MICHIGAN STATE UNIVERSITY

Project Plan Presentation

Airport Capacity & Ground Management

The Capstone Experience

Team NetJets

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From Students…
…to Professionals

Project Sponsor Overview

- World's Leading Private Jet Company
- Sells Fractional Shares of Private Jets
- Leads a Fleet of Over 600 Planes

NETJETS®

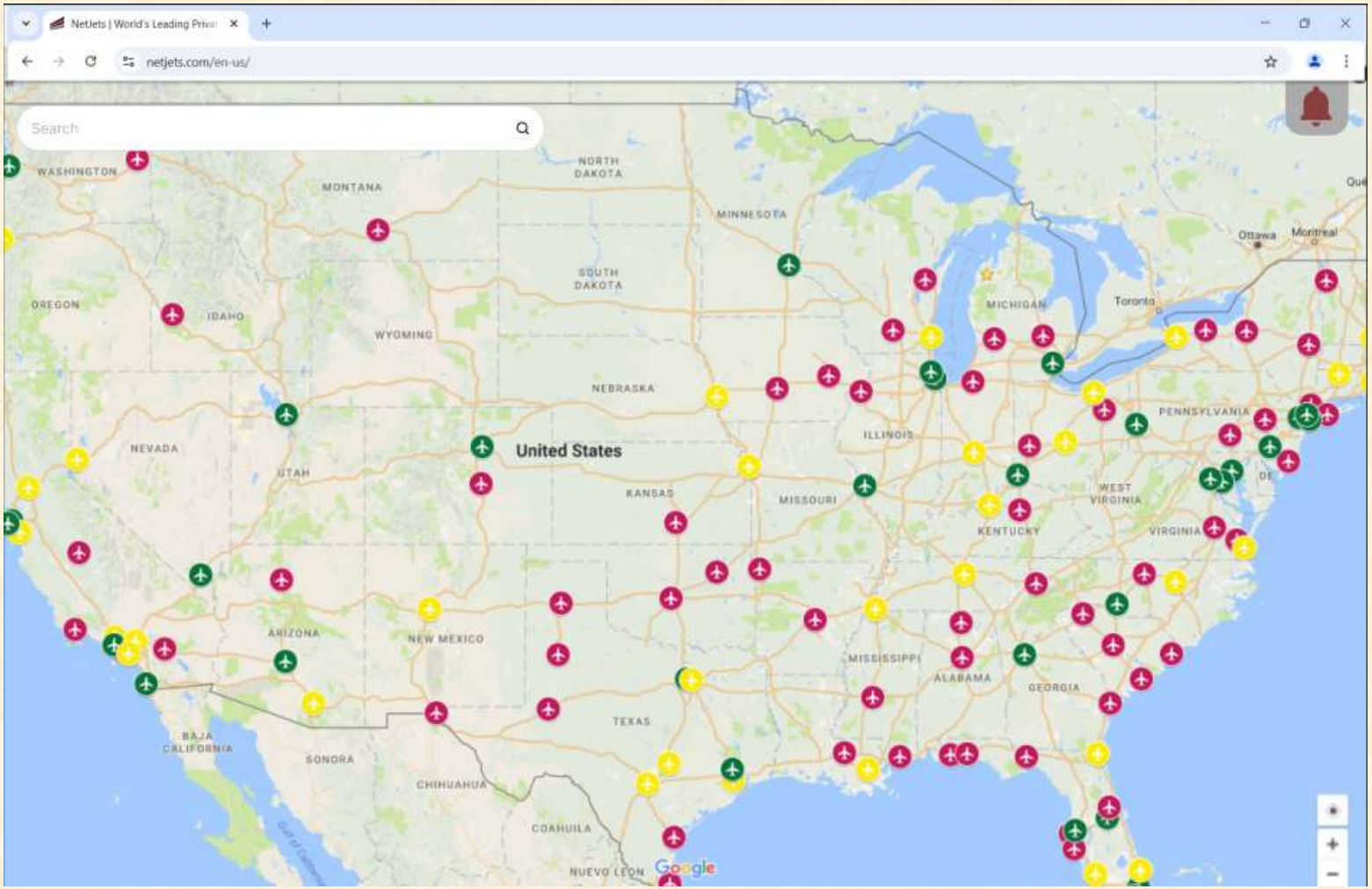
Project Functional Specifications

- Problem:
  - Obtain real-time information on airport capacity and ground space
  - Affecting planning, resource allocation, & operational efficiency
- Overview:
  - Web application to monitor airport ground capacity
  - Real-time flight data integration
  - Capacity analysis using current & historical data
  - Recommendation engine

