MICHIGAN STATE

UNIVERSITY

Project Plan Presentation
Technology Driven Inventory Optimization

The Capstone Experience

Team Stryker

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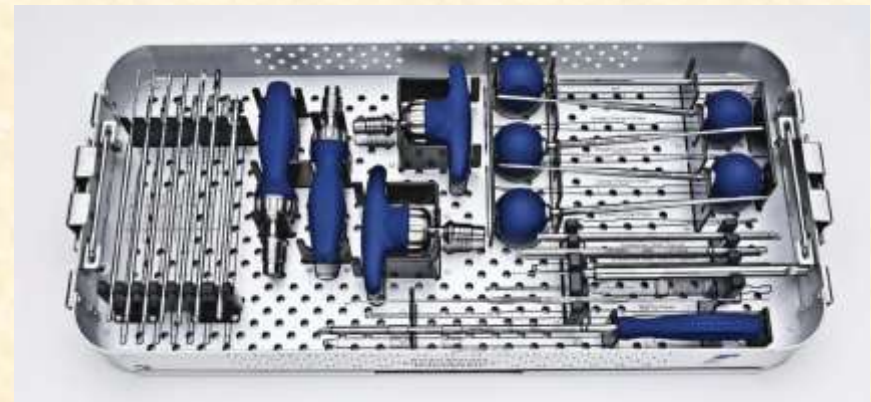
Michigan State University

Fall 2022

From Students…
…to Professionals

Project Sponsor Overview

- Stryker
  - Multinational medical technology and manufacturing company
  - Deploys surgical kits and other devices nationwide
    - Many stakeholders

Project Functional Specifications

- Technology Driven Inventory Optimization
  - Real-time inventory tracking
- Change of Hands
  - Stryker
  - Agency
  - Representative
- Business Risk Associated with Inaccurate Inventory

