MICHIGAN STATE UNIVERSITY

Project Plan

Security Analytics Suite: Configuration Setup Tool

The Capstone Experience

Team Avata

Sean Edwards
Ashley Gagnon
Chantz Johnson
Zack Lumley
Meenu Sundararaju

Department of Computer Science and Engineering
Michigan State University

Fall 2017

From Students…
…to Professionals

Functional Specifications

- Niche client base in police and law enforcement
- Goal is to reduce the time it takes for Avata to onboard clients from 3 weeks to 1 week
- 3 modules to implement
  - Client information
  - Geography
  - Taxonomy

Design Specifications

- A navigation menu displaying all the accessible modules will be available at all times via a menu icon on the top left of the page
- The rest of the screen will show the specific module forms
- Every module can be exported as a MsSQL or MySQL file when completed

Design Specifications

- Client Information Setup
  - Web application that contains 3 forms for creating new clients:
    - One form adds roles
    - One adds role and modules
    - One adds shifts

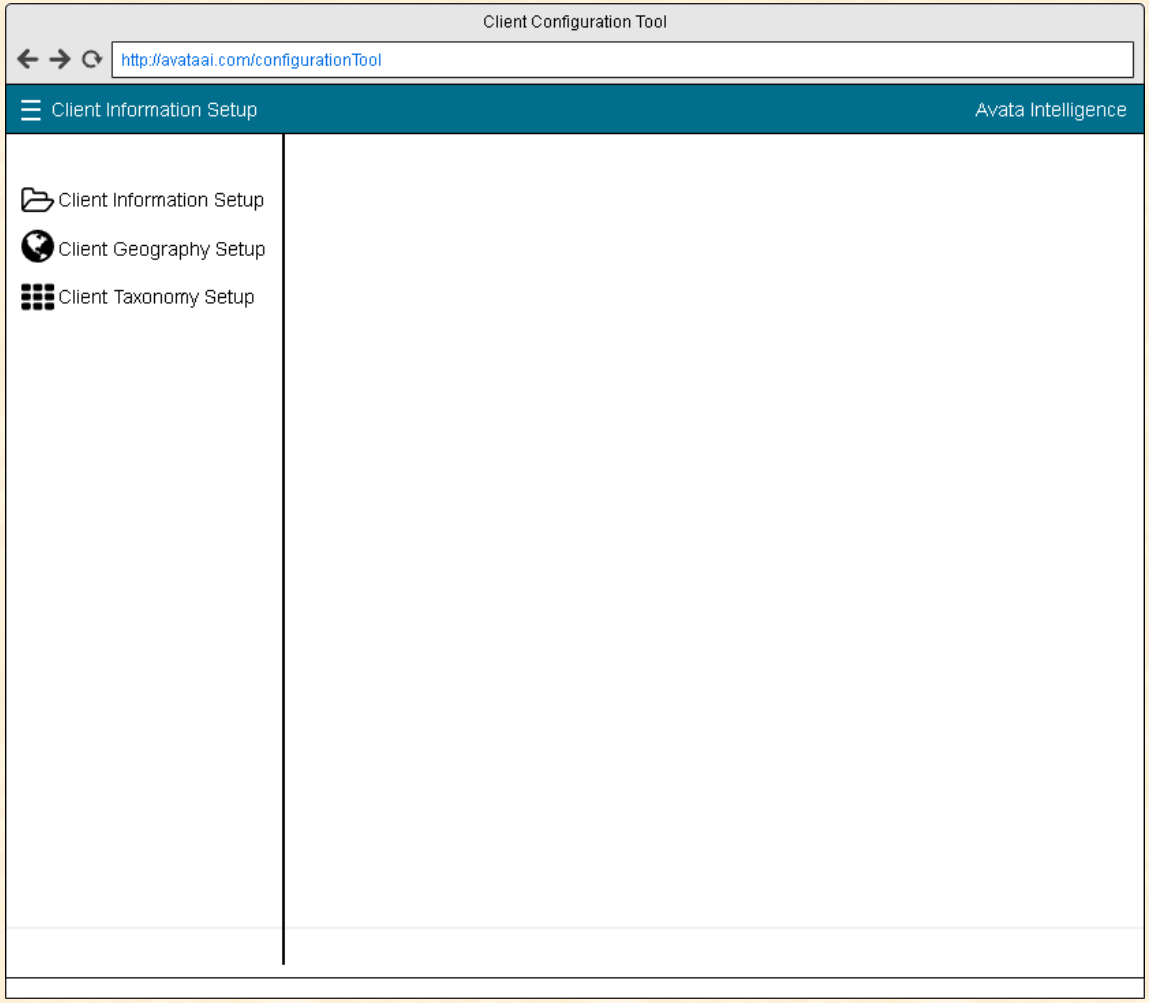
Design Specifications

- Client Geography Setup
  - Draw on campuses, beats, and sub-beats as polygons on a map
  - Upload Keyhole Markup Language (KML) files that contain coordinates for existing polygons

