MICHIGAN STATE UNIVERSITY

Project Plan

Oculus Rift Inspection and Training Tool

The Capstone Experience

Team Union Pacific

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Spring 2016

From Students…
…to Professionals

Functional Specifications

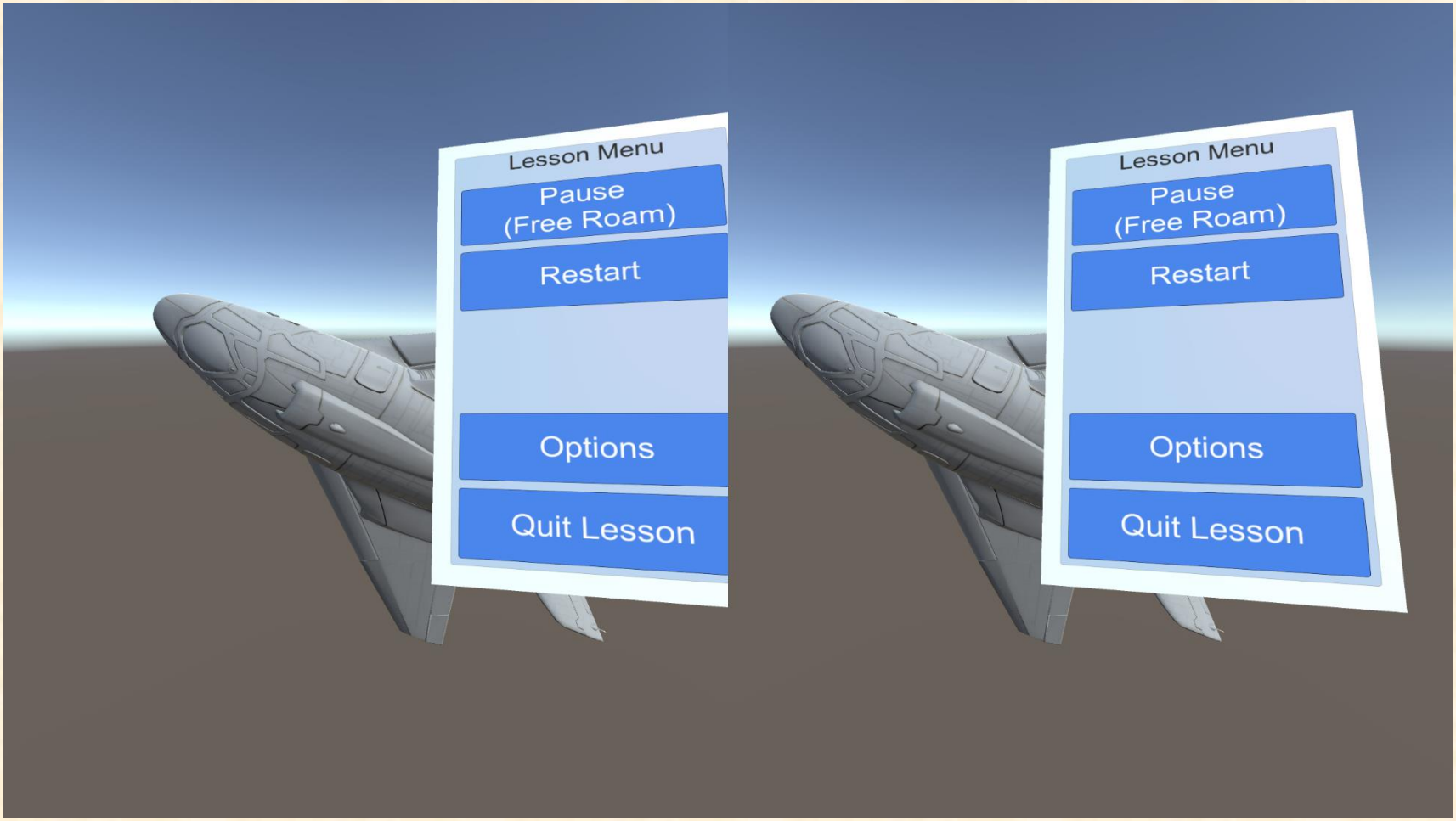
- Freeform View
  - Load models from library of objects
  - Rotate, zoom, and explode into constituent parts
- Guided Lessons
  - Created guided lessons with scripting language
  - Play back commands along with audio and visuals
- Objective-based Scenarios
  - Score-based system to test user knowledge
  - Finding a broken component, for example.

