Project Plan Presentation
Rules Test Practice Tool

The Capstone Experience

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Project Sponsor Overview

- Largest railroad network in the US by geographical coverage
- Constructed one of the first transcontinental railroads
- Covering 23 states and connecting borders
- Over 30,000 employees
Project Functional Specifications

• Current quiz software not modern
  ▪ Not dynamic-scaling, inflexible questions, not engaging

• Rules Test Practice Tool
  ▪ Web and mobile app
  ▪ More modern, customization, gamification

• Goal is to encourage more employees to study and pass their license exams
Project Design Specifications

• **Homepage and Study Course Selection**
  ▪ Adaptive, responsive, and interactive layout, User login and dashboard with progress tracking, navigation bar
  ▪ Course listings and search bar, course previews and mode selection

• **Exam Practice Interface**
  ▪ Various question formats, media integration, process indicators, timer, question navigator

• **Interactive Learning Tools**
  ▪ Flashcards, history page

• **Additional Features**
  ▪ Content management, multi-platform compatibility, data management
Screen Mockup: Web Homepage
Screen Mockup: Mobile Homepage
Screen Mockup: Web Exam Page

Question 3: What is a train?

- A pig
- A train
- A house
- A hole
Screen Mockup: Mobile Exam Page
Project Technical Specifications

- We will be using Firebase as our backend database to store our question files.
- Our frontend web application will be developed using ReactJS and will connect to our backend to extract files through an API call.
- Similarly, our mobile application will be developed using React Native.
- To integrate with Union Pacific’s LMS we will be creating a SCORM package.
Project System Architecture

- SCORM
- Client
- Website
- Front End
- Mobile Application
- Back End
- Firebase
- React JS
- React Router
- JSX
- TypeScript
- Node
- npm
- React Native
- React Navigation
- TypeScript
- Firebase
- TypeScript
Project System Components

• Hardware Platforms
  - Laptops
  - Smartphone

• Software Platforms / Technologies
  - Website: React JS, Node.js, JSX, npm, React Router, TypeScript
  - Mobile Application: React Native, React Navigation, Node.js, npm, TypeScript
  - Database: Firebase, TypeScript
  - SCORM
  - Learning Management System (LMS)
Project Risks

• Cross-Platform Compatibility
  ▪ Libraries/plugins may not be compatible with all platforms
  ▪ Identify incompatibilities and find an alternative solution that can still accomplish the desired outcome

• Accessing External Database within LMS
  ▪ Unable to access external database used for web/mobile in LMS
  ▪ Ensure quiz data can be transferred in and out of the LMS

• Scalability of Data
  ▪ Must effectively store many quizzes, questions, quiz results, images, etc.
  ▪ Stress testing our database using large datasets to determine and document limitations

• Standard Formatting of Input Files
  ▪ Three ways to input files, no current standard for how files are formatted
  ▪ Create and document a standard layout for all input files
Questions?