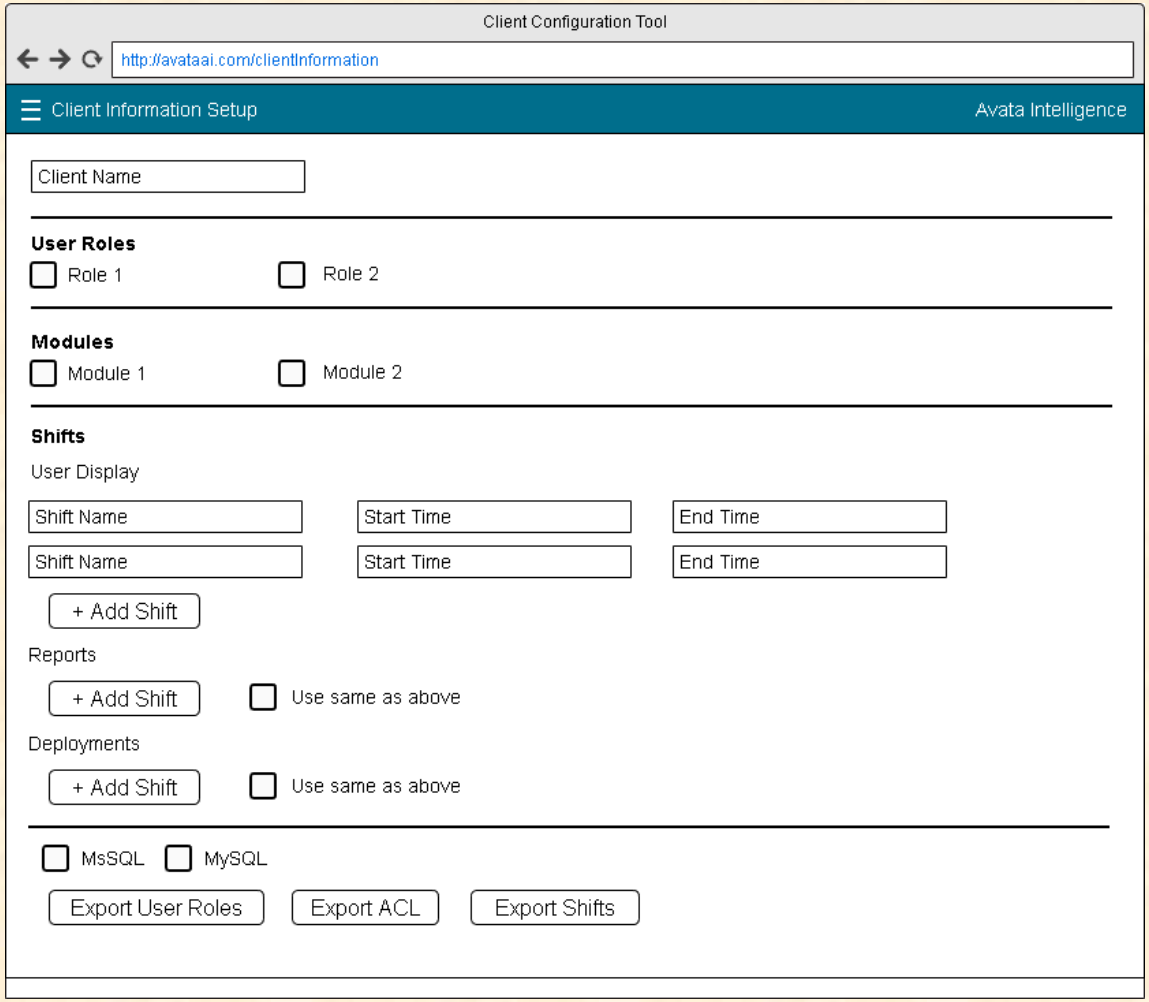
Design Specifications

- Client Taxonomy Setup
  - User interface displaying crime types read from database on right side of the screen
  - Text box to add crime categories, which consist of crime types, on the left side
  - Drag-and-drop functionality to add types to categories
  - Buttons to create a crime group in one of Avata's 3 primary groups

