Vaccine Games For Teens

MEDICAL GAMING SOLUTIONS

Our Team

Lenin Valdivia

Team Lead

Rain Bigsby

Customer Communicator

Veronica Cardenas

Documentor / Editor

Ethan Ikhifa

Architect

Tayyaba Shaheen

Team Mentor

Ashish Amresh

Client

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01

PROBLEM & SOLUTION

What is broken and how are we going to fix it?

THE PROBLEM

Sponsor and Organization

- Sponsor: Dr. Ashish Amresh, with expertise in video game development and a passion for addressing public health issues.

- Organization: Medical Gaming Solutions, dedicated to creating engaging solutions for healthcare challenges.

- Role: Dr. Amresh aims to bridge the gap in adolescent vaccination rates through interactive video game interventions.

- Contribution: The organization develops content-agnostic game frameworks to address various medical subjects, facilitating rapid game development.

Existing Issues

- Inefficiencies: Current vaccination campaigns lack engagement among adolescents, leading to low uptake rates.

Client's Business Area

- Our client operates in serious games research, focusing on adolescent vaccination awareness.

- Significance: Vaccination plays a crucial role in preventing hospitalizations and deaths among adolescents.

- Scale: Despite the importance, vaccination rates among adolescents are suboptimal, highlighting the need for innovative interventions.

Specific Problems

- Poor vaccination rates among adolescents aged 12-17 and 5-11.

- Limited intervention studies aimed at improving vaccination rates in this demographic.

- Lack of engaging platforms within clinical settings to promote vaccination awareness.

- Challenges in maximizing interaction time to effectively convey vaccination messages to adolescents and their parents.
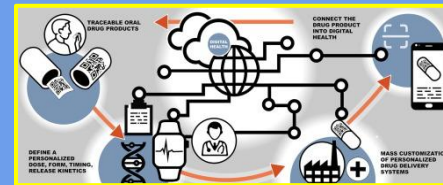
THE SOLUTION

Spread Awareness Through Gaming

- Knowledge Drops related to domain content
- Game environment can allow subconscious learning
- Data will allow researchers to learn and assist solving the problem

Easily Usable Framework

- Modifiable component system for customization
- Variety of genres with unique components
- Easy to understand architecture

02

# IMPLEMENTATION OVERVIEW

Our requirements.

IMPLEMENTATION OVERVIEW

MAJOR REQUIREMENTS

- Easily Accessible/Playable
  - Players have a limited time to play while waiting for their appointment

- Behavior Change
  - Knowledge Drop components
  - Track in-game data for researchers to determine outcomes

