

MICHIGAN STATE

UNIVERSITY

Project Plan Presentation

Railroad Switch Alignment Training

The Capstone Experience

Team Union Pacific

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

Project Sponsor Overview

- The Union Pacific Railroad system is the biggest in the United States. Operates in 23 states
- Over 32,100 route-miles in 23 U.S. states west of Chicago.
- As of 2022, Union Pacific Railroad recorded a \$147.23B U.S dollars market evaluation



Project Functional Specifications

- Misaligned switches lead to safety risks and property damage
- Web learning application
- Provide real footage of rail switches
- Help new and experienced conductors stay sharp
- Ultimately help prevent derailments



Project Design Specifications

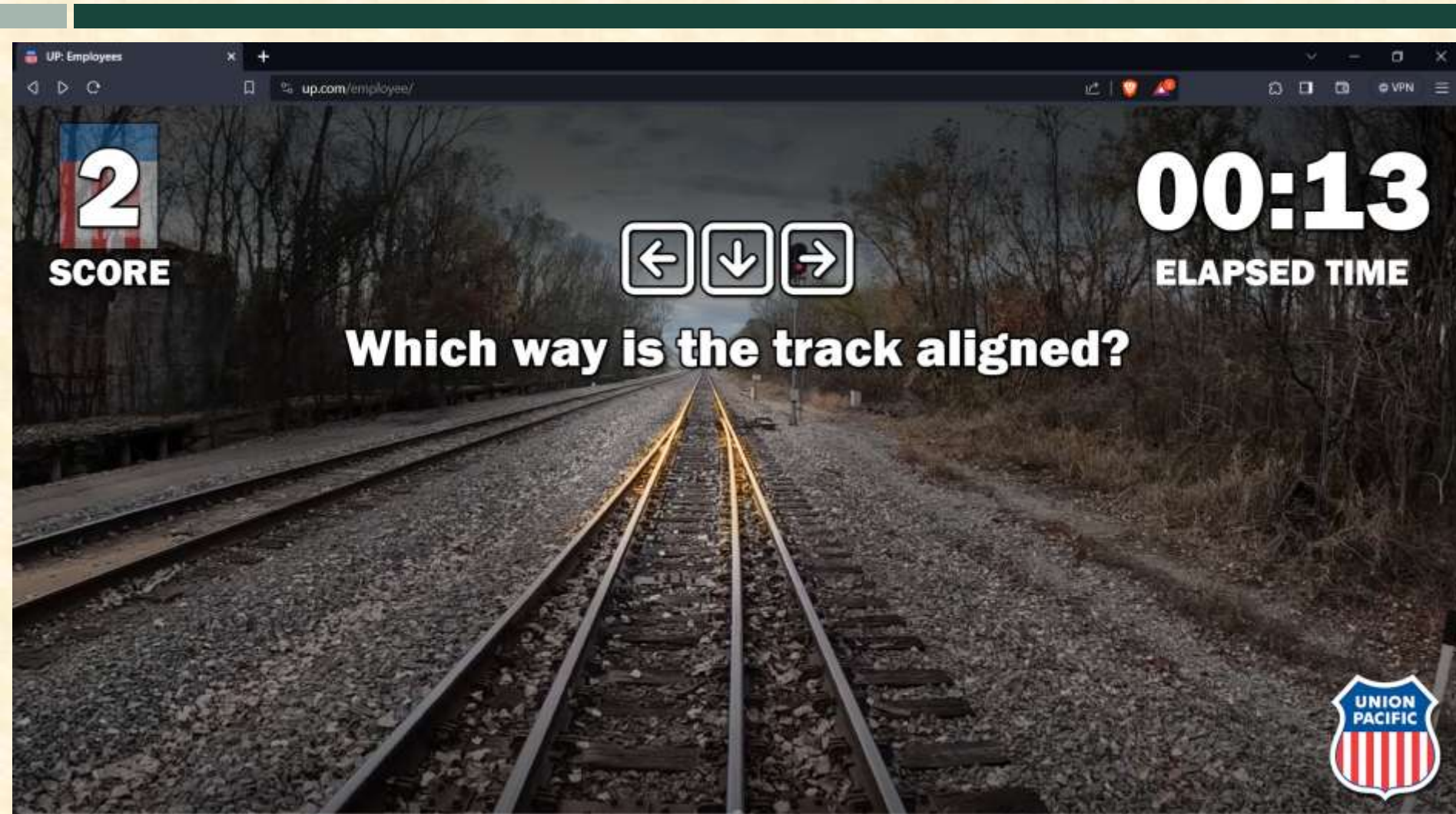
- Tutorial – Teaches controls and identifying rails switches
- Levels – Test player on identifying a set number of rail switches using real footage
- SCORM – Reports player performance back to instructor



