

MICHIGAN STATE

UNIVERSITY

Project Plan

Railroad Arcade

The Capstone Experience

Team Union Pacific

Sarah Byrum

Matthew Howard

Caleb Howell

Gordon Huang

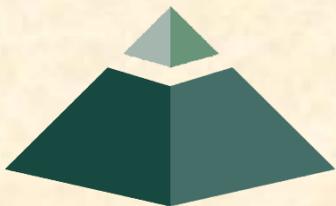
Margaret Wooten

Hongyu Yan

Department of Computer Science and Engineering

Michigan State University

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

Functional Specifications

- Build reusable components to reduce game development time
- Create a single, web-based location for all games in addition to Windows PC application
 - Simplifies uploading newly developed simulations
- Create three or more games to demonstrate reusability and functionality

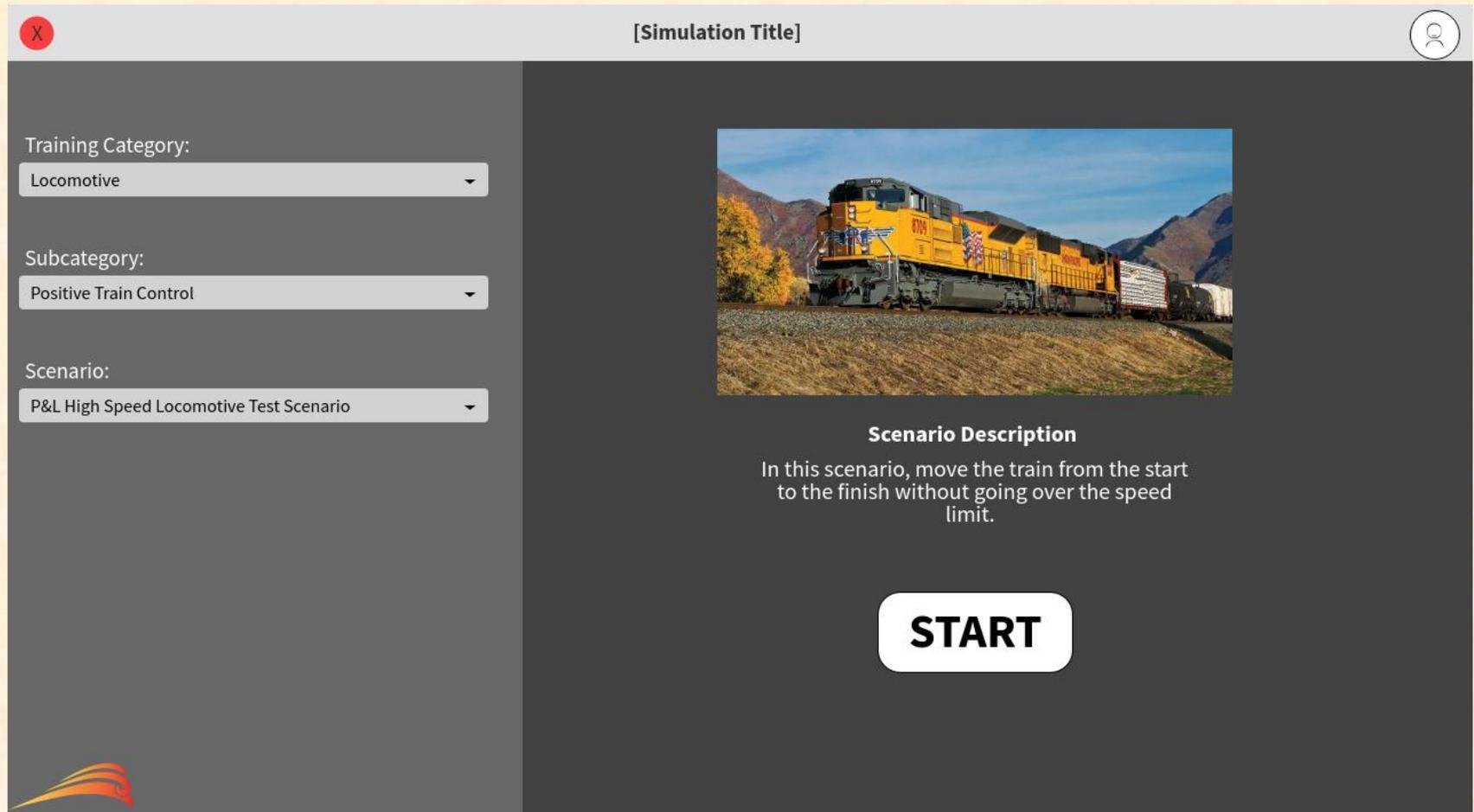


Design Specifications

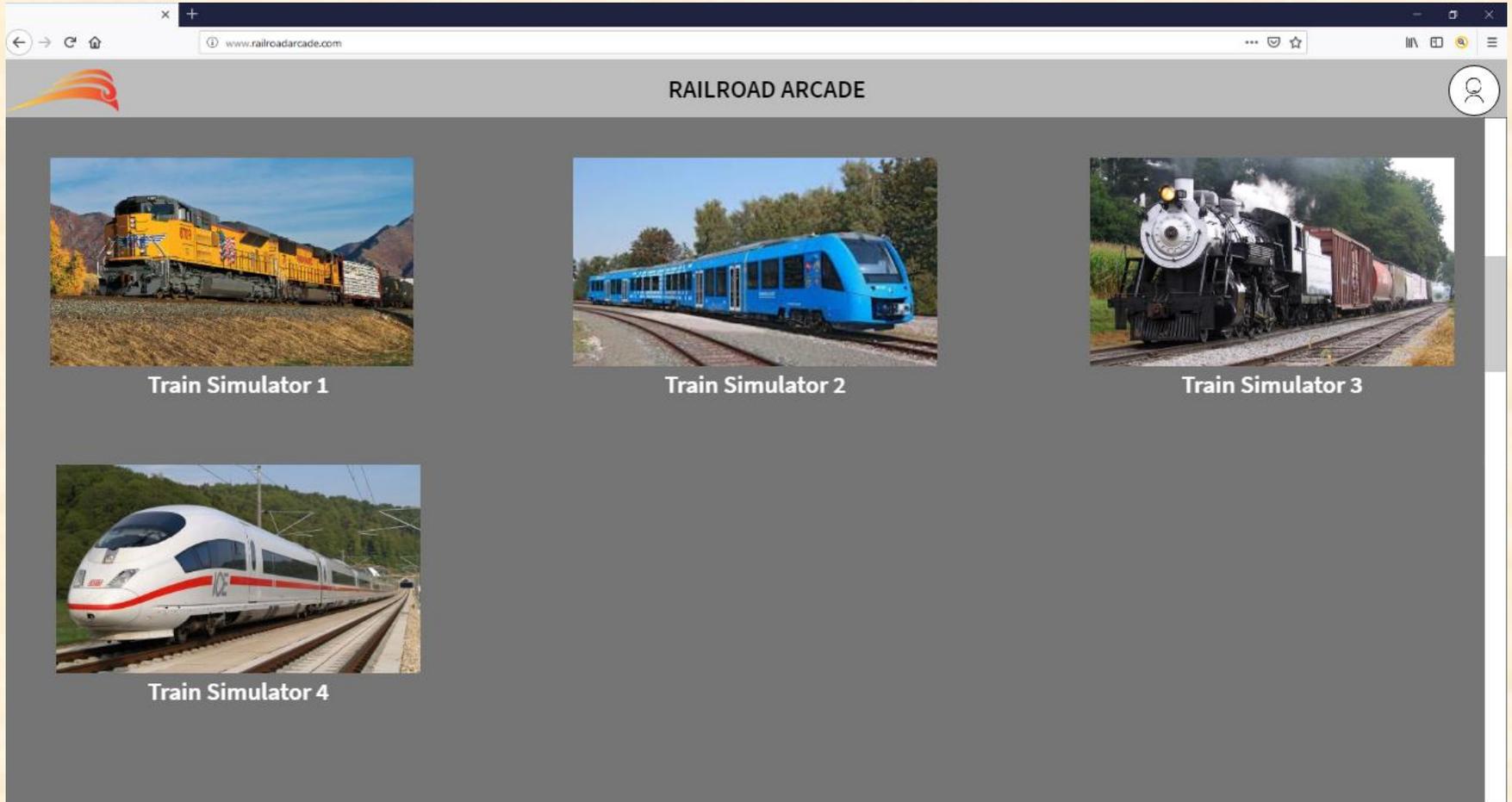
- Reusable component libraries allow for differing configurations
 - Main Menu, Scoring, Login, PDF Generation
- Website and Windows Application available
 - Application allows creation of new games
 - Website hosts all games created
 - Website holds leaderboard for simulation scores
- Individual score reports available for download
 - Database stores scoring data from completed levels
 - Available on both Windows PC and Website



Screen Mockup: Main Menu



Screen Mockup: Web Page



Screen Mockup: Website Leaderboard

The screenshot shows a web browser window with the URL www.railroadarcade.com. The page features a search bar, a dropdown menu labeled "Select", and a table with 8 columns: Game, Player, Overall, Completion, Procedures, Performance, Safety, and Details. The first row of the table shows "Game1", "Matt", and 100% scores across all metrics, with a "hyperlink" in the Details column. The remaining 12 rows of the table contain dashes (-) in all cells.