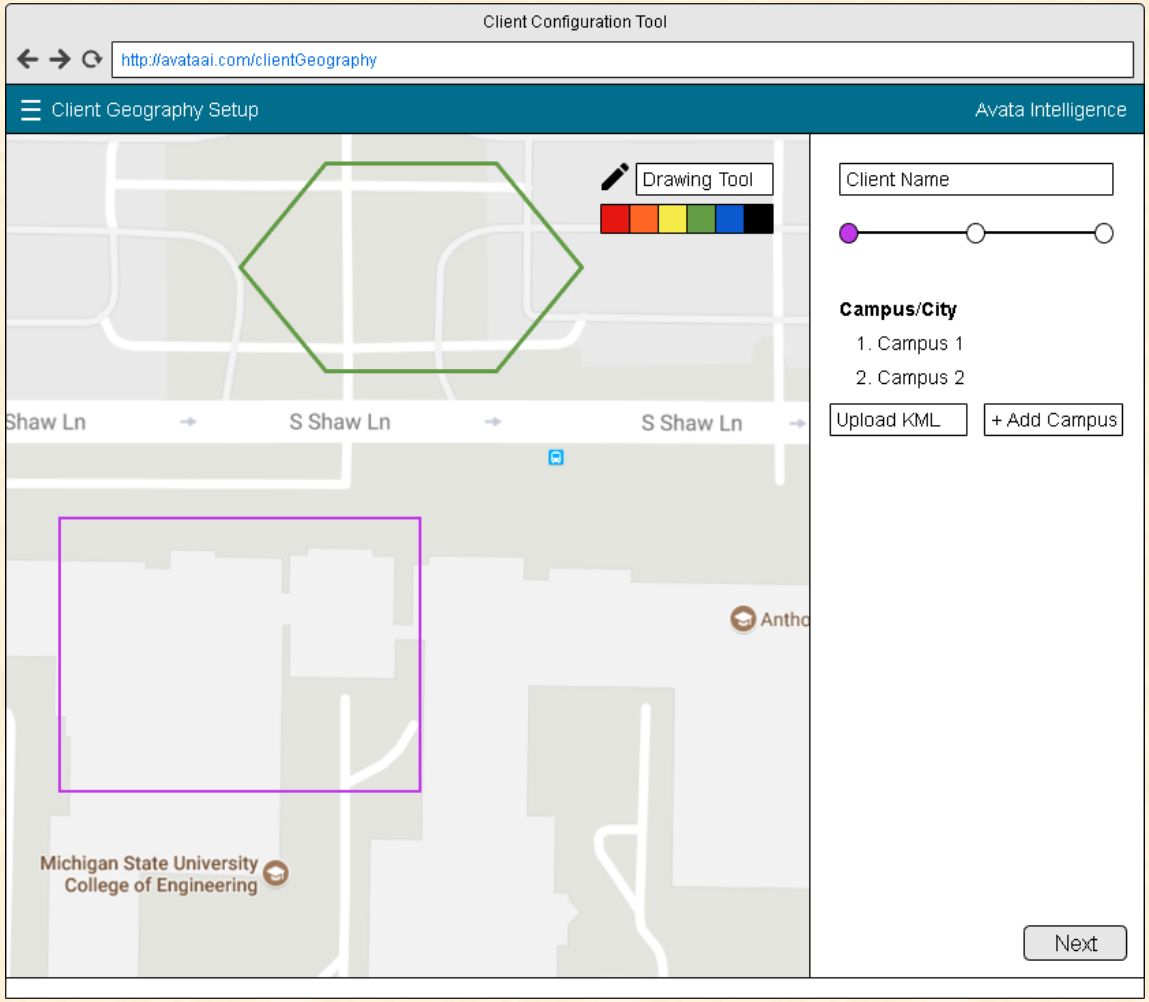
Screen Mockup: Main Interface



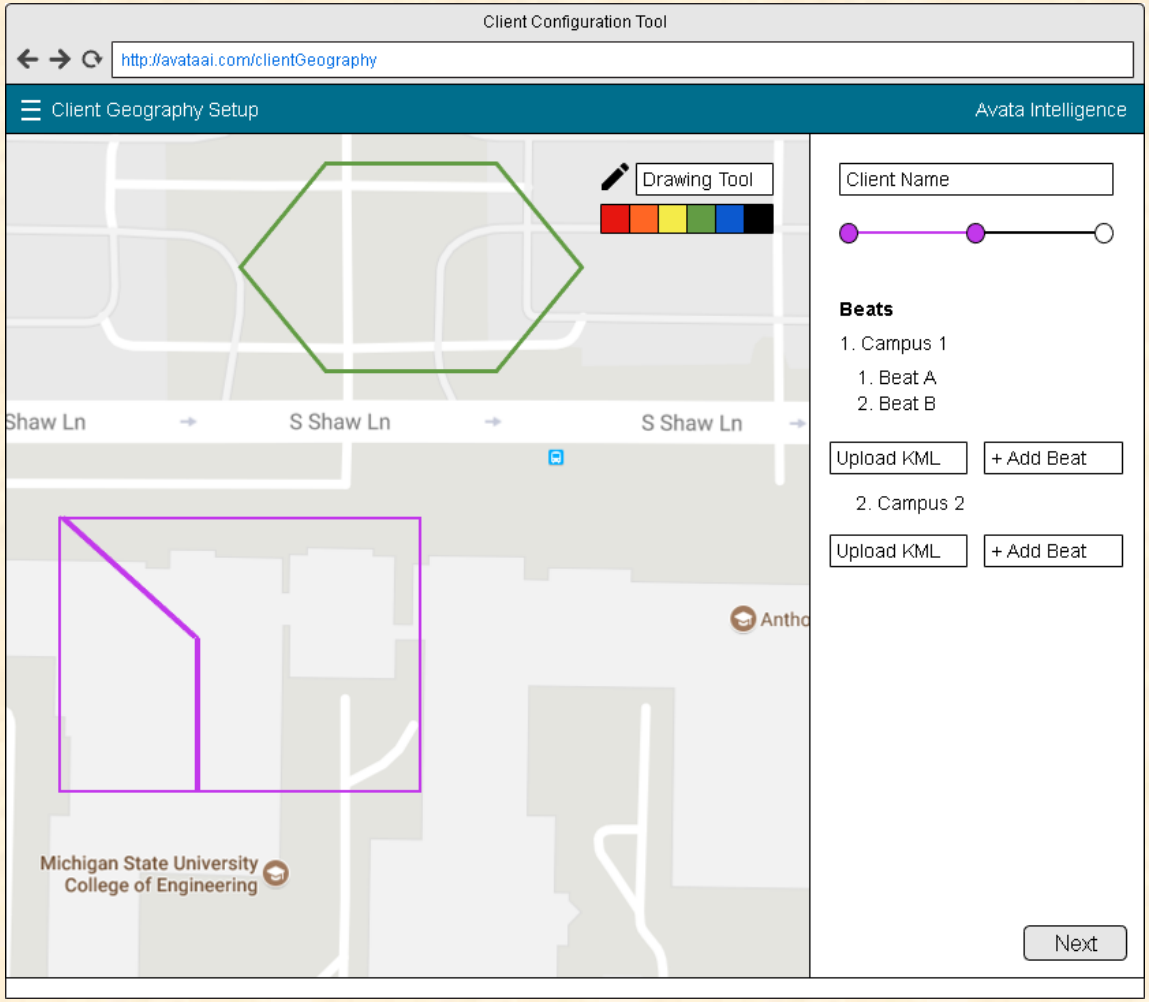
Screen Mockup: Information Setup



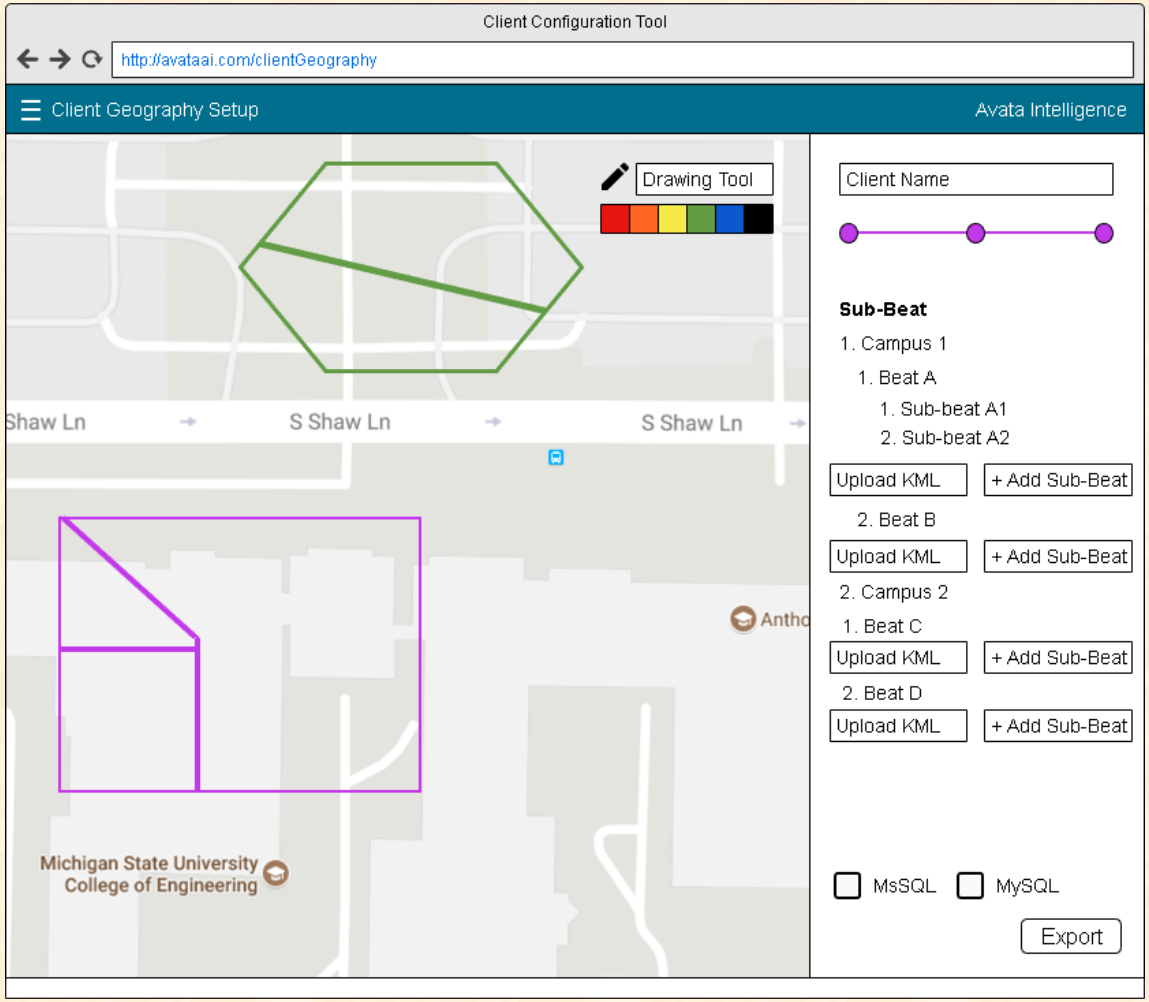
Screen Mockup: Geography Setup



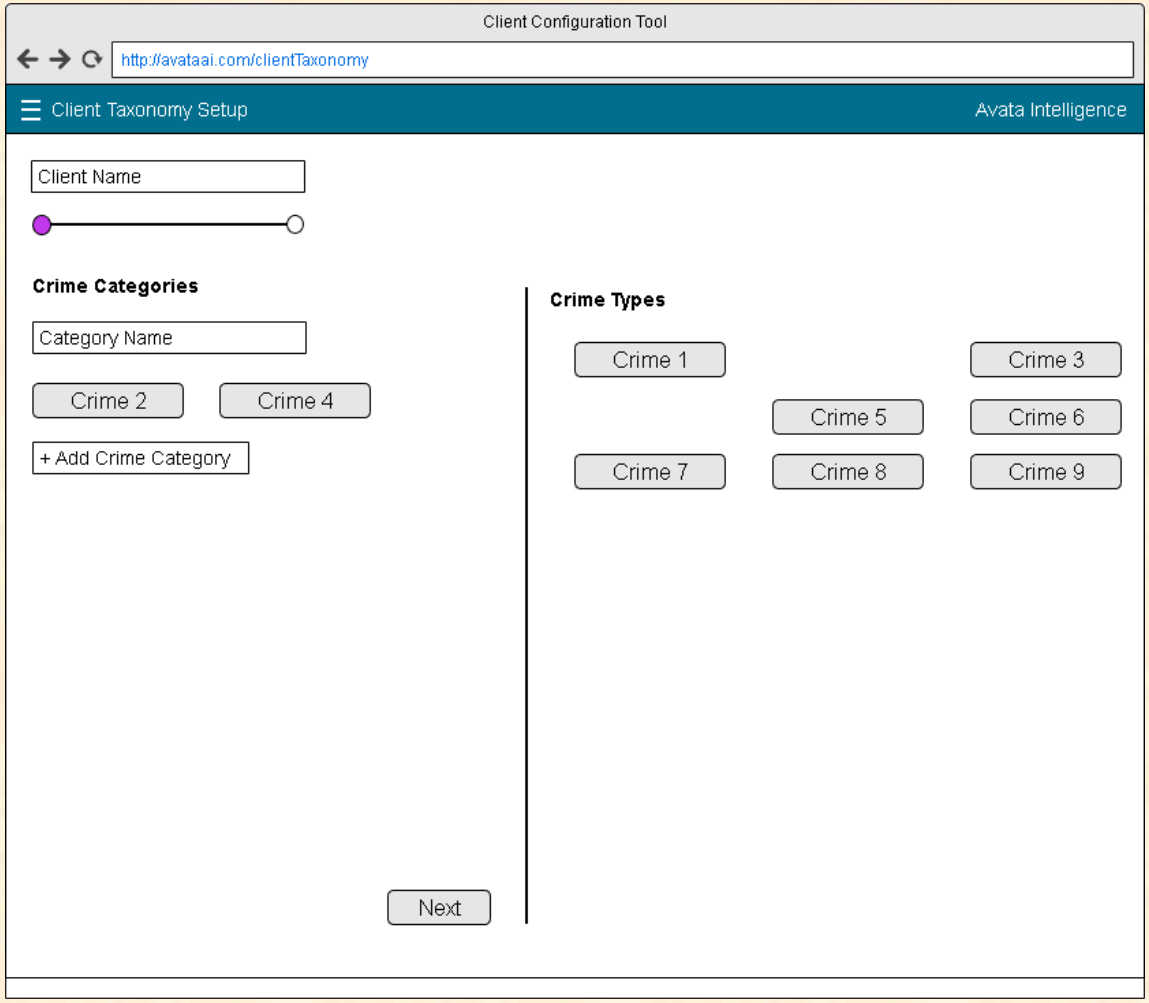
Screen Mockup: Geography Setup



