



Mobile App for Bike Data Collection

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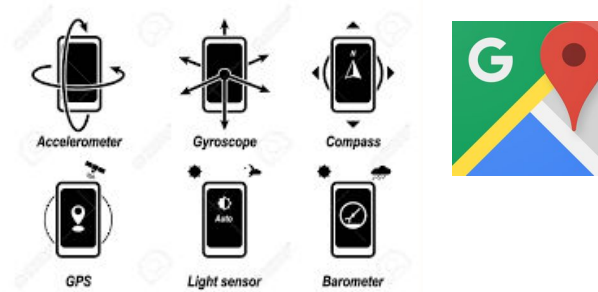
Project Description



- Cross-platform (Android and IOS) mobile app for bike data collection
- Records user stats, bike trip statistics
 - Age, weight, rider category, gender, etc.
 - User's GPS, accelerometer, and gyroscopic data
 - Trip start/stop time and location
 - Weather at time of ride
- Data will be used for VT Transportation Institute's (VTTI) traffic model
- Data uploaded and stored in VTTI Firebase database

Requirements

- Cross-platform application
- Account creation and management
- Get and store user info (age, gender, weight, biker status)
- Get and store weather data of trip
- Detect changes in mode of transportation (from bike to bus, etc.)
- Map view and directions (Google Maps)
- Real-time data collection of GPS, accelerometer, and gyroscopic data
- Automatically upload data