Design Specifications

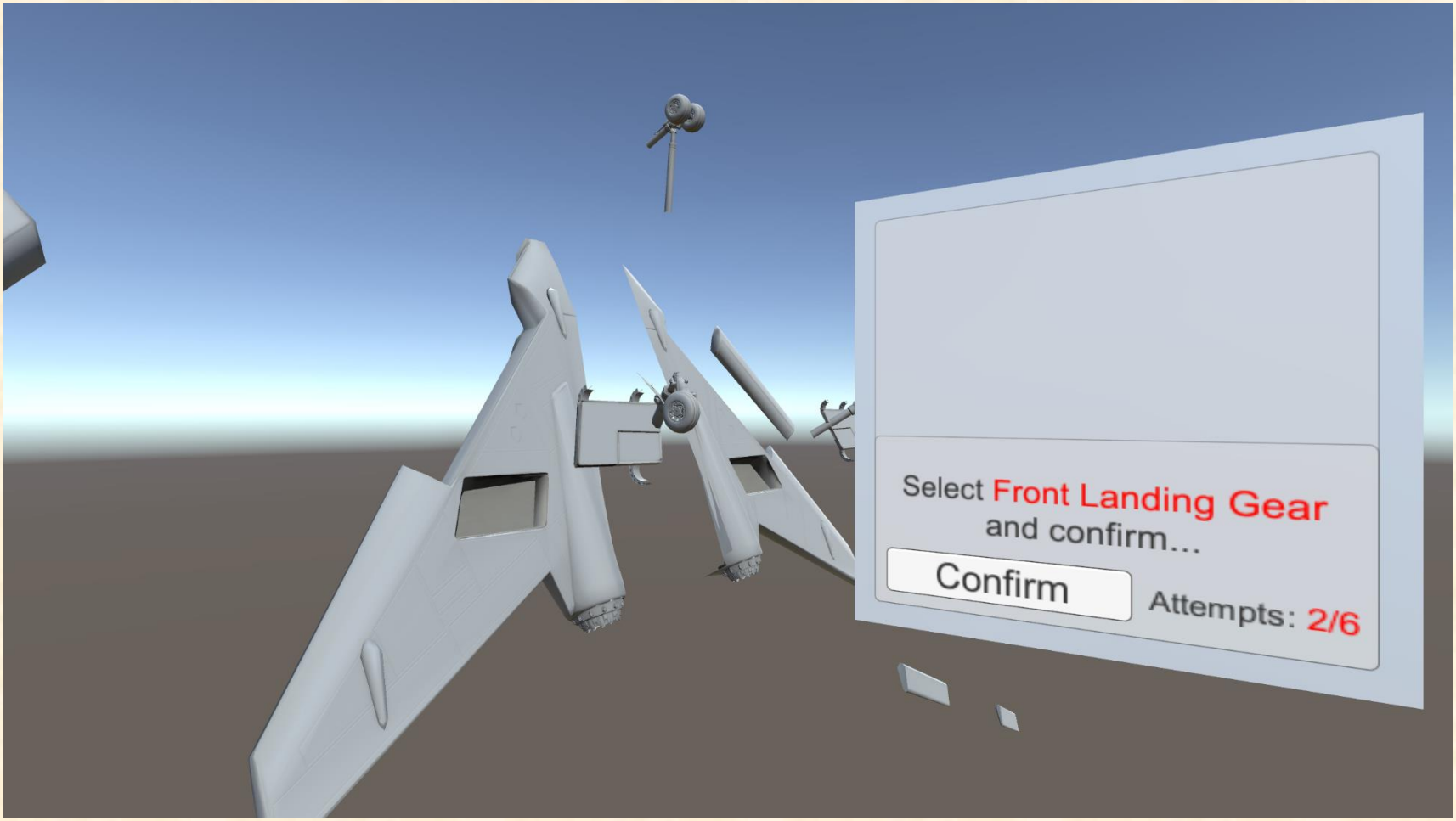
- Two HUDs depending on display mode
- Desktop display mode
- Oculus display mode
  - Traditional HUDs cause disorientation
  - HUD exists in simulation space as 3D objects
  - Context-dependent panels tracks with camera