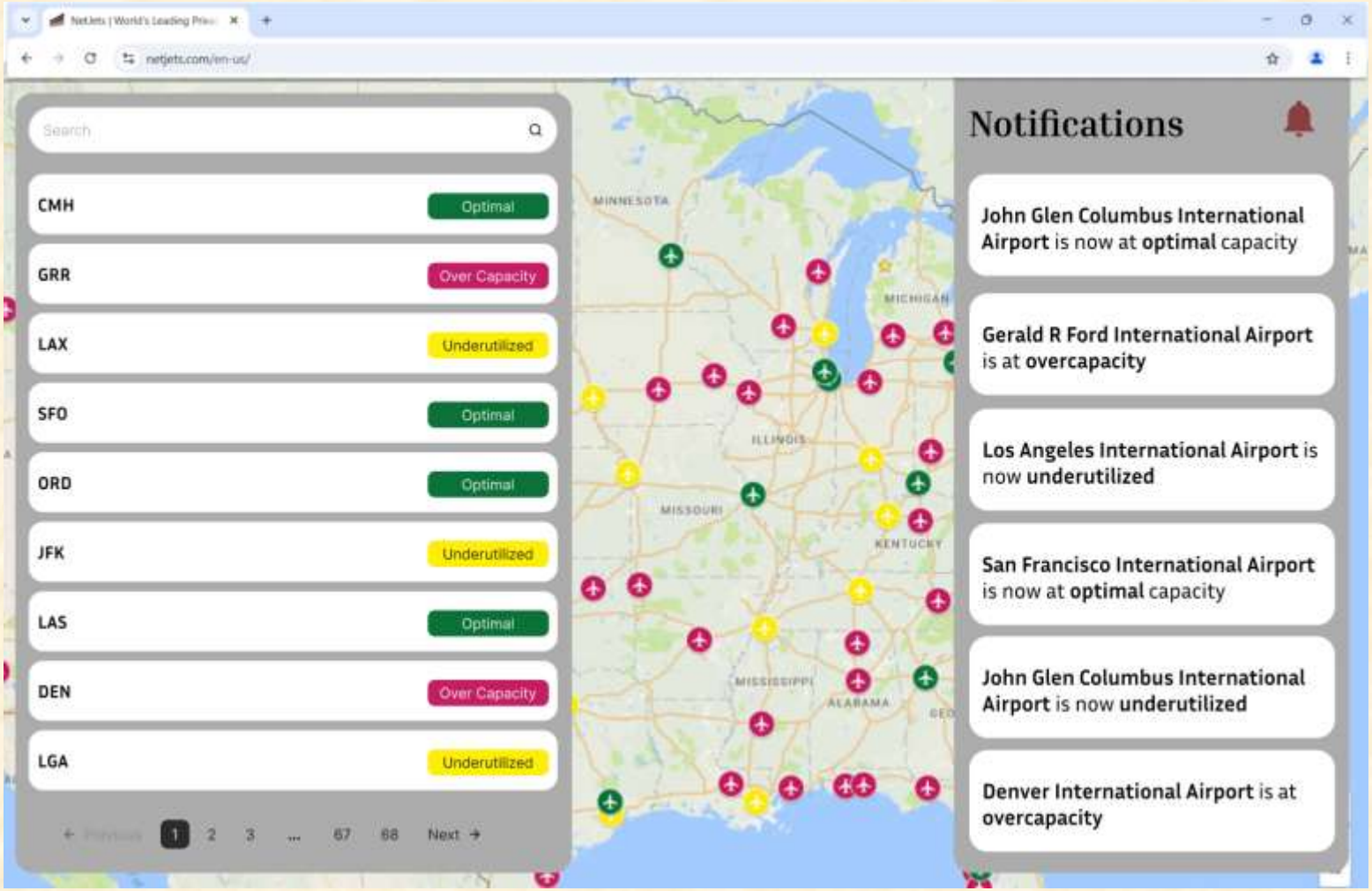
Project Design Specifications

- Standalone Web Application for Internal Use
- Homepage with Map View for Use in Scouting Airports
- Secondary Modals and Pages Expand on Airport Information and Include Simulation Capabilities

