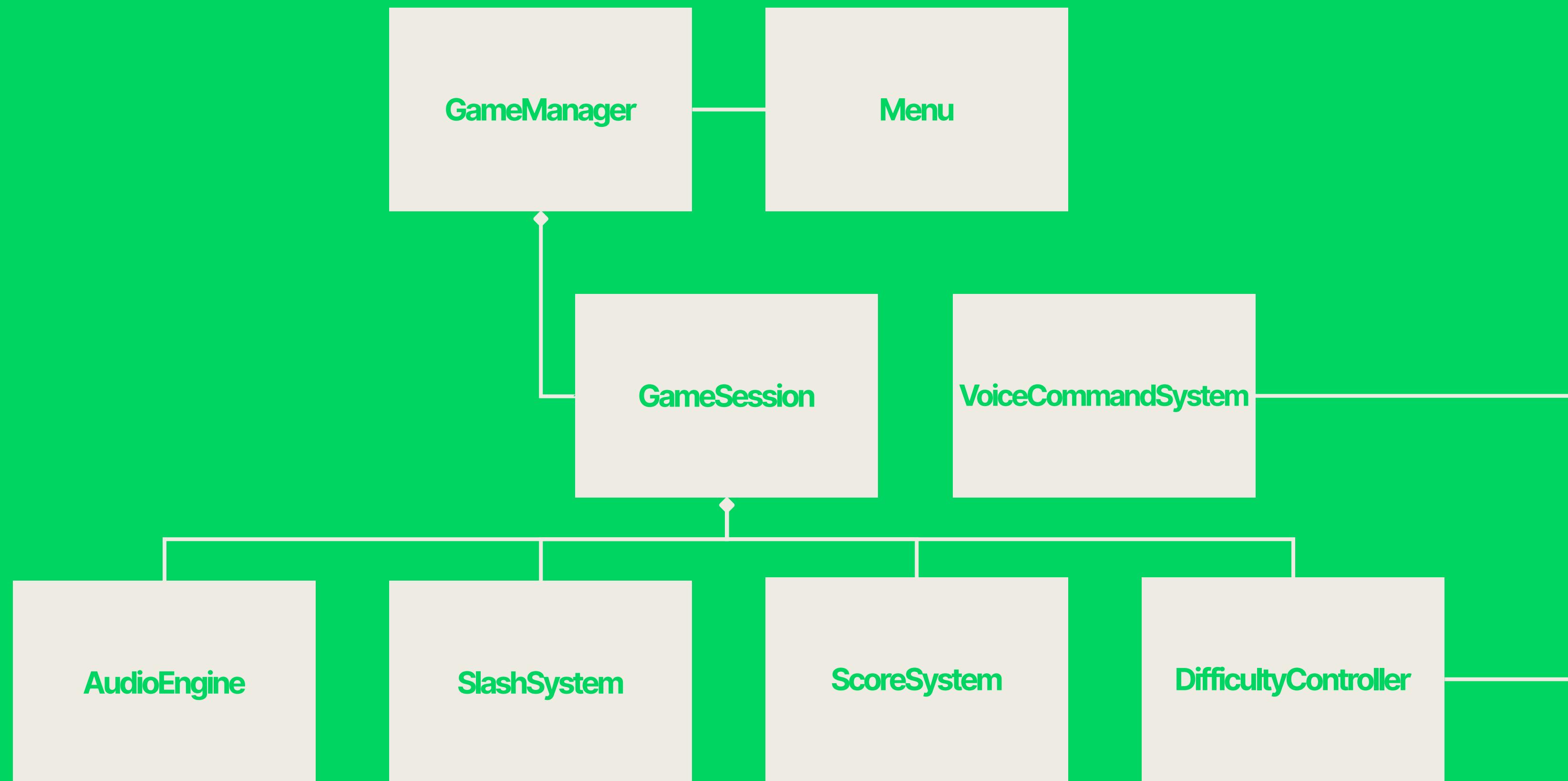
AUDIO I/O

Spatial Audio & Mic
Input

HARDWARE

PC, Headphones &
Controller

CLASS STRUCTURE



(10)

MAIN MENU

EchoRush

INSTRUCTIONS

USER INTERFACE

CLEAN & MINIMAL

(11)

PAUSE MENU

IN-GAME

START GAME

INSTRUCTIONS

EXIT



EchoRush

Player 1

EchoRush

Player1

EchoRush

Player 1

EchoRush

Player 1

EchoRush

Player1

EchoRush

Player 1

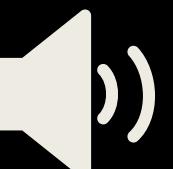
START GAME

INSTRUCTIONS

EXIT



Sit iste quidem quo eius praesentium et commodi repudiandae sit
unde mollitia est voluptatem voluptatem ex quos galisum est libero
ullam. Et laboriosam galisum aut recusandae natus ut veritatis veniam
ex rerum galisum et quia enim quo voluptatum repudiandae sit minus
Quis.



