Fishbowl

A Virtual Reality Training Platform

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A Virtual Reality Training Platform where:

- Teachers can create interactive 3D lessons in VR
- Students can select from and take these interactive lessons in VR

Team:

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- **Academic Advisor** - Dr. Jillian Aurisano

Project Abstract

We envision Fishbowl as primarily a Virtual Reality application where teachers, instructors and industry professionals will be able to enter a 3D interactive studio, place or import topic relevant assets, manipulate these assets and record their states and interactivity to define a complete 3D lesson. Students interested in these lessons will be able to enter the Fishbowl VR application or search a Web GUI to find relevant lessons, load these lessons into their application and then interactively complete these 3D lessons by following instructions and manipulating the assets saved to the lesson by the author.

User Stories

Core Users:

- Teacher User (Creates a VR Lesson in our application.)
- Student User (Uses our application in VR to experience the Lesson and pass/fail.)

Use Cases 1, 2: Welding

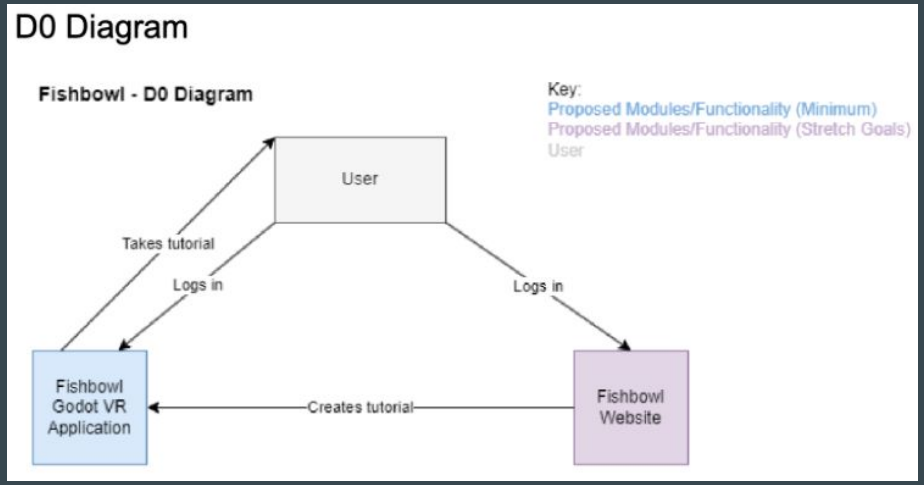
- As a Welding Instructor, I want to provide my students a VR/AR lesson on welding a T Joint to save resources and be safe.
- As a Welding Student, I want to learn how to weld a T Joint in order to succeed at my job.

Use Cases 3, 4: Setting an IV

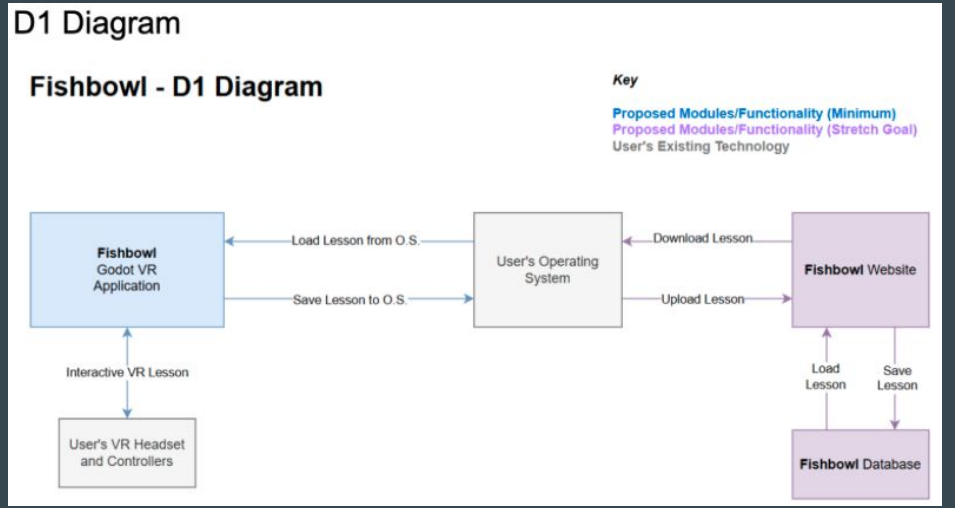
- As a Medical Professional, I want to provide my underlings a VR/AR lesson on safely administering an IV in order to increase safety.
- As a Medical Student, I want to learn how to insert an IV in order to increase safety and efficiency.