- Customization
  - Components can be easily modified to suit the users preferences
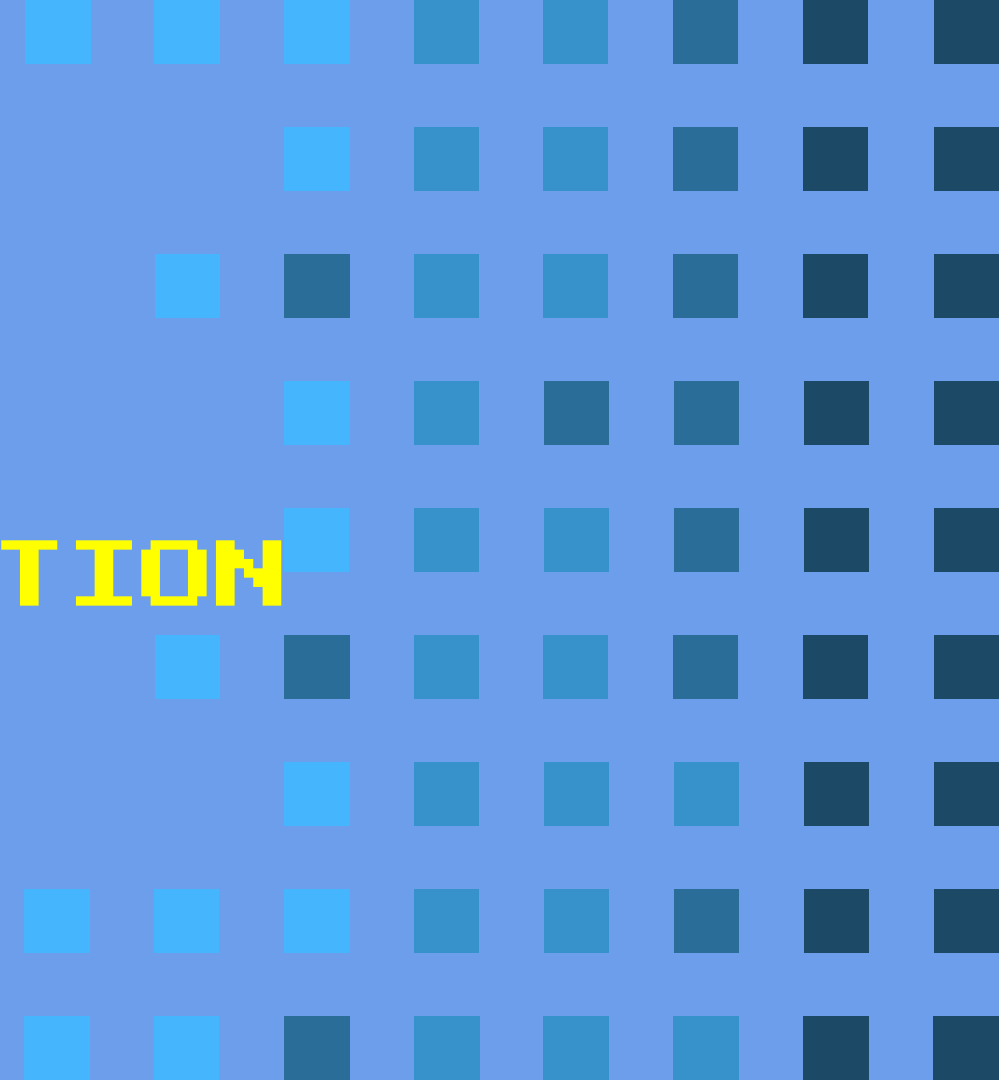