CONTINUE

CHECK SCORE

EXIT



YOUR SCORE

5081

HIGHEST SCORE

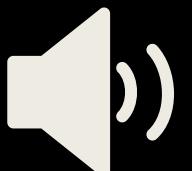
10,272



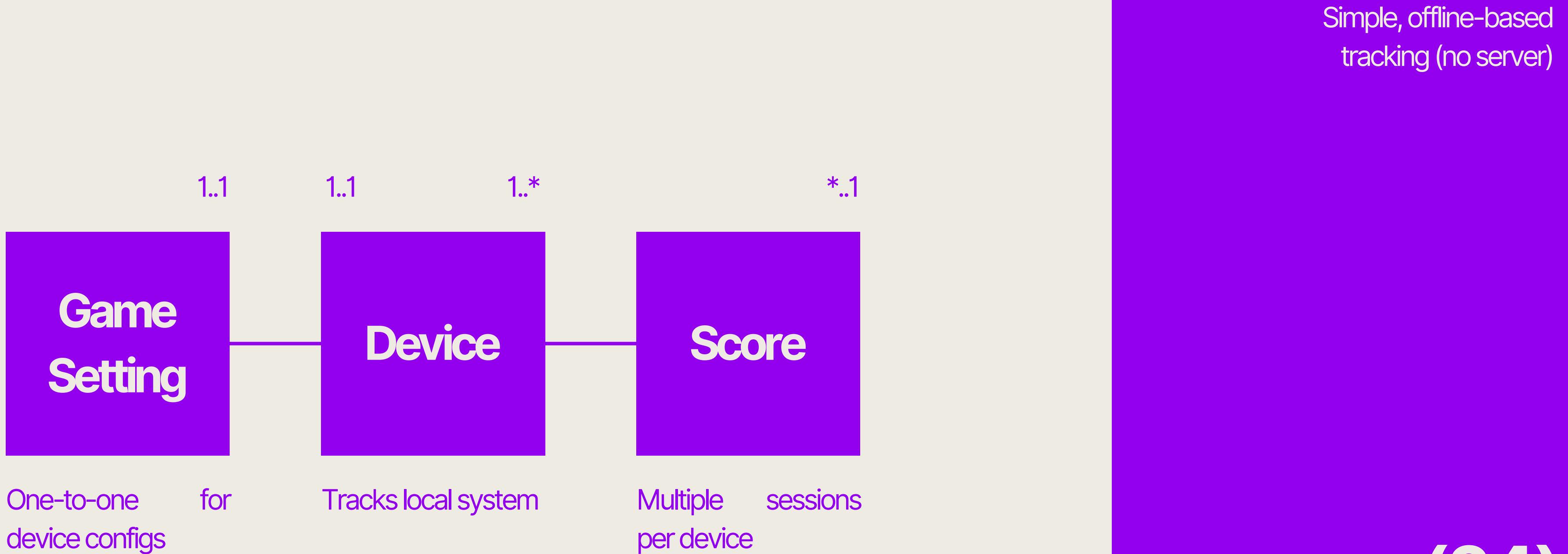
START GAME

INSTRUCTIONS

EXIT



DATABASE DESIGN



PLAN FOR PSM2

SEMESTER BREAK

Prep with Unity, APIs

GET FAMILIAR WITH VOICE/AUDIO TOOLS

INTERNSHIP PERIOD

DEVELOP ~40% OF THE GAME

BACKEND TESTING

SEMESTER II 2025/2026

FINALIZE DEVELOPMENT

BEGIN USER TESTING WITH SBM



ACHIEVEMENTS



Developed full concept & structure

Mapped key accessibility features

Designed architecture & gameplay logic

Understood the importance of non-visual gaming



LET'S MAKE GAMING
MORE HUMAN,
TOGETHER.