Project Design Specifications

- ## Supply Chain Dashboard
  - Interactive dashboard with the filters requested by the client which will be implemented into the Web Application.
  - Dashboard has two pages.
    - Monthly
    - Daily
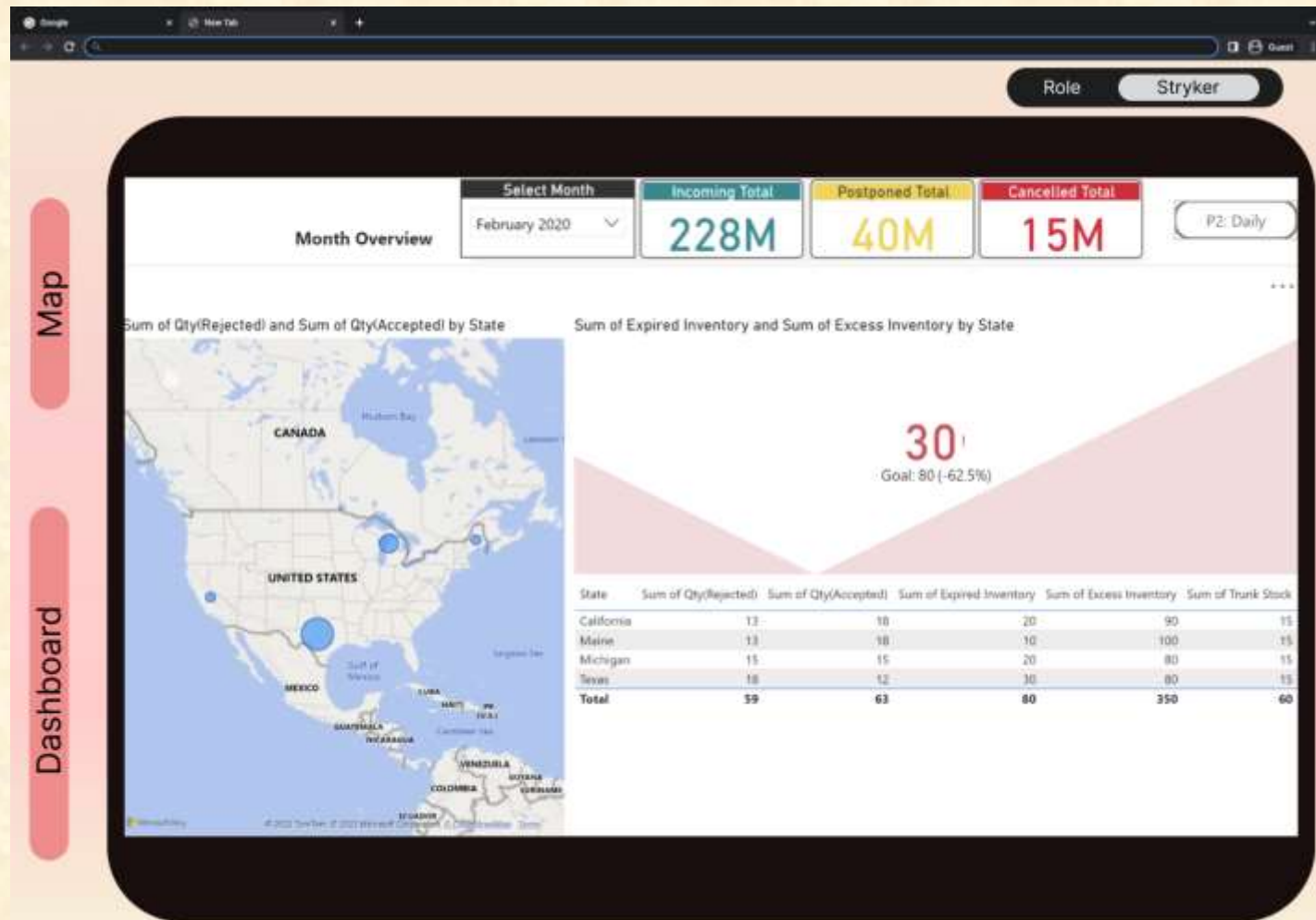
- ## Web Application
  - Web Application created to give access to three roles each with a different layout depending on the login provided.
    - Stryker (Manufacturer), Agency, Representative