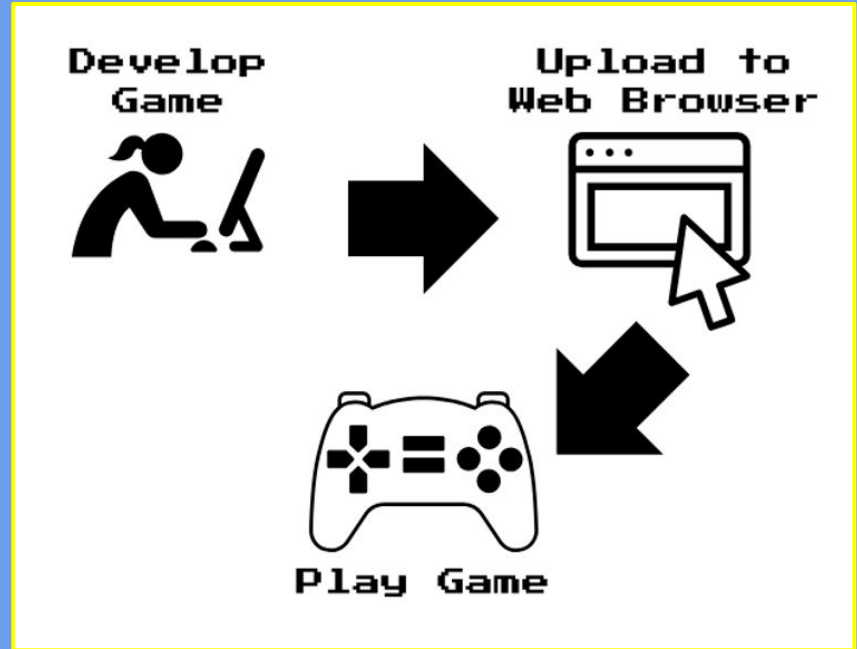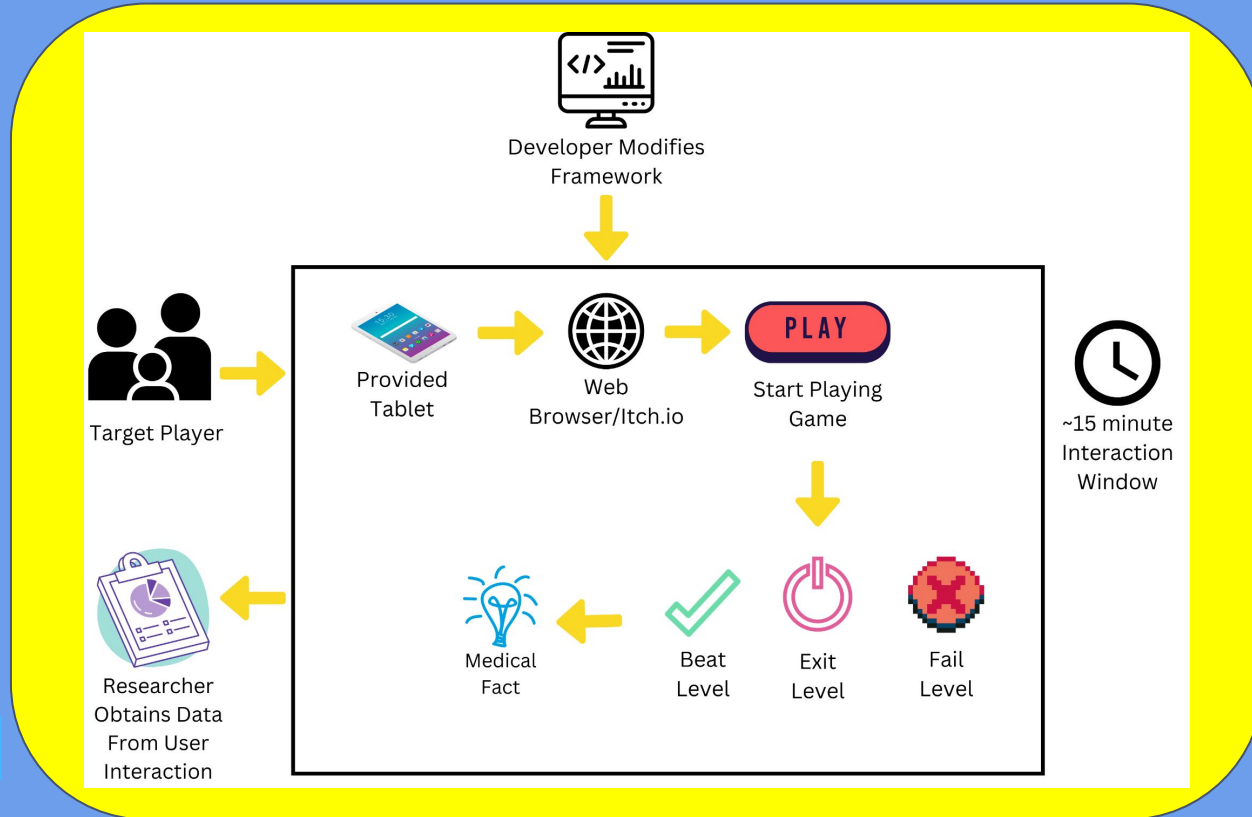
Game Engine