Design Diagrams - D0 and D1

D0 Diagram

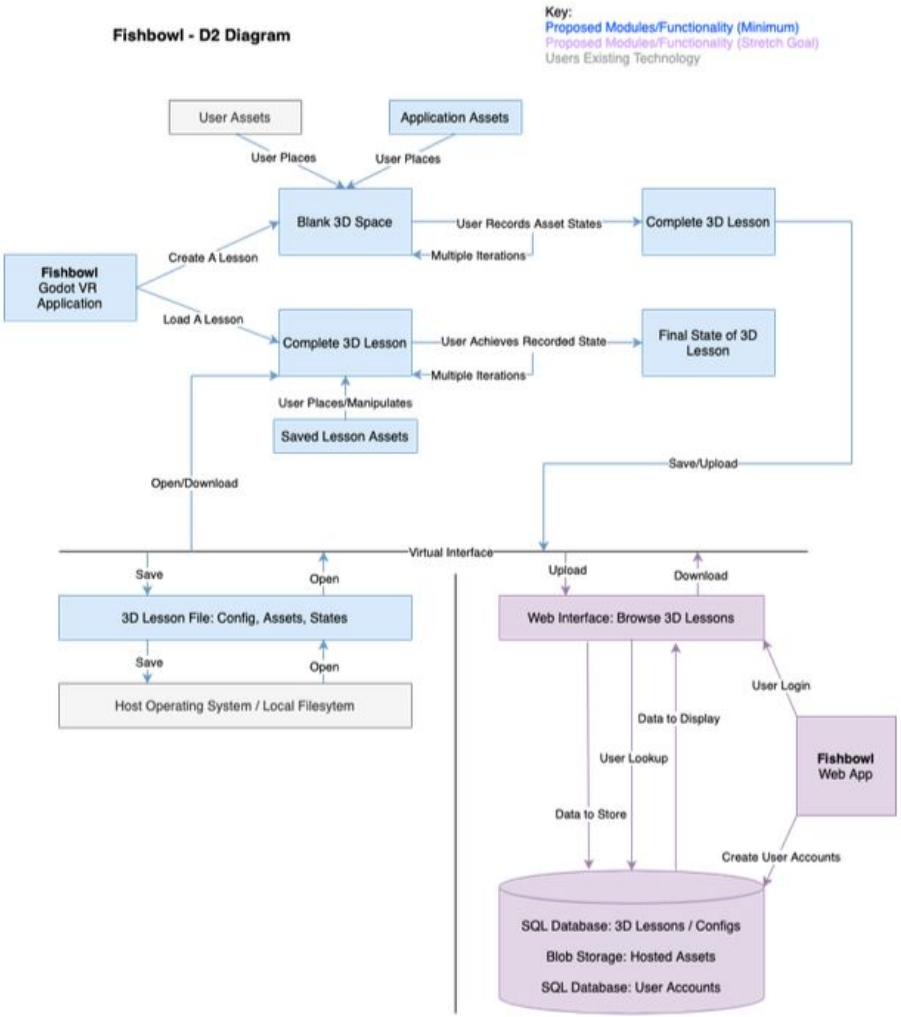


D1 Diagram



Design Diagrams - D2

D2 Diagram



Project Constraints

- **Finances** - Our project requires the use of VR, and additionally may require some third-party software/packages. At the moment, we already have access to 2-3 VR headsets, but this is a constraint to keep in mind as the project develops.
- **Professional Expertise** - Since our project requires creating “tutorials” for various fields, we will need to research those fields. For example, creating a tutorial for simple weld practices will require researching basic welding techniques.

Project Progress

We are in the planning phase and our project repo has been created. We have done some testing in Godot to make sure it will work for what we need and we have done some research into what our first steps will be.

Expected Accomplishment

At the end of this term, we would like to have a plan together to create the Fishbowl VR application, and we would like to create a proof of concept application that allows for basic movement in VR and manipulation of 3D objects (which will be the basis for our final application).

Division of Work

No.	Task	Primary Person
1	Setup GitHub repository for project code.	Caleb
2.	Define code repository structure / main folders.	Caleb
3.	Setup a GitHub project and begin to place development tasks into the backlog	Jake
4.	Investigate basics and best practices of VR development in Godot in the current state.	All
5.	Specify an appropriate proof of concept prototype for the Fishbowl VR application	Jake
6.	Investigate services available to host a web interface for the Fishbowl VR application and cloud storage options.	Sean
7.	Mockup a UI and user flow diagram for the web interface.	Sean
8.	Develop proof of concept prototype of the Fishbowl VR application.	All
9.	Document all issues encountered in the development process of the proof of concept prototype.	Caleb
10.	Document major design goals for the full Fishbowl VR application.	Jake
11.	Research and Design the needed networking layer for Fishbowl VR.	Sean
12.	Design the necessary save file elements / structure for saving complete 3D lessons.	Caleb
13.	Design a UI mockup / prototype for the UI of Fishbowl VR.	Sean
14.	Validate the design of the Networking, Save File Structure, Web Interface and Core Object Design for compatability.	Jake
15.	Implement the 3D lesson creation, placing assests, recording states.	Caleb
16.	Implement 3D lesson playback, state recognition, undo/redo, placing assests.	Jake
17.	Implement UI for Fishbowl VR, local search, interface with the web, common UI widgets used throughout.	Sean
18.	Test and validate functionality of Fishbowl VR in basic cases.	All
19.	Create some sample VR tutorials for Fishbowl VR.	All

Expected Demo

We expect to have a demo of our Fishbowl VR application where users can run through a single tutorial scenario. Additionally, we would like to demo the ability to create more scenarios and use them in our application.