Screen Mockup: Lesson Menu 2D

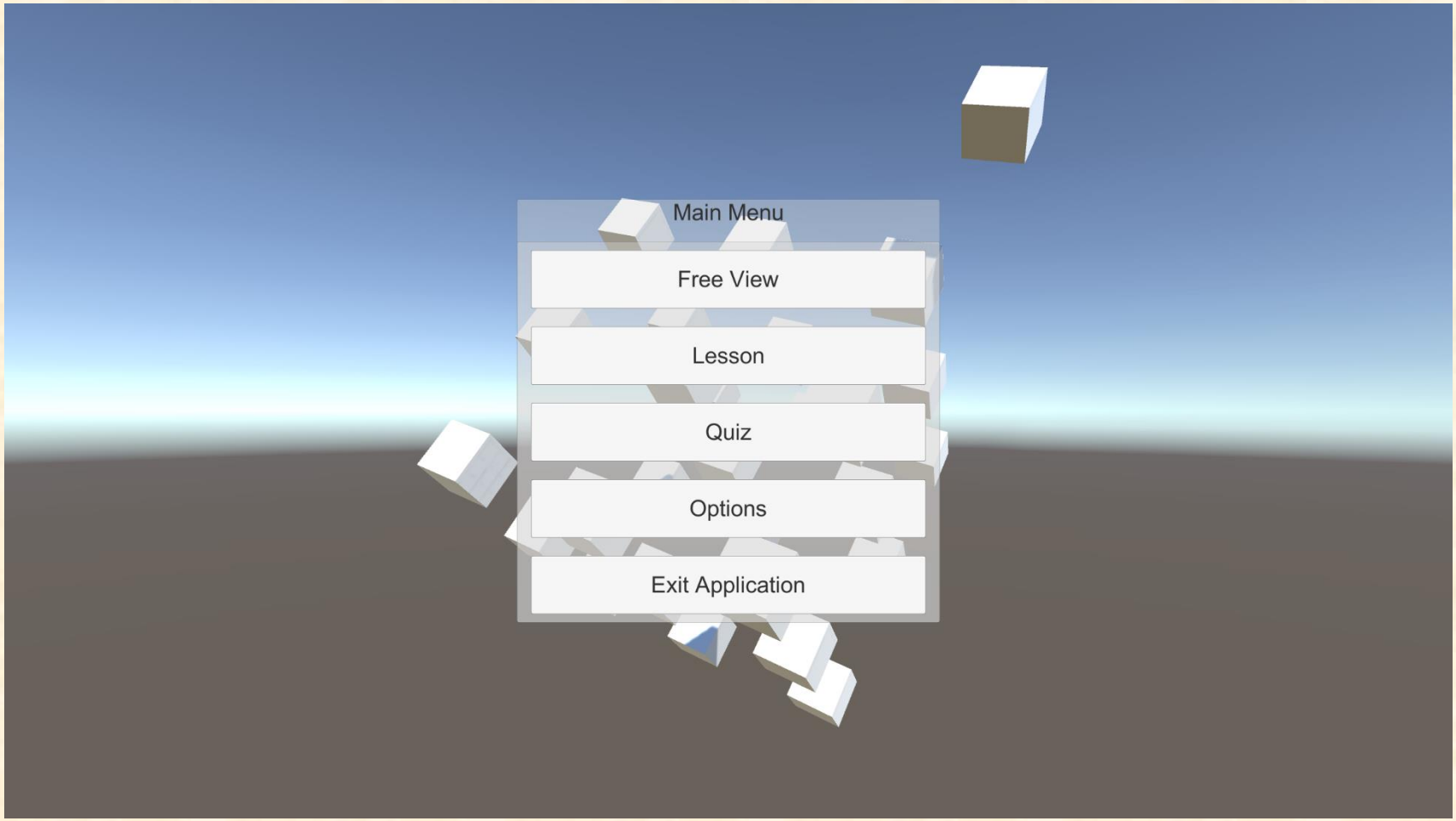
Screen Mockup: Lesson Menu 3D



Screen Mockup: Quiz System



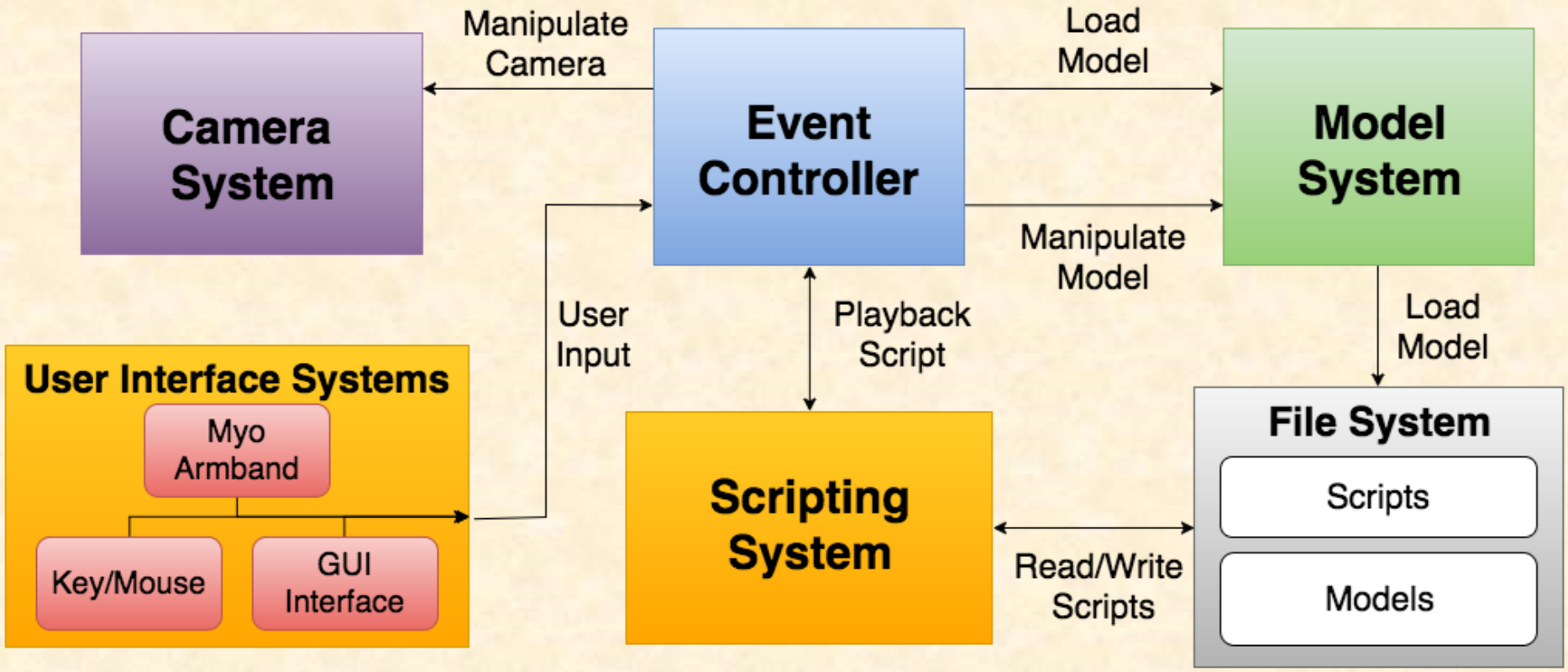
Screen Mockup: Main Menu



Technical Specifications

- Event Controller is the core of the application
  - Interprets inputs from UI and Scripted Lessons
  - Passes inputs to Model and Camera Systems
- Model System loads and manipulates models
- Camera System handles view mode and movement
- Enables scripting events and playback

System Architecture



System Components

- Hardware Platforms
  - Oculus Rift Development Kit 1
    - Runtime 0.4.4
  - Myo Armband
- Software Platforms / Technologies
  - Unity3D 5.3
    - Can deploy to any OS

Testing

- Unity Test Tools Asset
  - Unit Testing of code
  - Free Unity Asset
- Field testing with users
  - Bring in users that are unfamiliar with Oculus Rift
  - Implement what users intuitively want to do

Risks

- Oculus DK1 Integration with Unity
  - Leveraging client experience with Oculus
- Intuitive UI for Oculus Rift
  - Researching best practices and testing with users
- Exploded View Scalability of Complex Models
  - Ensure object structure and runtime loading are efficient
- Feature Creep
  - Compromise with client to focus on core features