MICHIGAN STATE
U N I V E R S I T Y

Project Plan
Volkswagen EV Route Planner

The Capstone Experience

Team Volkswagen

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From Students…
…to Professionals

Functional Specifications

- Underlying reason on why customers are resistant to converting to EV is inadequate knowledge of EVs and the benefits gained by switching from gasoline powered cars

- By use of this application
  - Minimal to no daily route change
  - Long range trips possible
  - Comparison information between EV and gas-powered vehicles
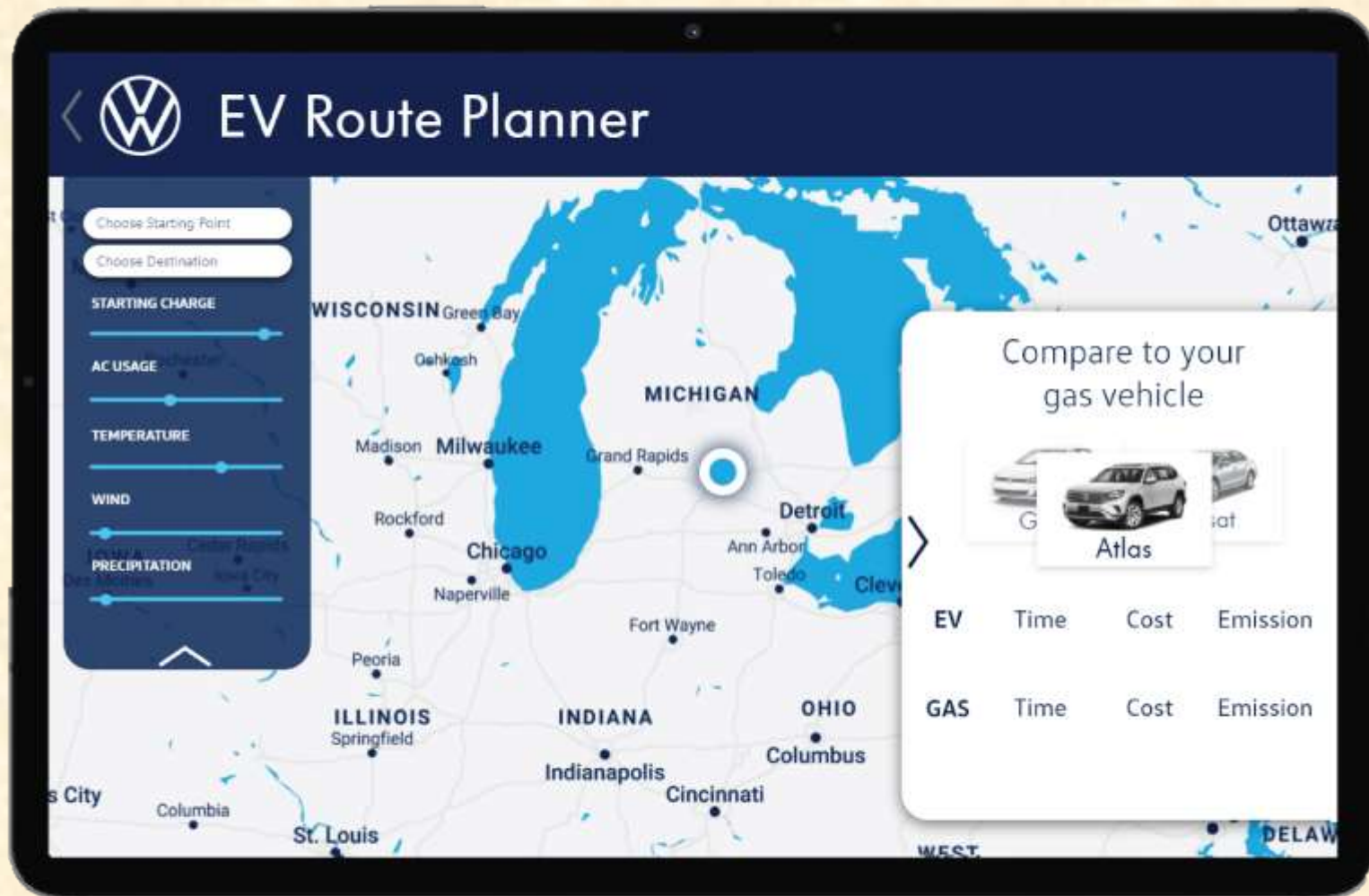
Design Specifications