Web Browser

- Unity
  - HTML5 and WebGL development support
  - Compatible with a wide range of platforms

- Itch.io
  - Easy to upload and find games
  - Mobile device compatibility
  - HTML5 and WebGL platform support
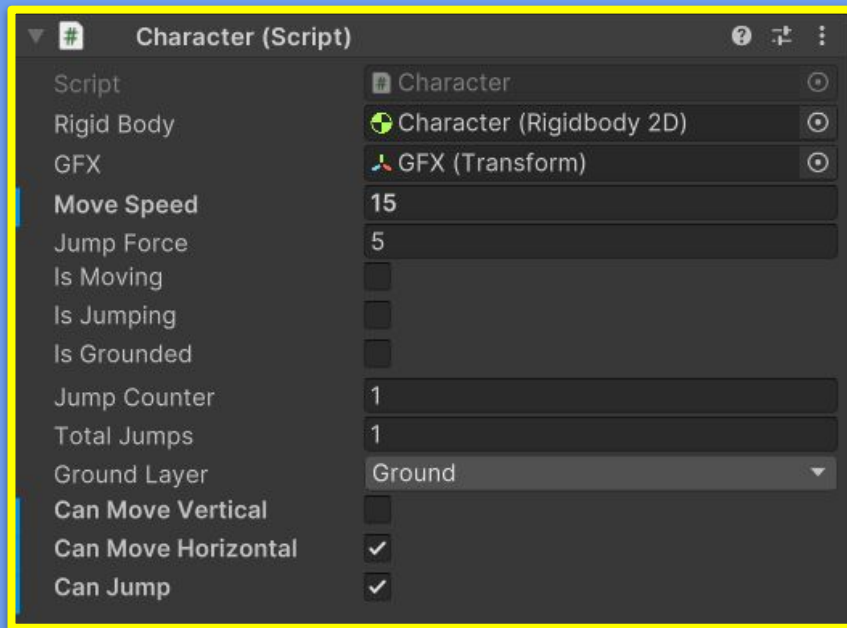
03

IMPLEMENTATION DETAILS

Overall architectural shape
of our implementation.

CHARACTERS

COMPONENTS

- Character Prefab Component
  - Movement and interaction
  - Player controller
  - Autonomy

Character (Script)	
Script	Character
Rigid Body	Character (Rigidbody 2D)
GFX	GFX (Transform)
Move Speed	15
Jump Force	5
Is Moving	☐
Is Jumping	☐
Is Grounded	☐
Jump Counter	1
Total Jumps	1
Ground Layer	Ground
Can Move Vertical	☐
Can Move Horizontal	☑
Can Jump	☑

# ⊦ ENVIRONMENT ◁

COMPONENTS

- Platform Component
    - Moveable platforms
    - Customizable platforms
    - Character collision handling

- Obstacle Component
    - Success/Failure zones
    - Player collision handling

LEVEL MANAGER

COMPONENTS

- Character Respawn Component
  - Handles reappearance after level failure
- Scene Manager Component
  - Developers choose which scene to load next
- Fall Detector Component
  - Load another scene or fail level
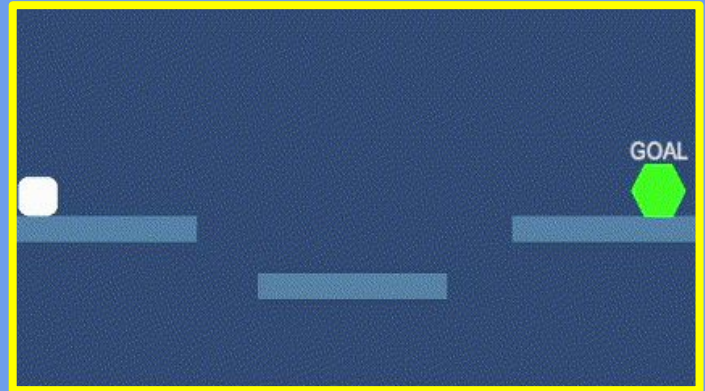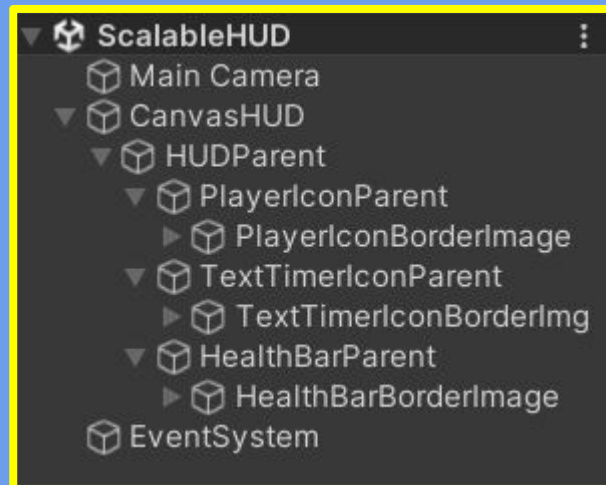
UI CAMERAS