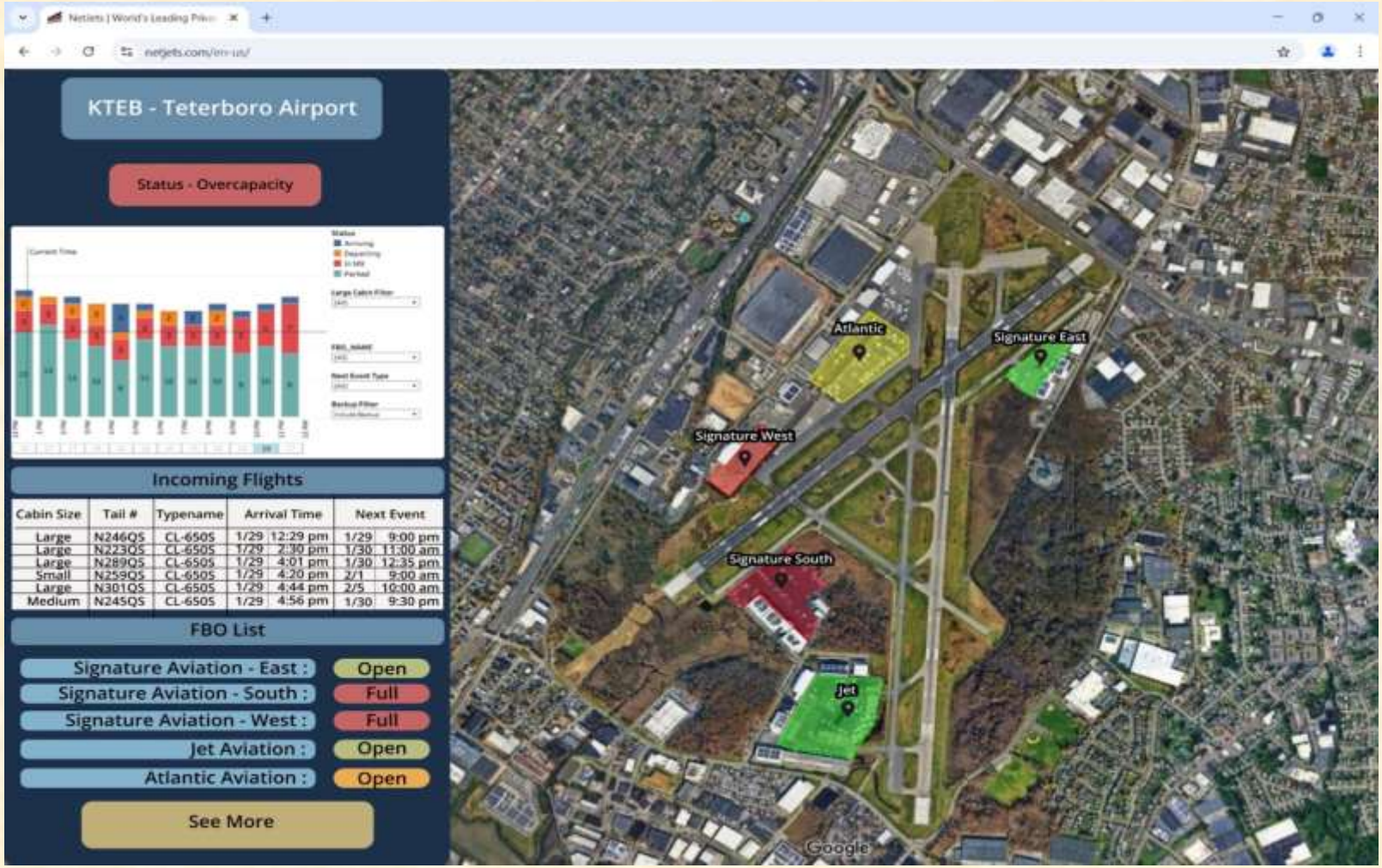
Screen Mockup: Full Homepage