- Use cases
  - Salesman
  - Customer
- Samsung Galaxy Tab S7+ and kiosk
- There are two main views
  - Initial splash view
  - Route planning view
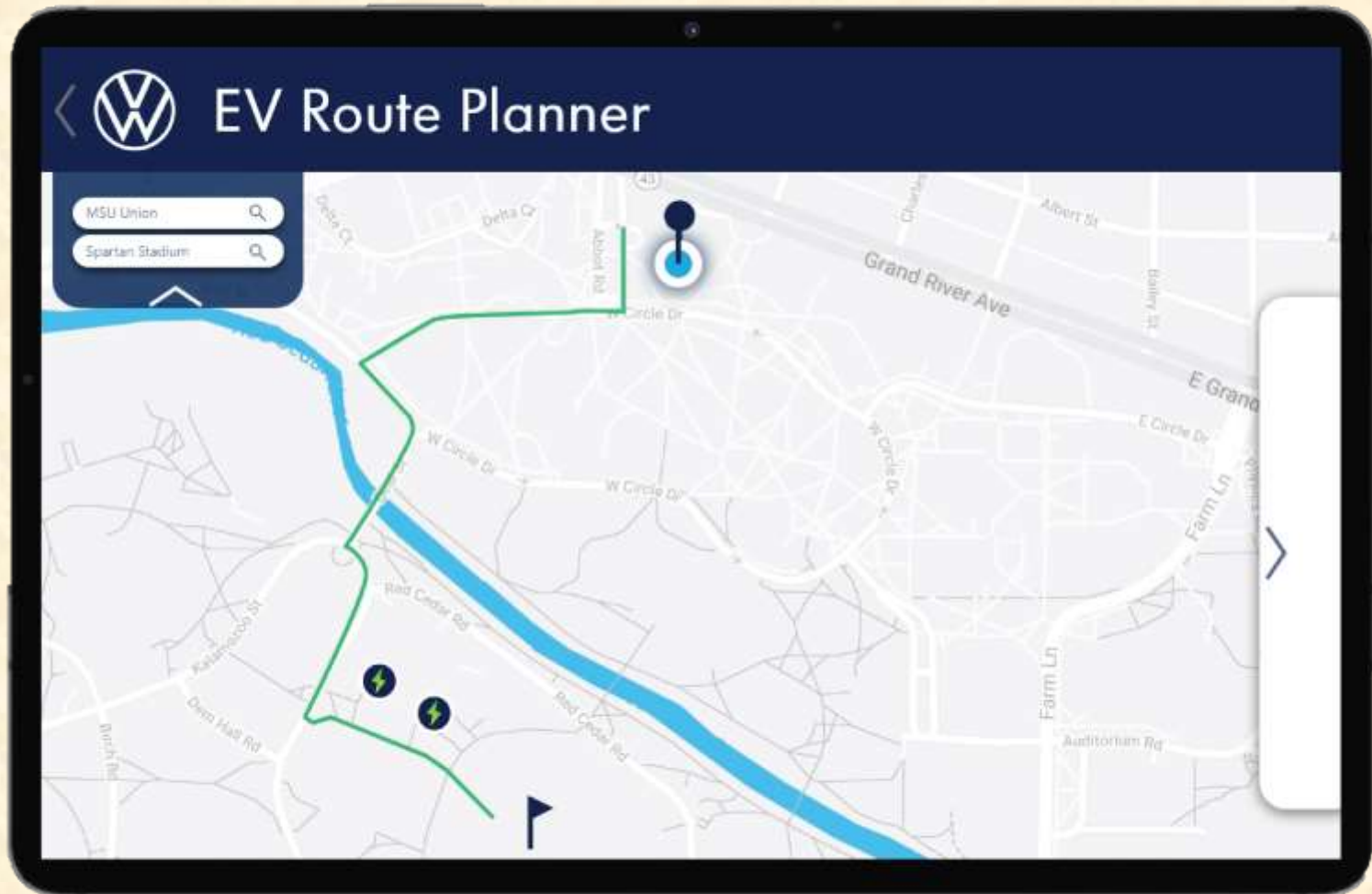- Adherence to Volkswagen style guide
- Material Design