Roles

Team Lead: Devin

Requirements: Devin, Sam

VTechWorks Submissions and Reports:
Sam, Alex

Prototyping: Sam, Lucas

Meeting Notes: Lucas

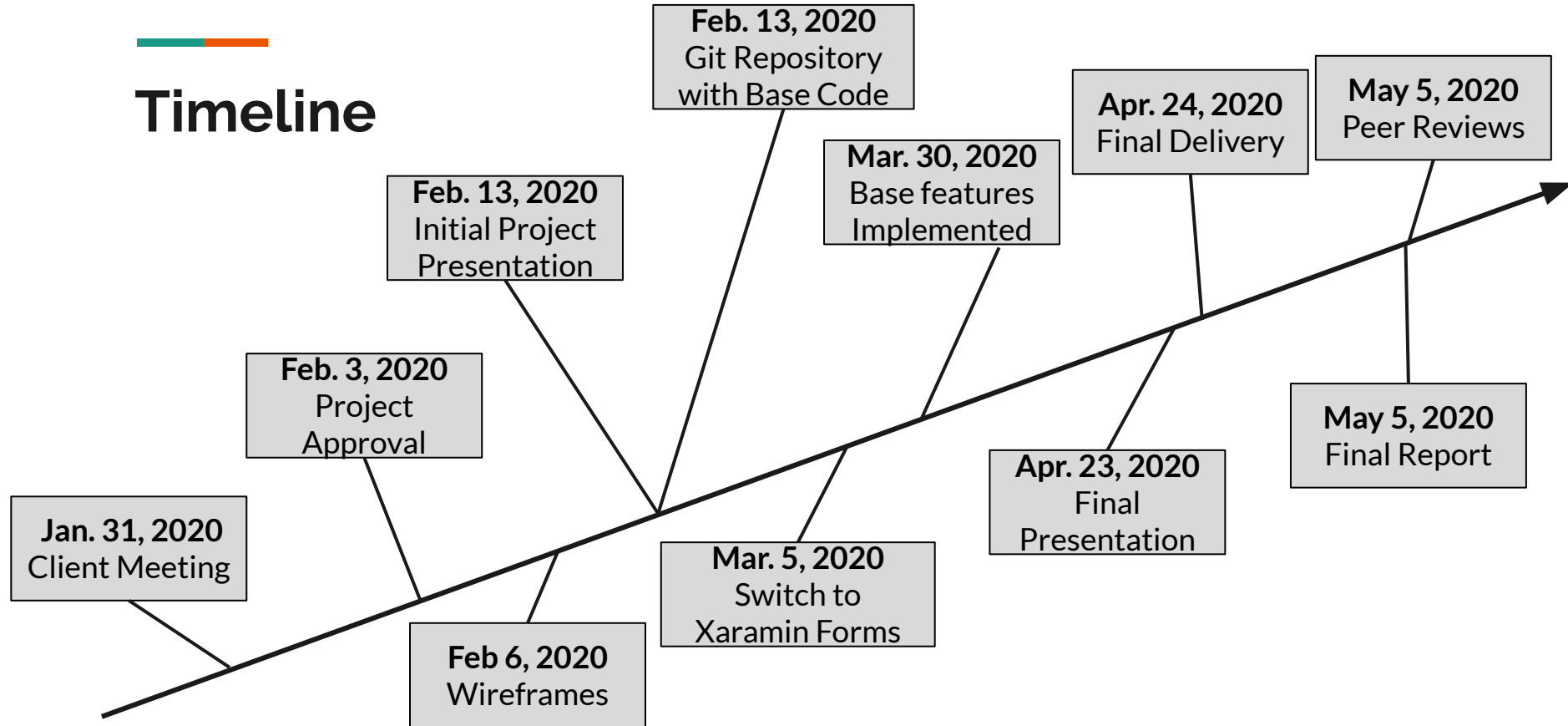
Testing: Lucas, Devin

Presentations: Alex, Sam

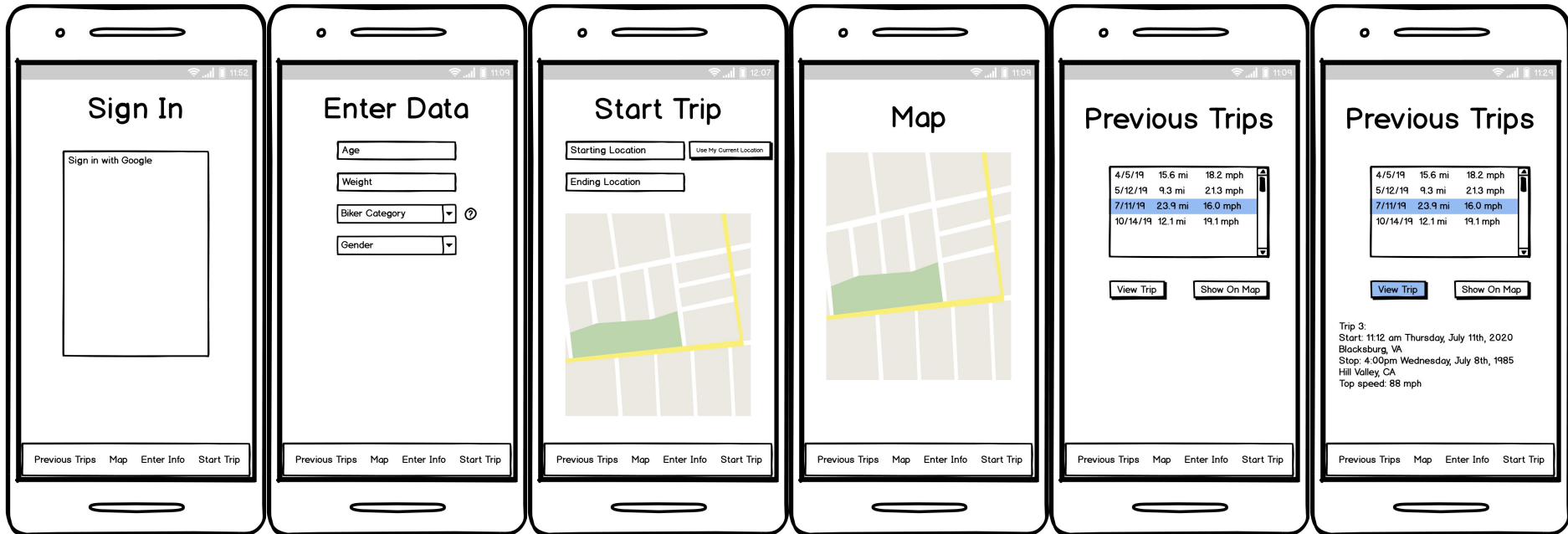
App Design: Alex, Devin, Sam

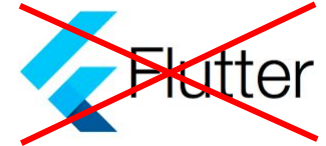


Timeline



Wireframes / Initial Design





Project Design/Implementation

- Switched from Flutter to Xamarin
 - Maintained cross-platform development capabilities
 - Better support and plugins
- Utilizing navigation stack
- Model-view-controller framework (as part of the .NET framework)
- Real-time data collection during trips
 - Accelerometer and gyroscope as streams, GPS at 2 Hz





Project Design



- Firebase database
 - Real-time data uploads
 - Data retrieval
- Account management with Google Sign-in
- GPS-based weather reports
- Map support through Google Maps
- Reports of previous trips stored in database



Acknowledgements

- Prof. Hesham Rakha
 - <https://sites.google.com/a/vt.edu/hrakha/>
- Prof. Mohamed Magdy
 - <http://www.aast.edu/cv.php?ser=57100>

Questions?

