Project Plan

CATAlyst: Mapping CATA Routes and Buses in Real-Time

The Capstone Experience

Team Michigan State University

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Functional Specifications

• The primary goal is to allow for MSU students to easily use the bus system to arrive at a destination on time.
• Users can view all routes and buses within the CATA bus system in real-time.
Design Specifications

• Allow users to access real-time CATA bus locations, stops, routes including filtering of this information.

• Students can enter their class schedules and push notifications will notify them when they should leave to catch the bus.

• Clean design to allow for easy use on-the-go.
Screen Mockup: Home Screen
Screen Mockup: Route Filtering
Screen Mockup: Route Selection
Screen Mockup: Schedule Input

Class Start Time
9:10 am

Class Name
PHY 183

Your Initial Location
Wilson Hall, Wilson Road, East Lansing

Class Location
Biomedical and Physical Sciences, Wilson Road

M Tu W Th F

Submit
Screen Mockup: Push Notifications
Technical Specifications

Server-side:
• RESTful Web Services
• Spring Boot Maven Java application

Client-side:
• iOS application with Swift
• Android application with Java
System Architecture
System Components

- **Hardware Platforms**
  - Capstone Server Ubuntu 16.04/ AWS server
  - iPhones
  - Android phones

- **Software Platforms / Technologies**
  - iOS
  - Android
  - RESTful Web Services
Testing

- RESTful API and database queries will utilize unit tests.
- Apps tested on multiples devices, screens and OS versions.
- Scaled tests with multiple users
- Field testing of multiple scenarios
Risks

• Accurately Interpolating CATA Bus Locations Between Updates
  ▪ CATA only updates data from their GTFS system 120 times an hour (once every 30 seconds).
  ▪ Cross reference the CATA route data with Google Maps API ETAs

• Implementing User Schedules
  ▪ Need to allow users to input their schedules and provide trip planning for them.
  ▪ A calculation will have to be determined to figure out a bus’s estimated time of arrival for each possible path between the two points

• Consistent Application Interface Between iOS and Android
  ▪ Application needs to appear and function the same for both iOS and Android users.
  ▪ Both the Android and iOS teams will work together closely to ensure they are at similar development points and will make decisions about roadblocks as the emerge
Questions?