- ## Sensor
  - Sensor to provide geo-location of the medical cases that are being sent from Stryker to the agency/rep.
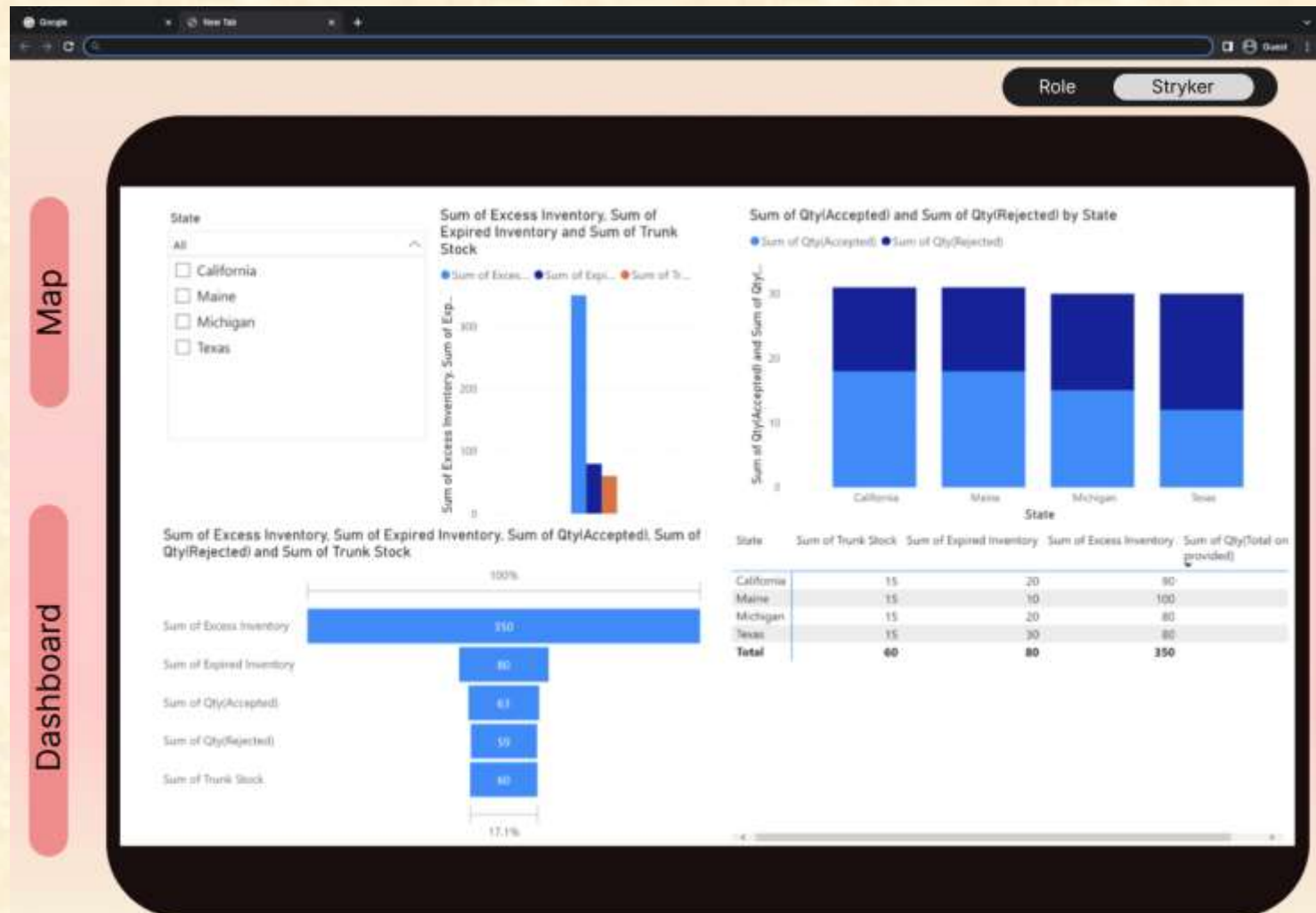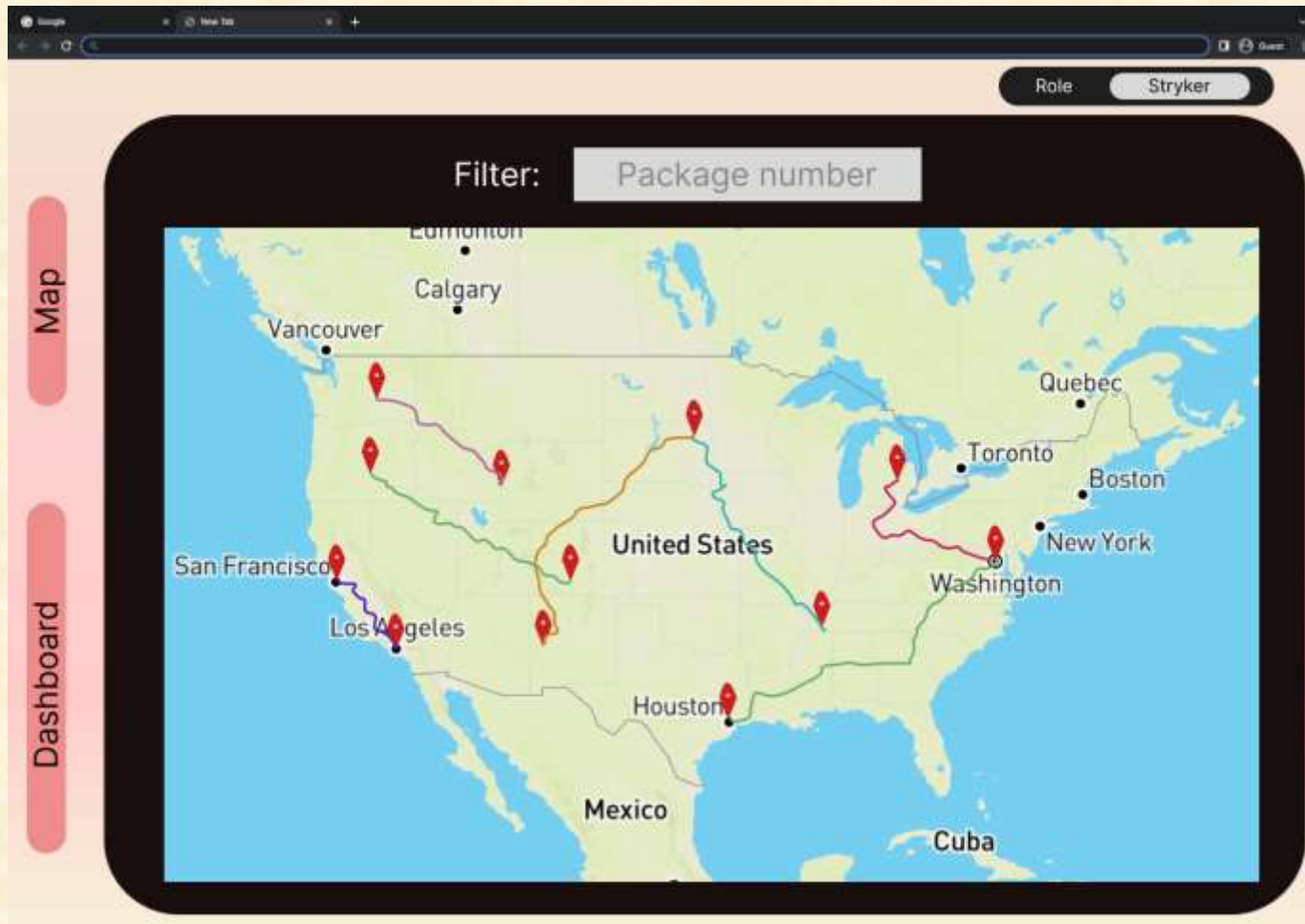