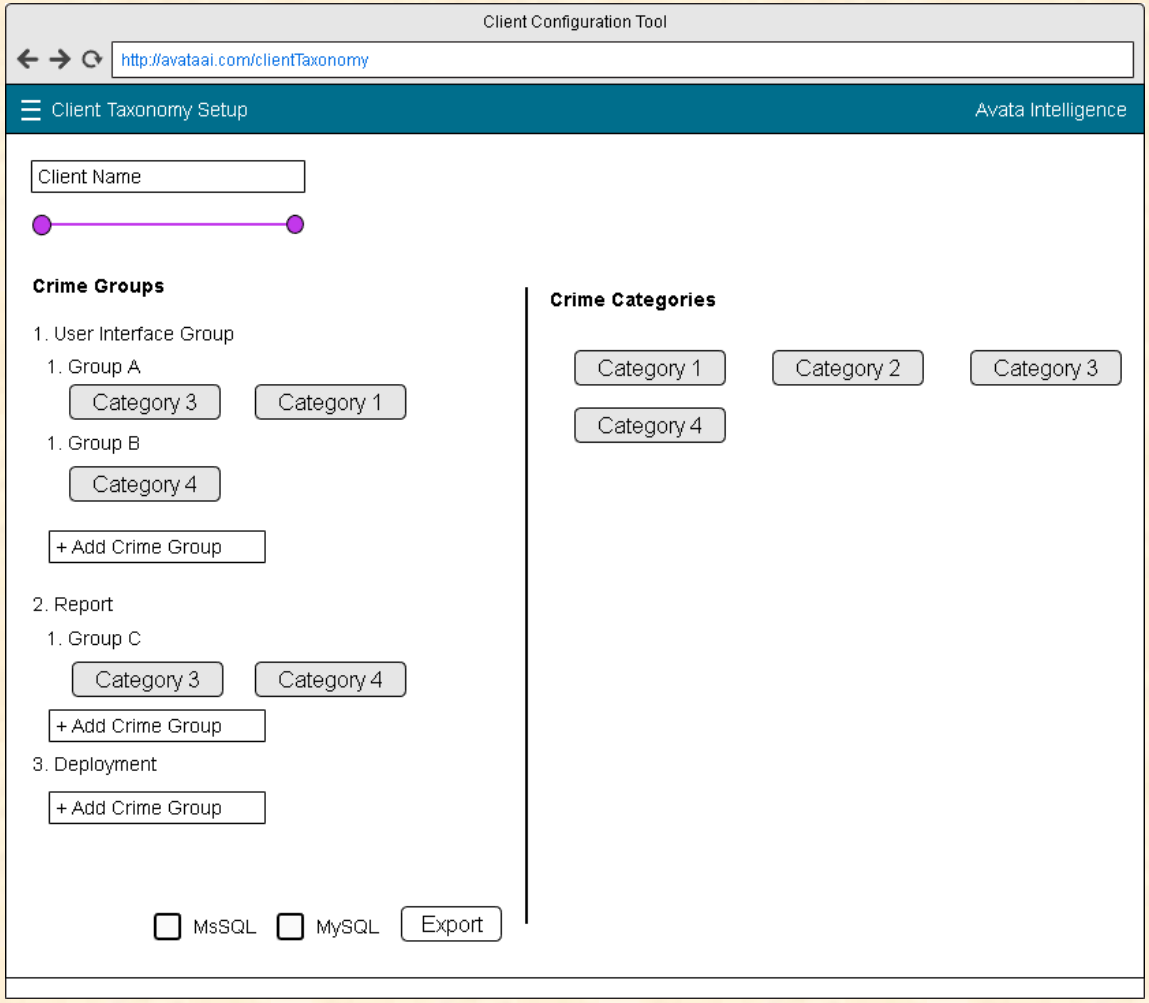
Screen Mockup: Geography Setup



Screen Mockup: Taxonomy Setup



Screen Mockup: Taxonomy Setup



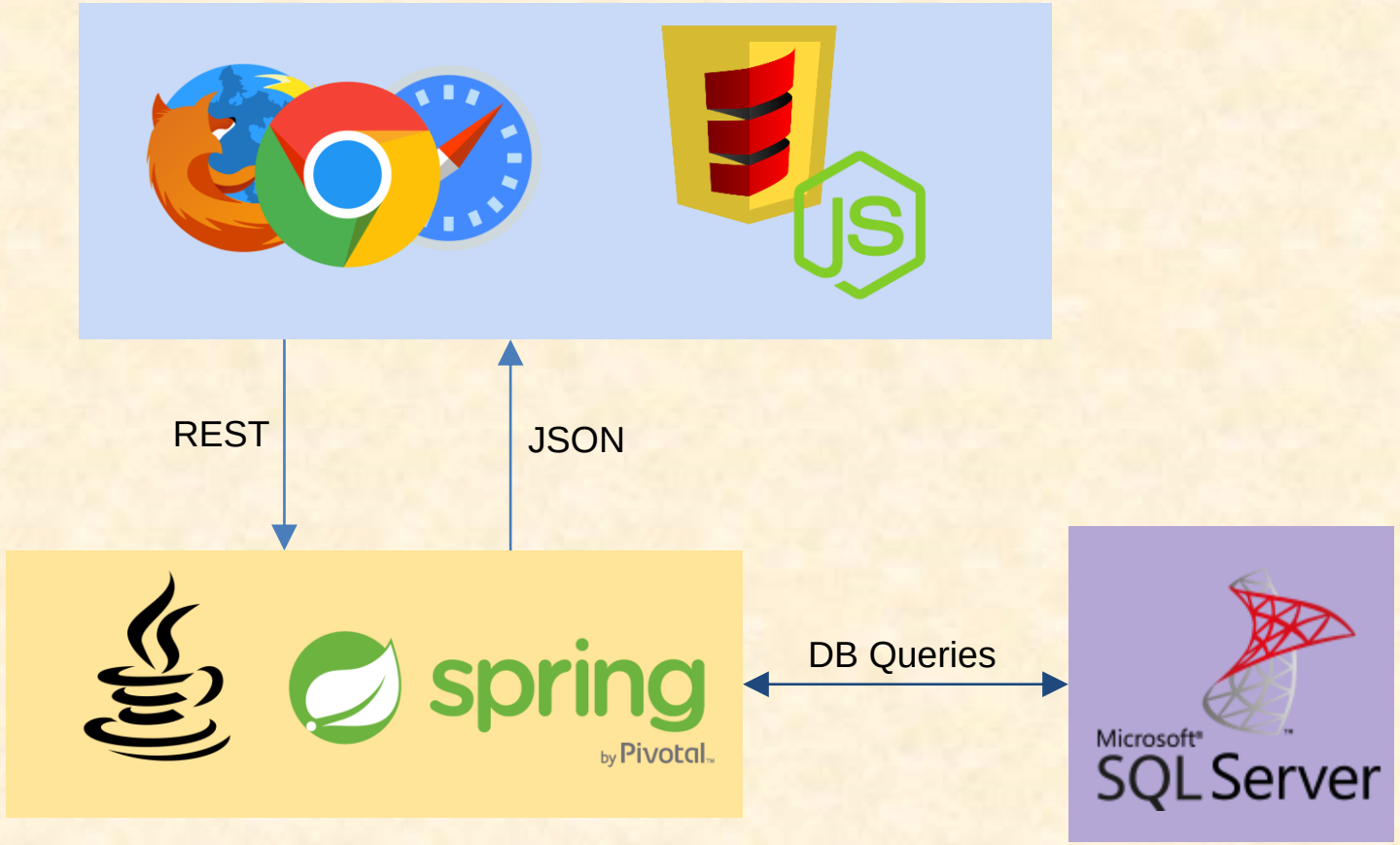
Technical Specifications

- Technologies
  - IntelliJ IDEA IDE used for software development
  - GIT for version control
  - Slack for communication
  - Jira for project and sprint planning

Technical Specifications

- Back End
  - Java Spring Boot for RESTful API
  - Hibernate as an ORM
- Front End
  - Scala.js
  - Material Design by Google for styling
  - ArcGIS
  - ReactJS

System Architecture



System Components

- Hardware Platforms
  - AWS Elastic Beanstalk web server
  - MsSQL server for data
  - Tomcat web server for local testing
- Software Platforms / Technologies
  - Spring Boot (Java)
  - Scala.js
  - ReactJS

Testing

- JUnit and Mockito for unit testing
- Create prototypes for testing difficult problems
  - ArcGIS polygon drawing
  - Drag and drop crime types for taxonomy
- Integration tests for testing database create and read

Risks

- ArcGIS API (Medium)
  - Algorithm for finding center of polygon and preventing collisions
  - Will create prototype using less complicate shapes (i.e. lines)
- ReactJS drag and drop API for moving crime types (Medium)
  - Little experience with UI APIs, not sure if one exists
  - Create simple test page that uses API
- Data Hierarchy (Hard)
  - Data structure for graphing campus/beat/sub-beat and crime/group/categories
  - Speak with client about the relationships between data points

Questions?