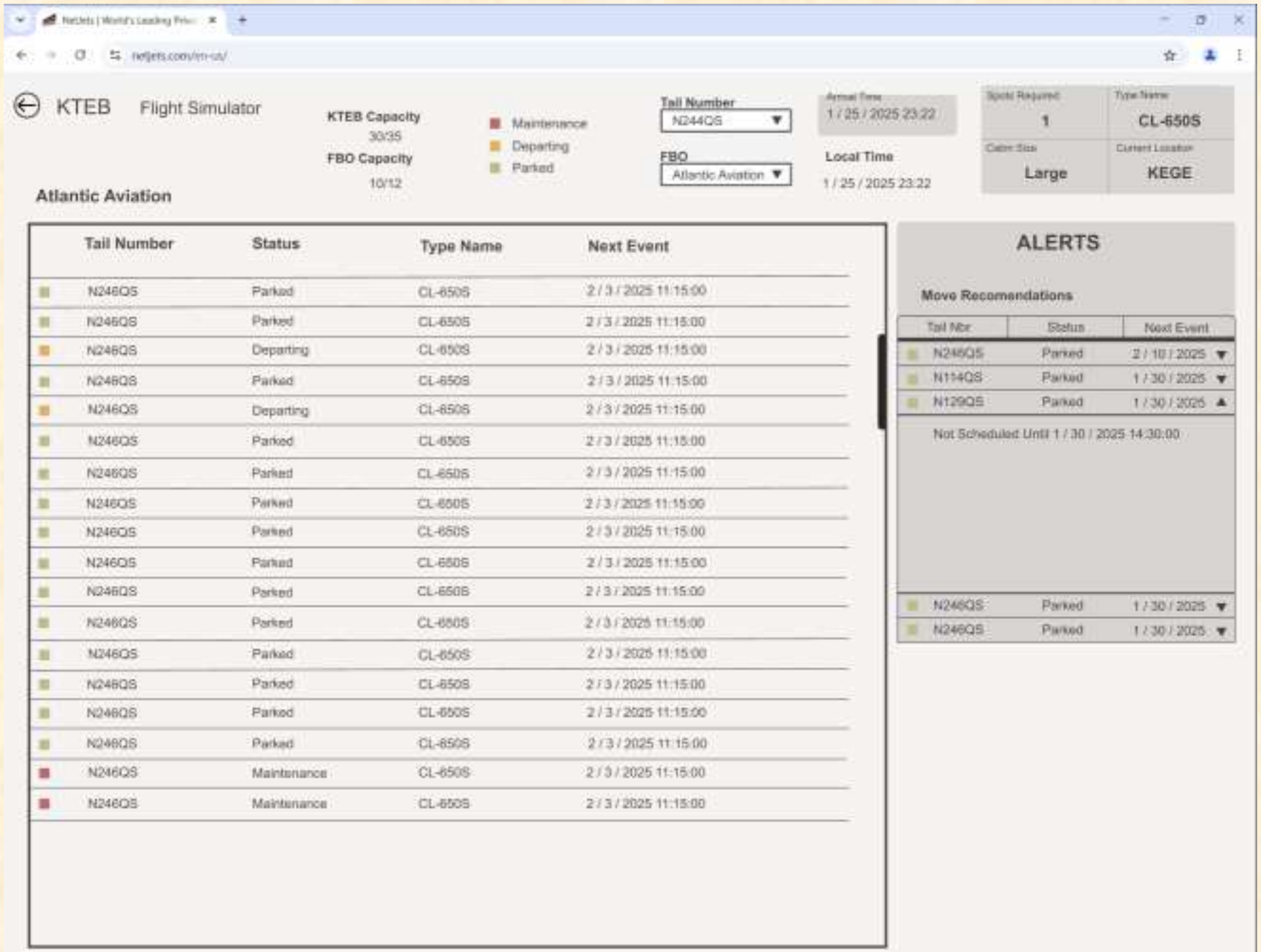
Screen Mockup: Homepage with Sidebars Open