Game	Player	Overall	Completion	Procedures	Performance	Safety	Details
Game1	Matt	100%	100%	100%	100%	100%	hyperlink
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
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Screen Mockup: Scoring PDF

Score Card

Scoring Information for Meg Smith

Overall Score: 75.00%

Completion: 0.00%

Scenario: Incomplete

Procedures: 100.00%

Brake Cylinder Pressure: 0

Buff/Draft Threshold: 0

Buff/Draft Forces: 0

Throttle Handling: 0

Performance: 100.00%

Time: 00:00:08

Safety: 100.00%

Penalty brake application: 0

Bell not on when beginning to move: 0

Incorrect bell time before crossing: 0

Emergency brake application: 0

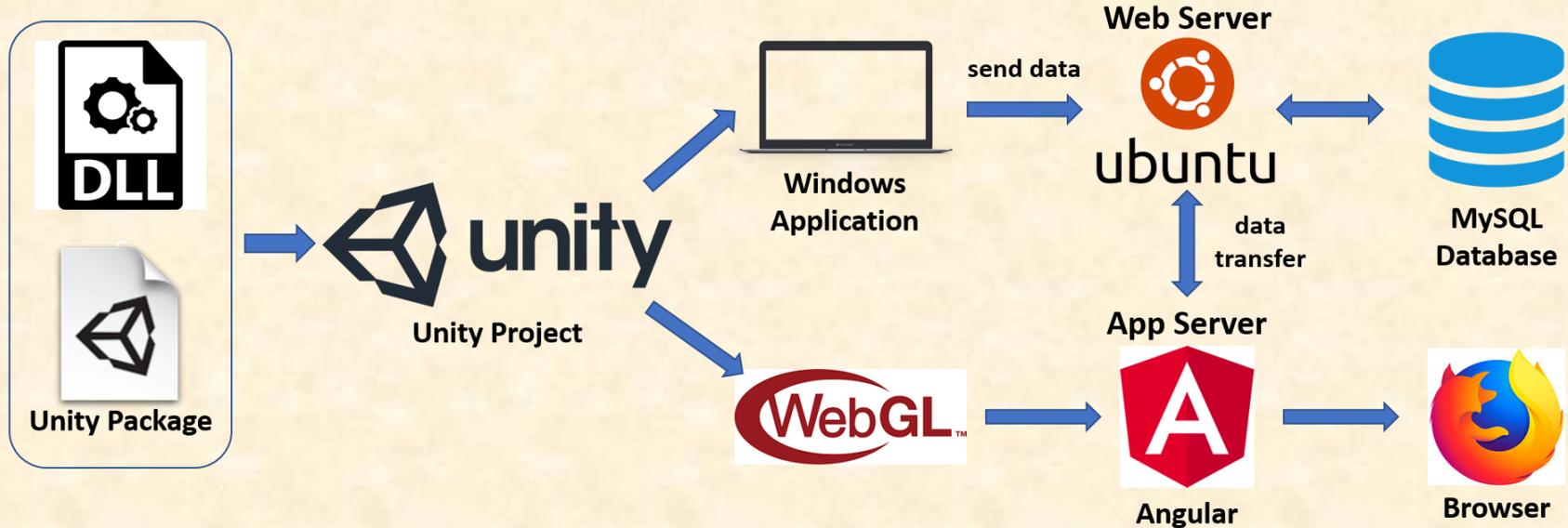


Technical Specifications

- Main menu component and PDF generator for PC game are built by Unity and output as a unity package
- All web pages and the PDF generator for the WebGL game will be built as an application with angular framework
- Ubuntu server handles the angular application and stores scoring reports using a database through MySQL



System Architecture



System Components

Software Platforms / Technologies

- Unity
 - WebGL
- Angular
- MySQL
- Ubuntu
- SharpPDF



Risks

- Reusability of Components
 - Must be flexible, but consistent with the needs of Union Pacific Developers
 - Create prototypes early for developers to test
- Connection of Windows App and Web App
 - Scoring information must be consistent between the two apps
 - Scores will be sent to a database and will be tested with sample data from both apps
- UP Framework
 - Union Pacific has provided a framework for common structure and color schemes for the website. The client is not fully familiar with the framework.
 - Time will be spent investigating how the framework works and if it is valuable for the application
 - Additional documentation has been provided to us courtesy of our clients
- Integration of Adobe Captivate into Unity
 - Adobe Captivate needs to be used to allow pop-ups to appear in front of the user while they are playing and record quiz results
 - Research will have to be done on Adobe and Unity documentation and forums, as well as test pop-ups written



Questions?

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