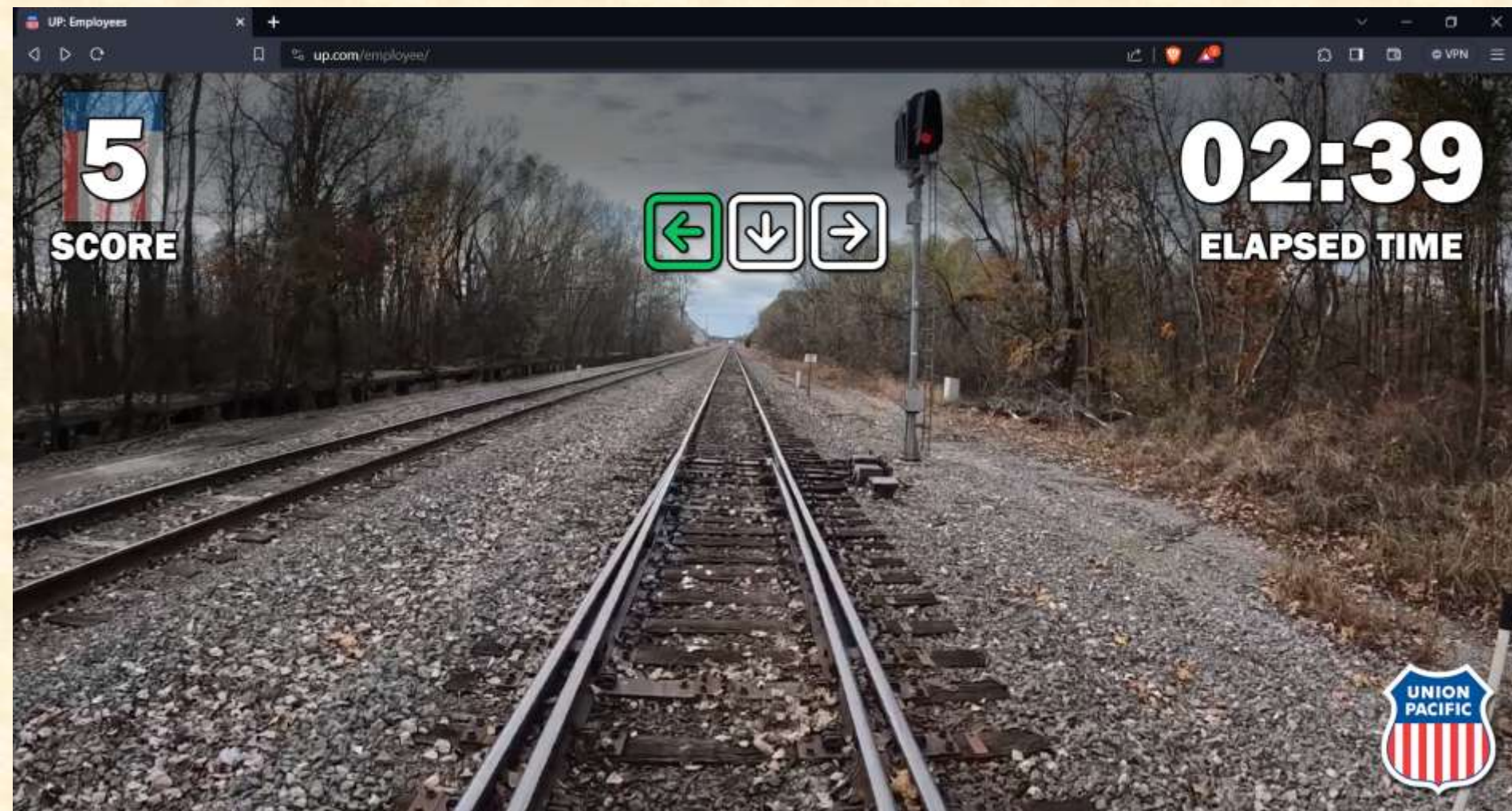
Screen Mockup: Start Screen



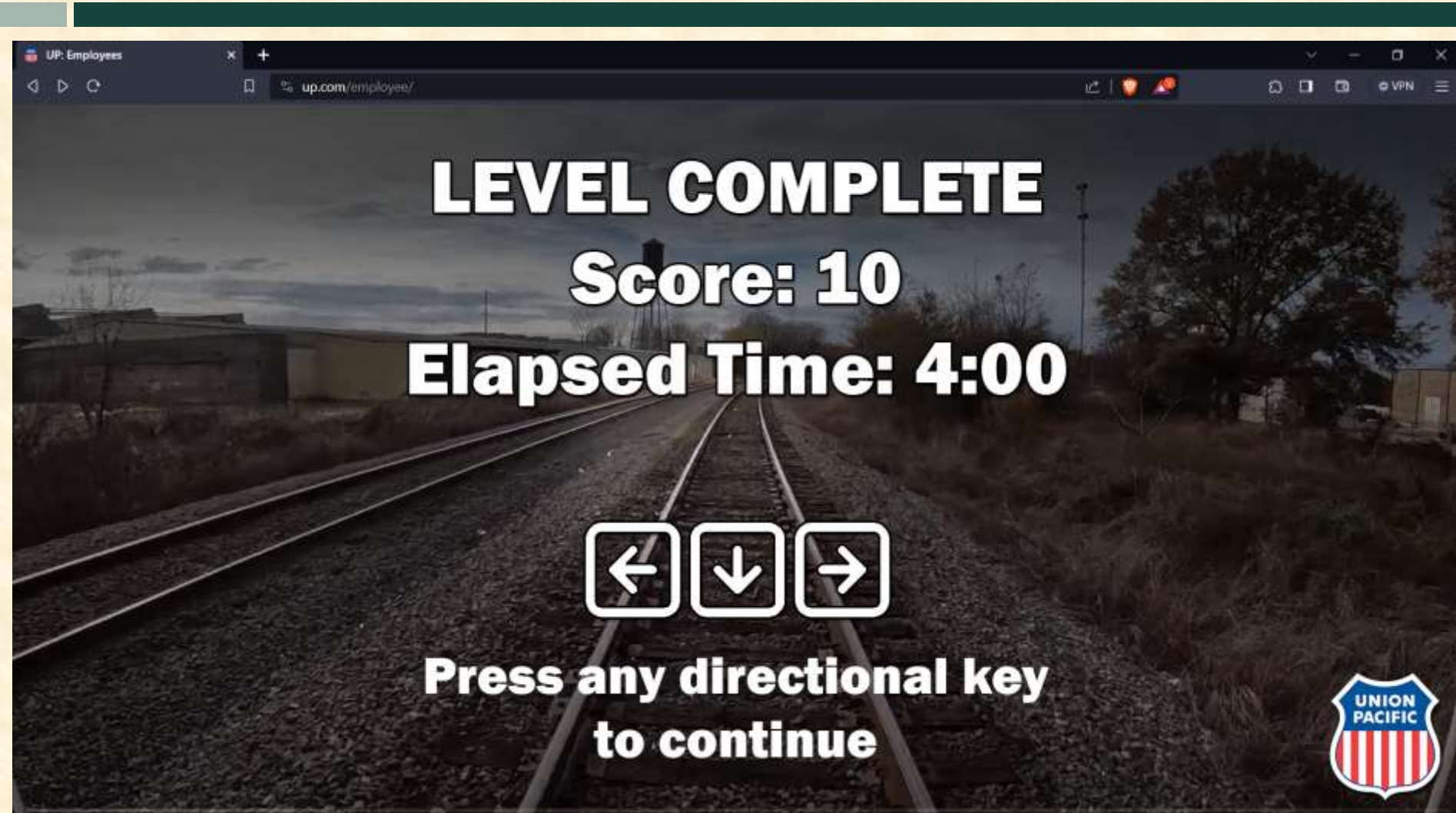
Screen Mockup: Tutorial



Screen Mockup: Gameplay



Screen Mockup: Level Complete

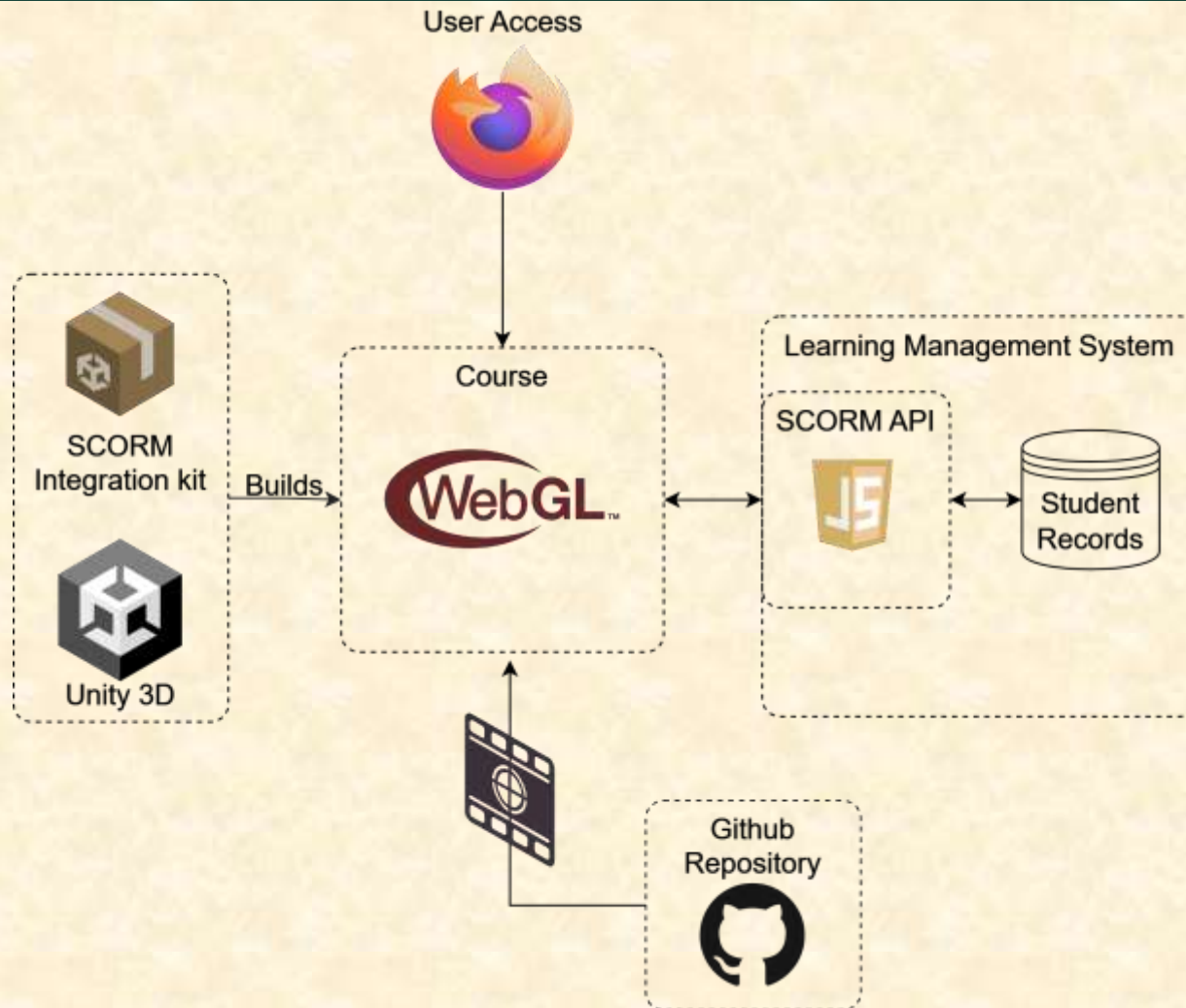


Project Technical Specifications

- Unity – 2D and 3D game development engine using C#
- WebGL – JavaScript library allowing unity software to run in a web browser
- SCORM – Industry standard specifications for learning content



Project System Architecture



Project System Components

- Hardware Platforms
 - Desktop computer
- Software Platforms / Technologies
 - Web browser
 - C#
 - LMS



Project Risks

- Risk 1
 - Implementing SCORM into Unity
 - Unity package to use that exports the WebGL build onto SCORM, but it needs work to function properly
- Risk 2
 - Video playing in Unity
 - Use dummy footage to test video player implementations
- Risk 3
 - Importing/Exporting videos into application
 - Create a prefab that can grab videos from an online database and test functionality to pull
- Risk 4
 - Large files in WebGL
 - Utilize the dummy video player and the SCORM interface throughout the semester



Questions?

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