Interactive Dashboard (Monthly)
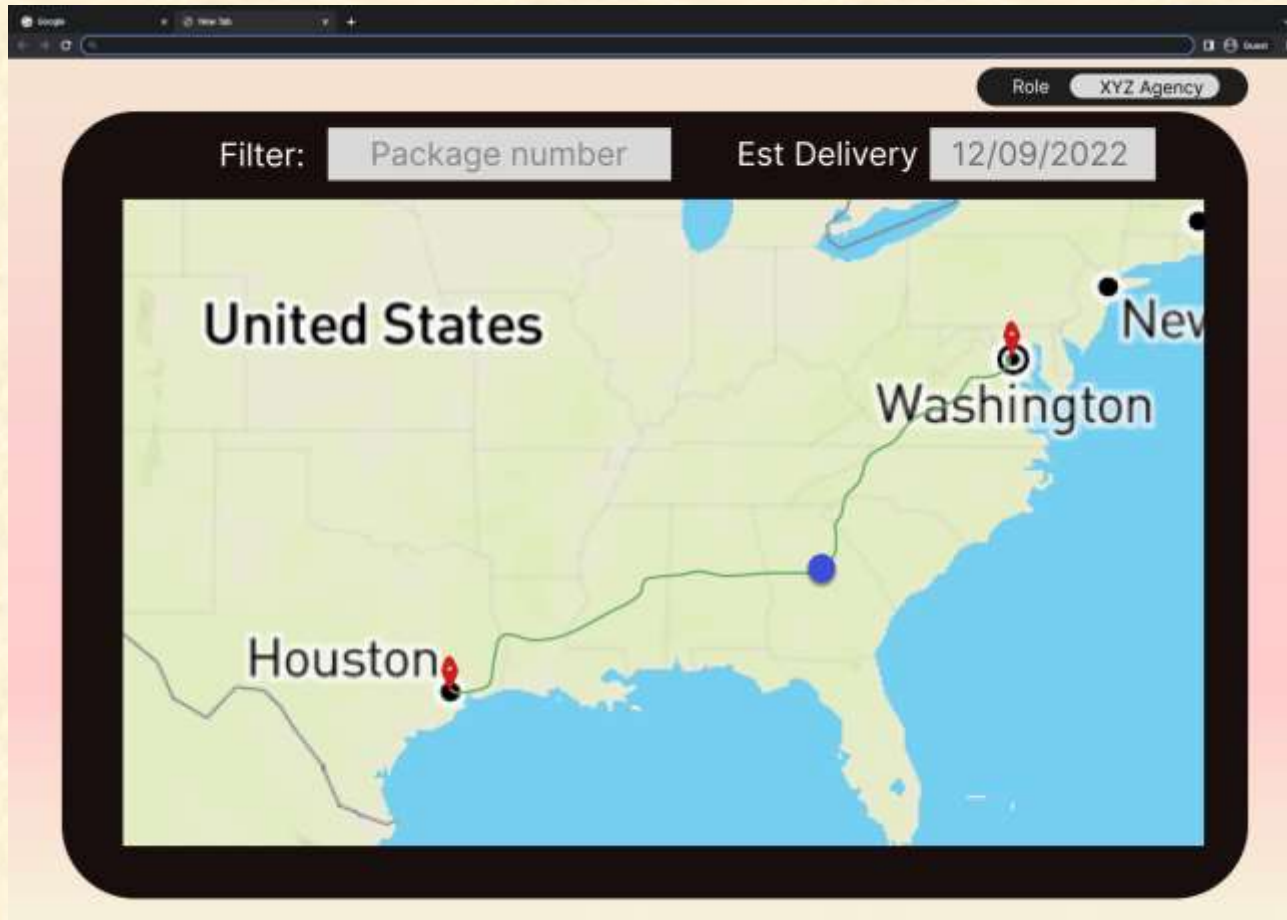
Interactive Dashboard (Daily)