Screen Mockup: Initial Map Screen

Screen Mockup: Initial Screen With Menu

Screen Mockup: Routing Example

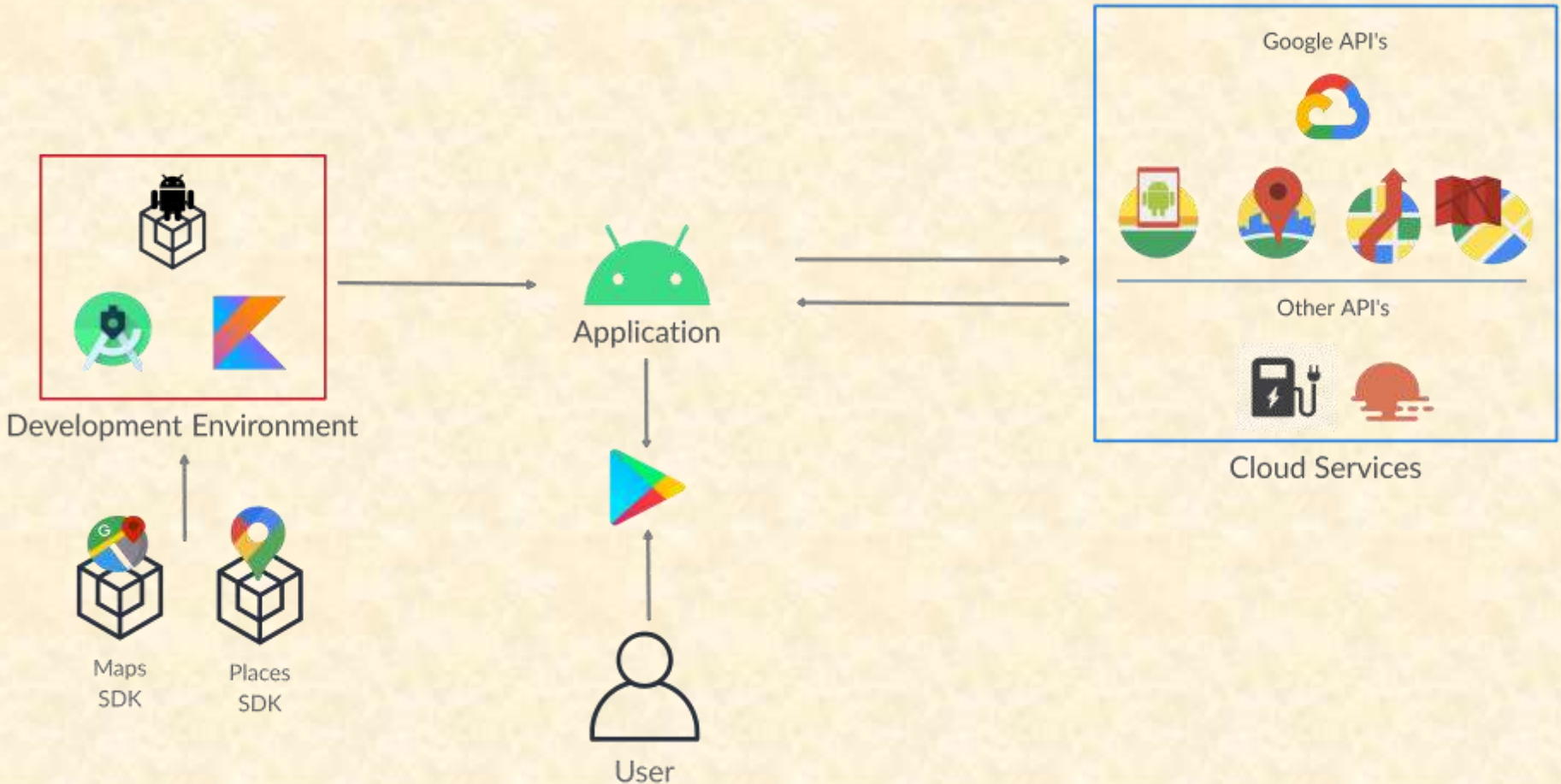# Screen Mockup: Route With Information

Technical Specifications

- Android 10.0+

- XML

- Kotlin

- SDKs
  - Google Maps 17.0.0
  - Google Places 2.4.0

- Material Design Components

System Architecture

System Components

- **Hardware Platforms**
  - Galaxy S7+ Tab

- **Software Platforms / Technologies**
  - Android Studio
  - Google APIs
    - Places
    - Directions
    - Maps Elevation
    - Googles Map
  - Open Weather API
  - Department of Energy EV Charger API

Risks

- **Calculating Fuel Efficiency**
  - **Description:** Calculating MPG based on varying conditions
  - **Mitigation:** Use specifications from the client and research more APIs

- **Implementing Charging Station Locations**
  - **Description:** Adding charging stations to the optimal route
  - **Mitigation:** Utilize Google Directions API and Energy EV Charger API

- **Ease of Use of the Application**
  - **Description:** The application must be easily accessible
  - **Mitigation:** Work with the client iteratively

Questions?