COMPONENTS

- Scalable HUD Component
  - Parent objects for easy customization
  - Replaceable images and sprites
  - Removable UI elements

04

CHALLENGES AND RESOLUTIONS

Implementation challenges and their solutions.

TECHNICAL CHALLENGES

GITHUB AND UNITY COMPATIBILITY

- Amount of files when importing packages range around 15,000 to 20,000
- GitHub has a file size limit of 100 MB per file

SOFTWARE REUSABILITY

- Our framework requires maximum reusability
- Difficult to determine what developers would like to implement in their medical-focused games

SOLUTIONS

GITHUB AND UNITY COMPATIBILITY
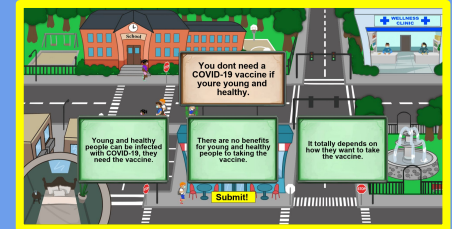
- Currently importing as packages into GitHub, with different components as their own package.

- Included a GitIgnore for Unity to avoid any unnecessary commits such as metadata files

SOFTWARE REUSABILITY

- Referring to example games from our client developed in GameMaker

- Making sure all components are in a singleton design, meaning they are not dependent on another component.

OUR MILESTONES

February 2024 | March 2024

Task name	Assigned	Status
Unity Implementation	Everyone	In process
Main Menu Module	Ethan	Done
Audio Manager	Ethan	Done
Joystick Component	Rain	Done
Character Module	Lenin	Done
Character Classes	Lenin	Done
AI Handling	Lenin	Done
Environment Module	Rain	Done
UI Camera	Veronica	Done
Cameras	Veronica	Done
Level Manager	Veronica	Done
Game Cameras	Lenin	Done
Statistics	Rain	Done
Knowledge Drop	Rain	Done
Game Mechanics Componen	Ethan	Done
Use Case 1	Everyone	Done
Use Case 2	Everyone	In process

CONCLUSION

Importance of the Project

- The main role of COVID-19 vaccination in preventing hospitalizations and deaths among adolescents.

- Urgent need for intervention studies to address the gap in vaccination rates among adolescents.

Project Vision and Goals

- Development of a video game framework to promote vaccination awareness among adolescents.

- Creation of fast-paced, engaging games within clinical settings to maximize impact during short interaction times.

Implementation Overview

- Technologies used: C# scripts in Unity game engine.

- Support for WebGL builds to make games accessible via web browsers, particularly on mobile devices.

Confidence in Project Success

- Dedication to overcoming challenges and delivering a high-quality solution.

- Confidence in the project's ability to achieve objectives and positively impact adolescent vaccination rates.

Commitment to Software Reusability and Scalability

- Maximizing software reusability to benefit future developers.

- Scalability of the framework to accommodate different game genres and medical subjects.

THANKS