MoGreen

“Clean My Campus” Mobile Application

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Problem Statement

- College campuses strive to be green and sustainable
- As student populations grow, overflowing bins, full dumpers, and campus litter rises, and maintenance issues increase as well
- To make NAU green, we have the Department of Sustainability and the Moving & Recycling Department

Problem Statement cont.

NAU’s current problems:

- Poor current mechanisms for reporting maintenance issues
  - Unknown, outdated, and inconvenient
  - Students don’t use them, creating more work for the people who rely on them

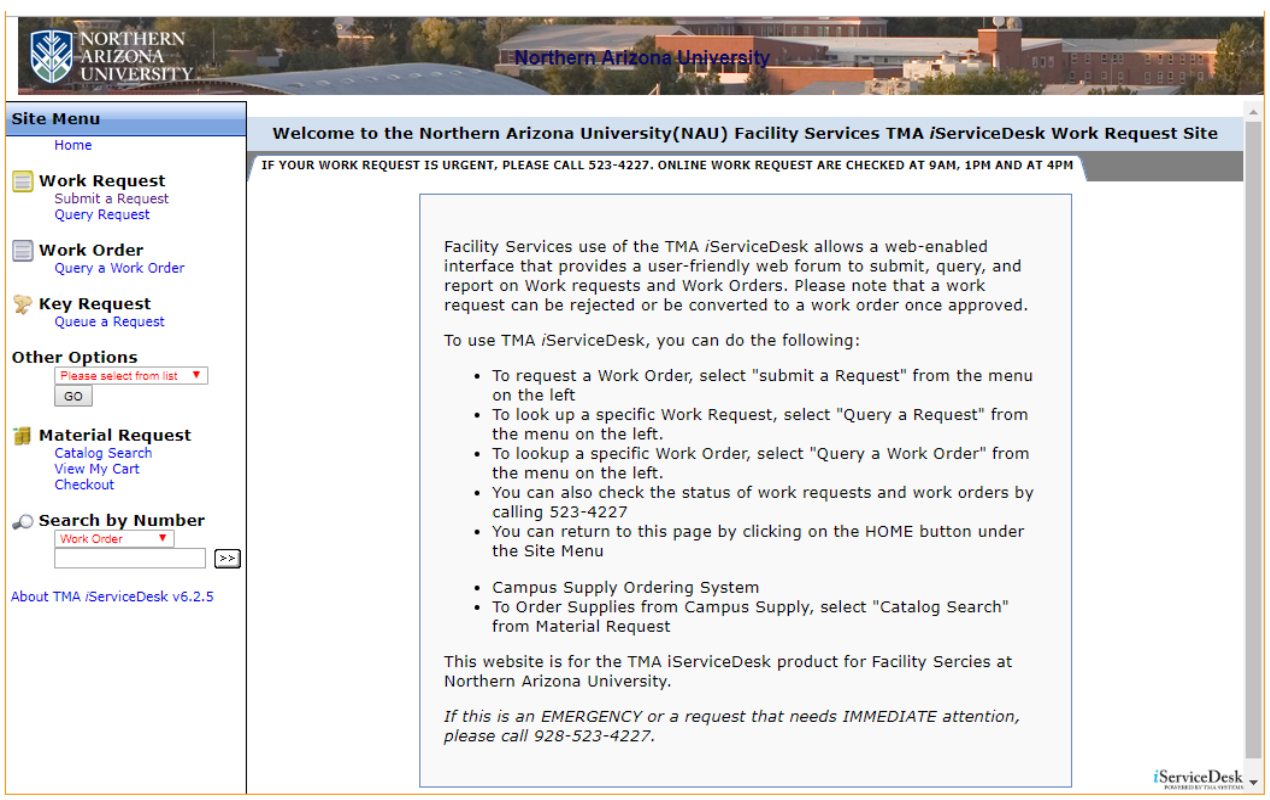
- Students have little involvement with keeping their campus clean
  - Students don’t feel like it is their responsibility to pick up trash

