



Beta Presentation

Cars in the Clear VR Training

The Capstone Experience

Team Union Pacific

Timothy Alcorn
Antonio Capozzoli
Brayden Goff
Cameron Otten
Vivek Revankar
Will Schmidtfranz

Department of Computer Science and Engineering
Michigan State University



*From Students...
...to Professionals*

Fall 2025

Project Overview

- Proper management of railcars is crucial to safety
- Real-world training is challenging
- VR training eliminates logistical and safety concerns
- Prepare trainees before they use real equipment



Team Member's Technical Tasks

Technical Tasks Assigned

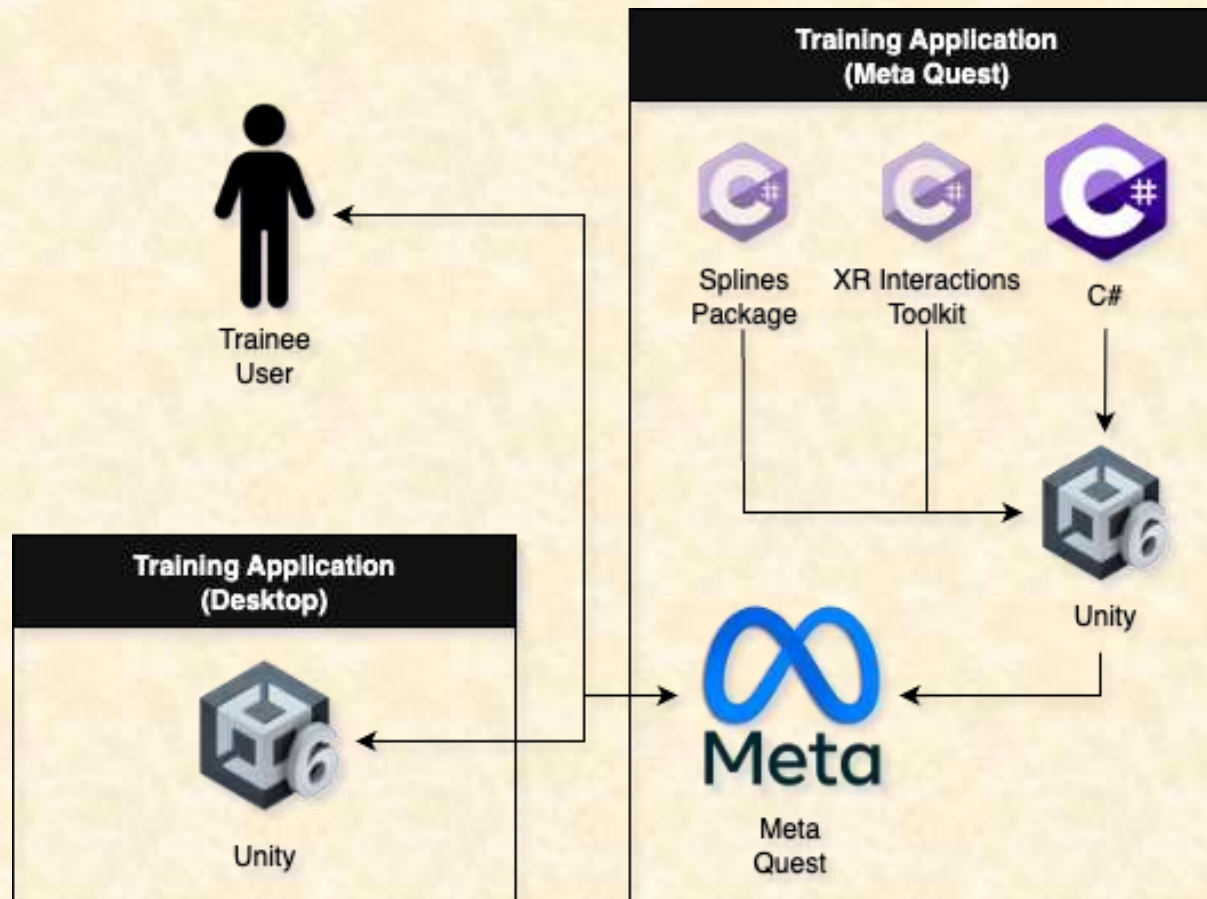
- Timothy Alcorn
 - Created scoring system, checking when objects are in the clear
 - Created grabbable cone object
 - Created mouse and keyboard player controller
 - Implemented mouse and keyboard controls for every system
 - Created web build for Scorm (learning management systems)
 - Added realistic VR controls to operating switches
- Antonio Capozzoli
 - VR Movement Settings, Persistent through Scenes
 - TrackPiece system for building track layouts/ railcar movement
 - Switch TrackPiece and Switch Interactable Functionality
 - UI Summoning
- Cameron Otten
 - Procedural Highlight generation, various shapes
 - Highlight shader
 - Ground shader
 - Vision Detection
- Vivek Revankar
 - VR Controller Gestures
 - Created Car Class with nodes for railcar connection
 - Hand Gesture Controls
- Brayden Goff
 - Coupling and decoupling
 - Realistic Railcar Motion
 - Created Various forms of fail detection
 - Created various steps of LISOPP as well as the logic behind how the steps interact with each other
- William Schmidtfranz
 - Interactive UI Features
 - Random generation of debris
 - Controlling LISOPP spawning
 - Voice control movements for railcar

Technical Tasks Completed

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System Architecture



Phase 1.5



Phase 2



Phase 4



Safe Switching



What's left to do?

- Features
- Stretch Goals
- Other Tasks
 - Bug fixing
 - UI wording updates
 - Repository cleanup
 - Environment updates



Questions?

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