Screen Mockup: Airport Selection



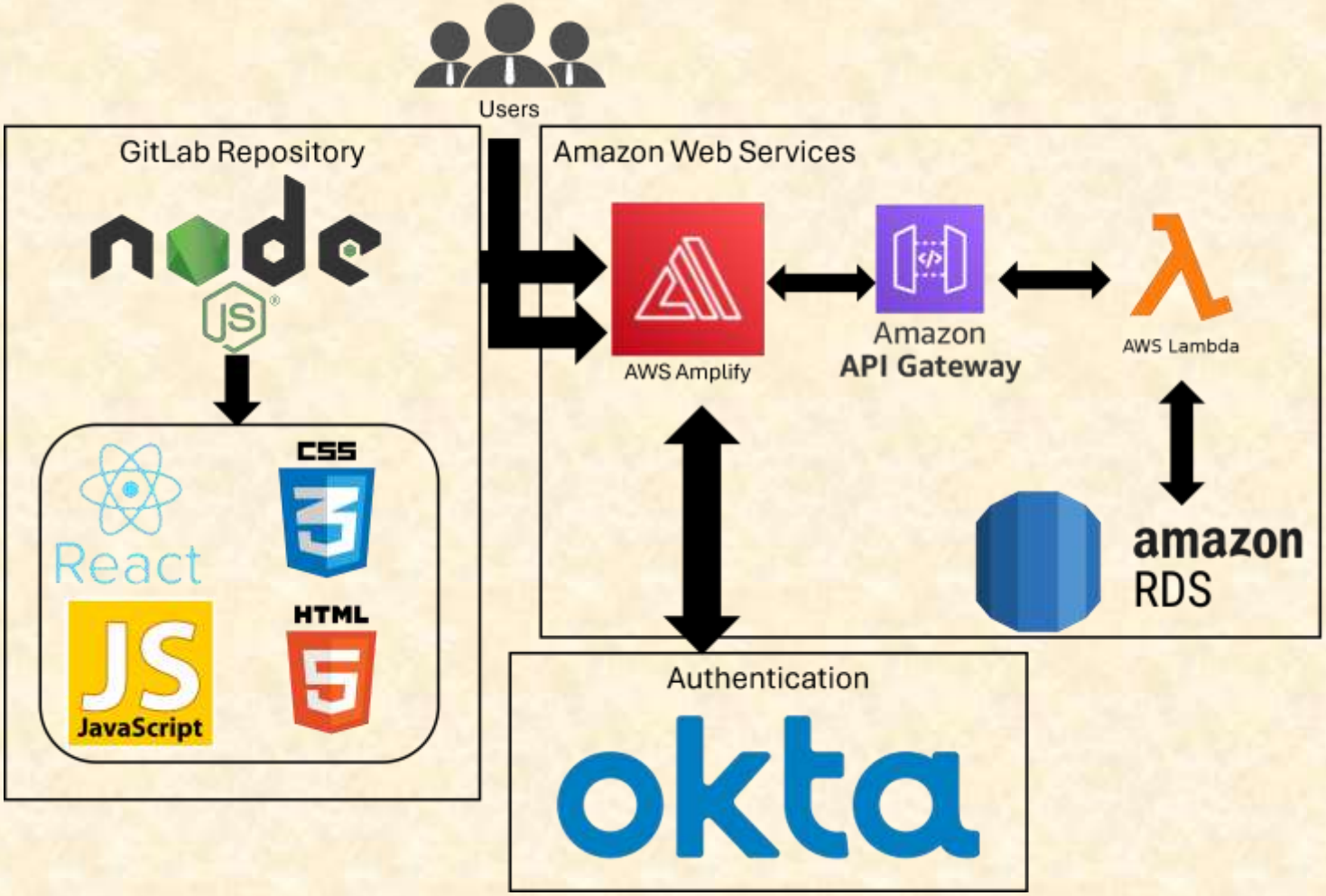
Screen Mockup: Airport Simulation



Project Technical Specifications

- Amazon Web Services
- React Framework
- Languages used for development (JS, CSS, HTML)
- Authentication using NetJets Okta login

Project System Architecture



Project System Components

- Software Platforms / Technologies
  - AWS Amplify
  - Amazon API Gateway
  - AWS Lambda
  - Amazon RDS
  - Google Maps API
  - JavaScript
  - Express.js Framework
  - React.js Framework
  - Node.js Framework
  - Okta SDK

Project Risks

- Constant Data Updates
  - Currently, the client utilizes airframe specification from an excel sheet from the FAA that occasionally updates by creating a new sheet
  - Discussing with our client the best path forward for creating a workflow that would allow us to update the data periodically. Otherwise, we could use data scraping techniques on the FAA website.
- Parking Area Locations and Access
  - We have not found a database that accurately depicts all airport parking coordinates for US-based airports
  - Continue to engage the client about that data. Otherwise, satellite imagery could provide insights to make estimates
- Determining Parking Dimensions
  - The application needs to consider the dimensions of parking areas at airports across the country and determine capacity and parking strategies based on parking lot and airplane dimensions.
  - Could be done using Google Maps' distance measure feature and grouping airlines based on their size to efficiently determine parking lot availability
- Recommendation Engine
  - Designing an effective algorithm to generate recommendations based on variables like aircraft type and parking zones.
  - Working with NetJets to determine most important influences to reduce over-reliance on less important factors.

Questions?