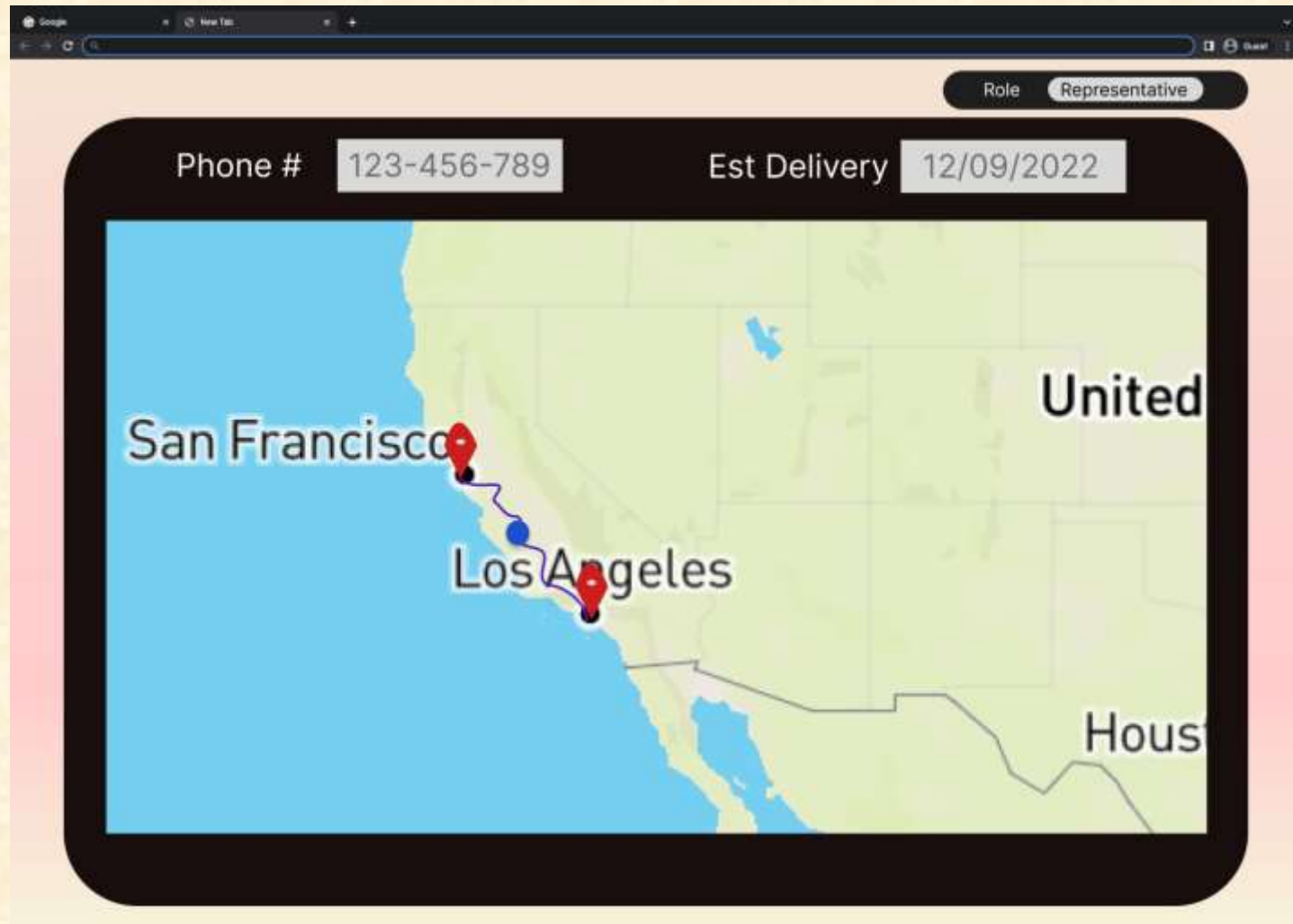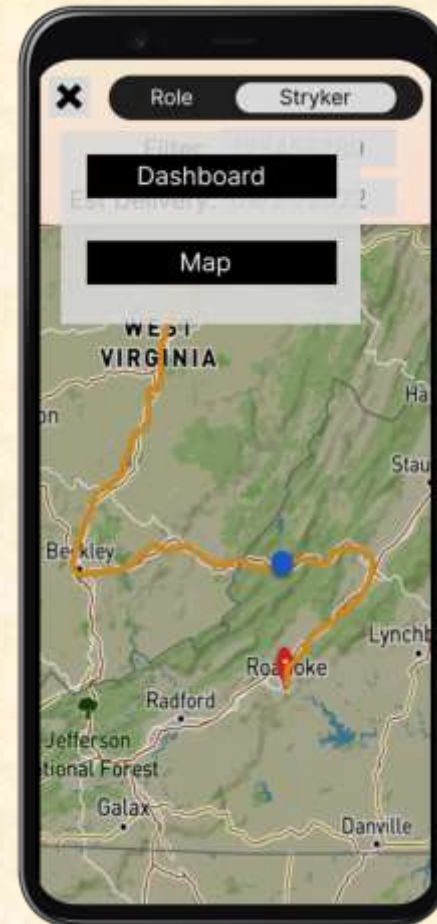
Web Application Layout

Web Application Layout

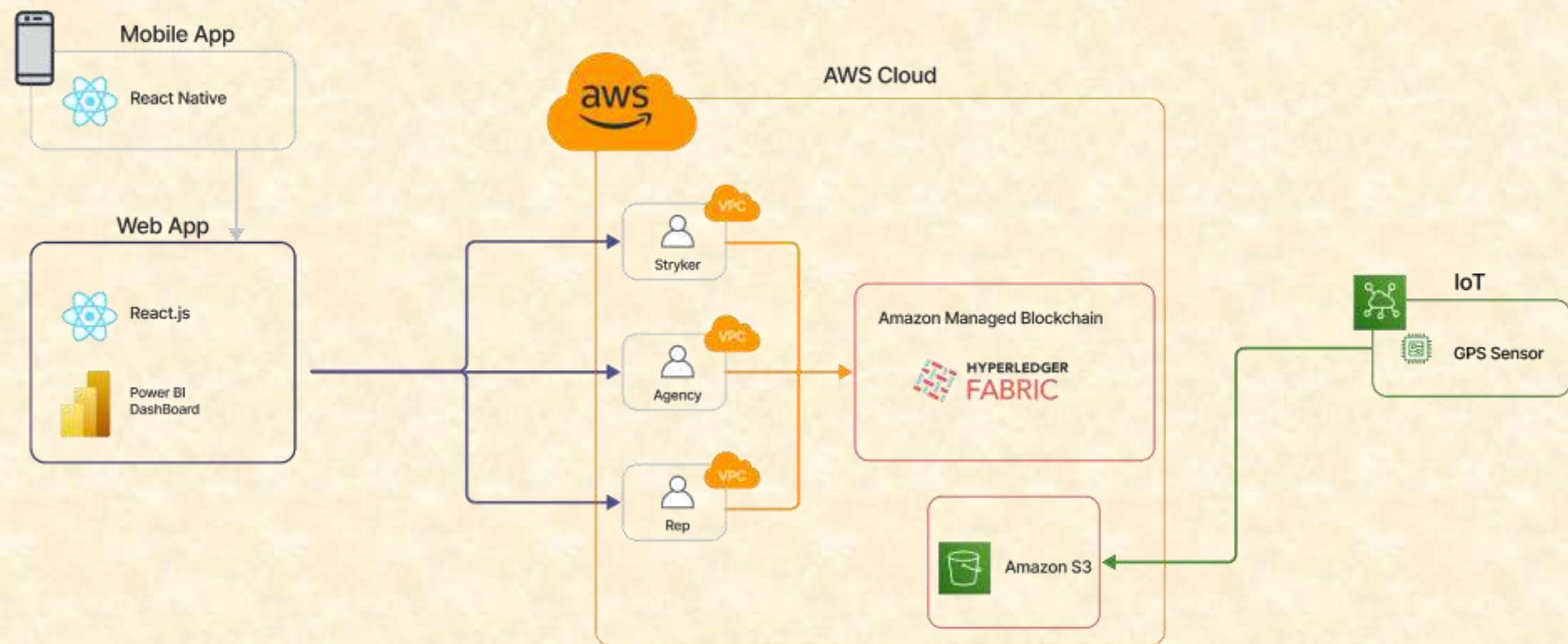# Web Application Layout

Mobile App Layout

Project Technical Specifications

- Cloud Platform
  - Amazon Web Services
    - Amazon Managed Blockchain
      - Hyperledger Fabric Blockchain
    - Amazon S3
- Dashboard
  - Power BI
- Web Application
  - React JS
- Mobile Application
  - React Native

Project System Architecture

Project System Components

- Hardware Platforms
  - Geolocation Tracker
- Software Platforms / Technologies
  - Power BI
  - AWS (Blockchain)
  - Visual Studio (ReactJS, React Native)

Project Risks

- Sanitization Destroying Sensors
  - Autoclaves put packages through conditions that have destroyed every sensor tested so far
  - Testing at local hospital
- Connecting to AWS
  - Data is stored in AWS cloud and needs to be accessed
  - Test connection points that satisfy privacy requirements
- Harnessing GPS Data
  - Many GPS devices only support their service, not a custom one
  - Filter research, possible middle-man API
- GPS Pinging Frequency
  - Ping sensors at rate that provides up-to-date information while saving battery life
  - Analyze kit movement patterns

Questions?