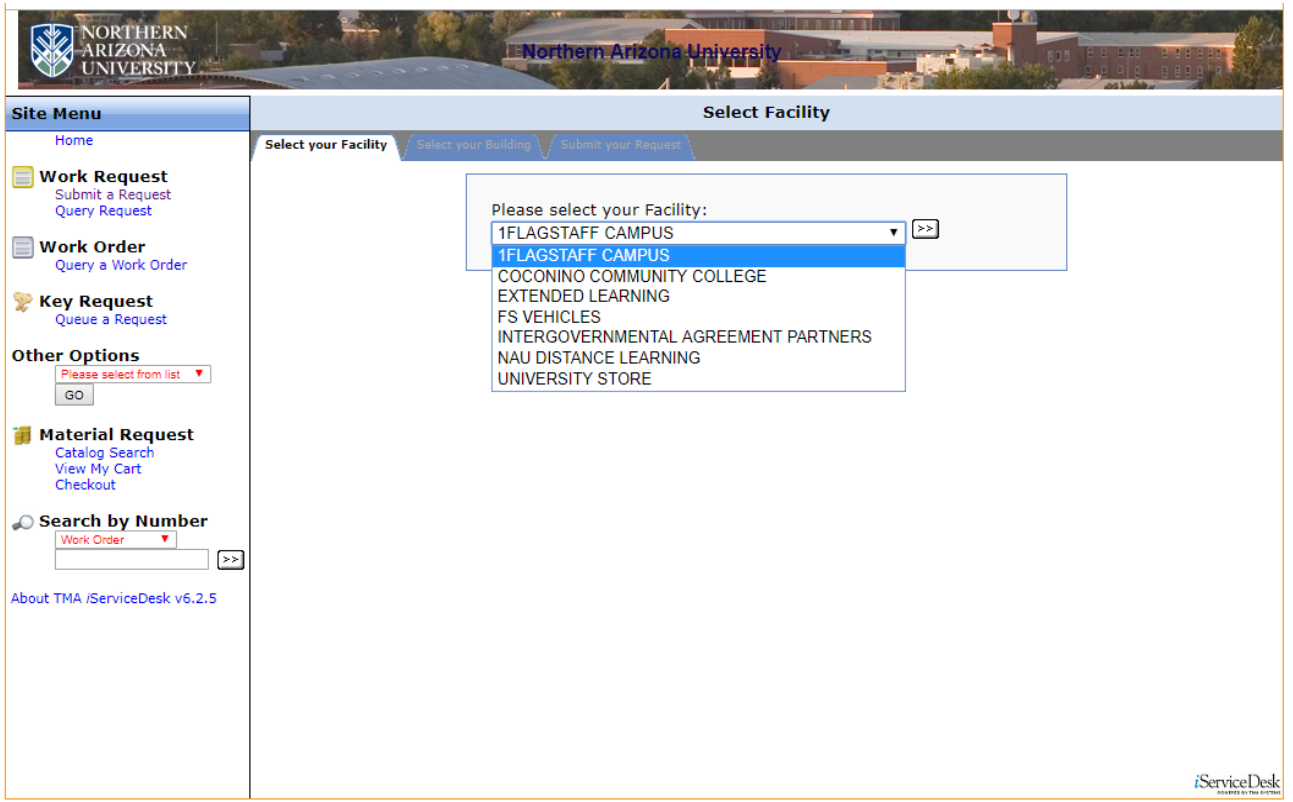
Problem Statement cont.

Clients:

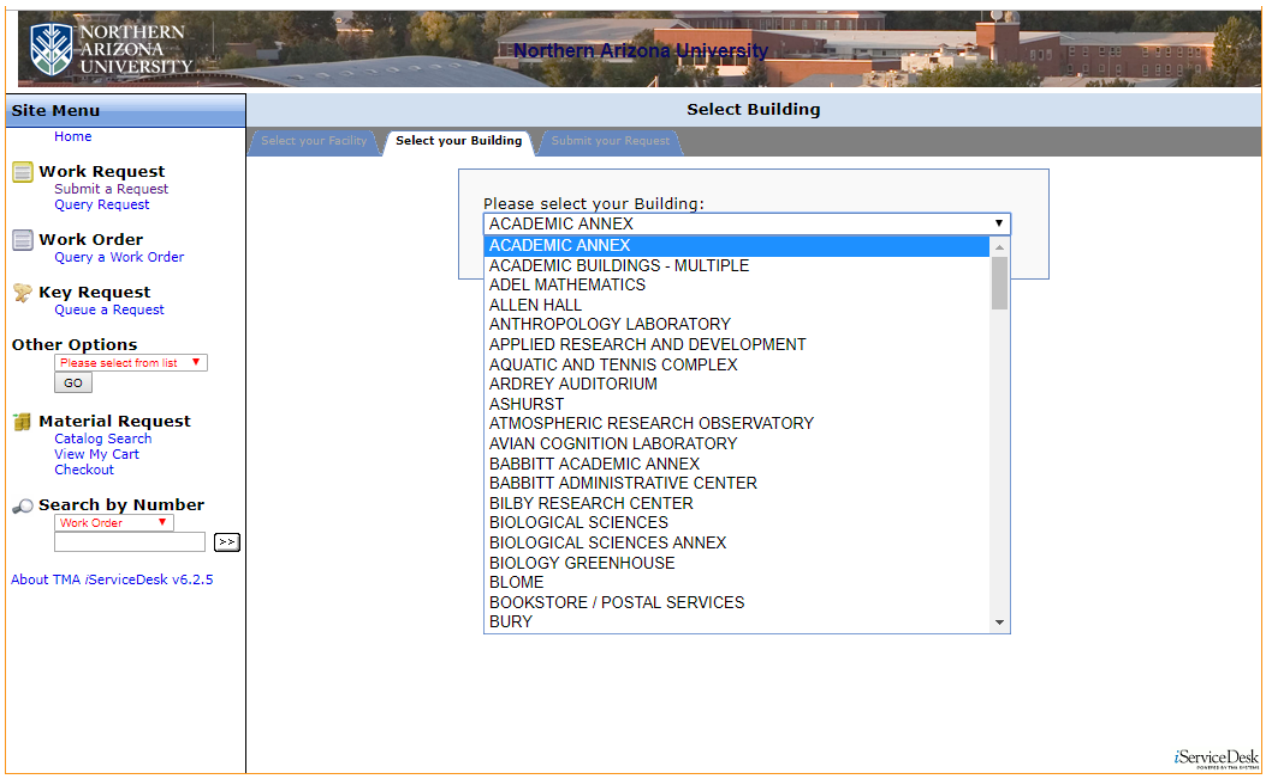
- Brock Brothers:
  - Manages NAU's Moving and Recycling department
  - Oversees trash and recycling efforts at NAU
  - Handles general NAU maintenance problems
- Ellen Vaughan:
  - Higher Education Sustainability Professional
  - Used to be the sustainability manager with NAU's Office of Sustainability
  - Now at UC Santa Cruz, is the Water and Climate Action Manager

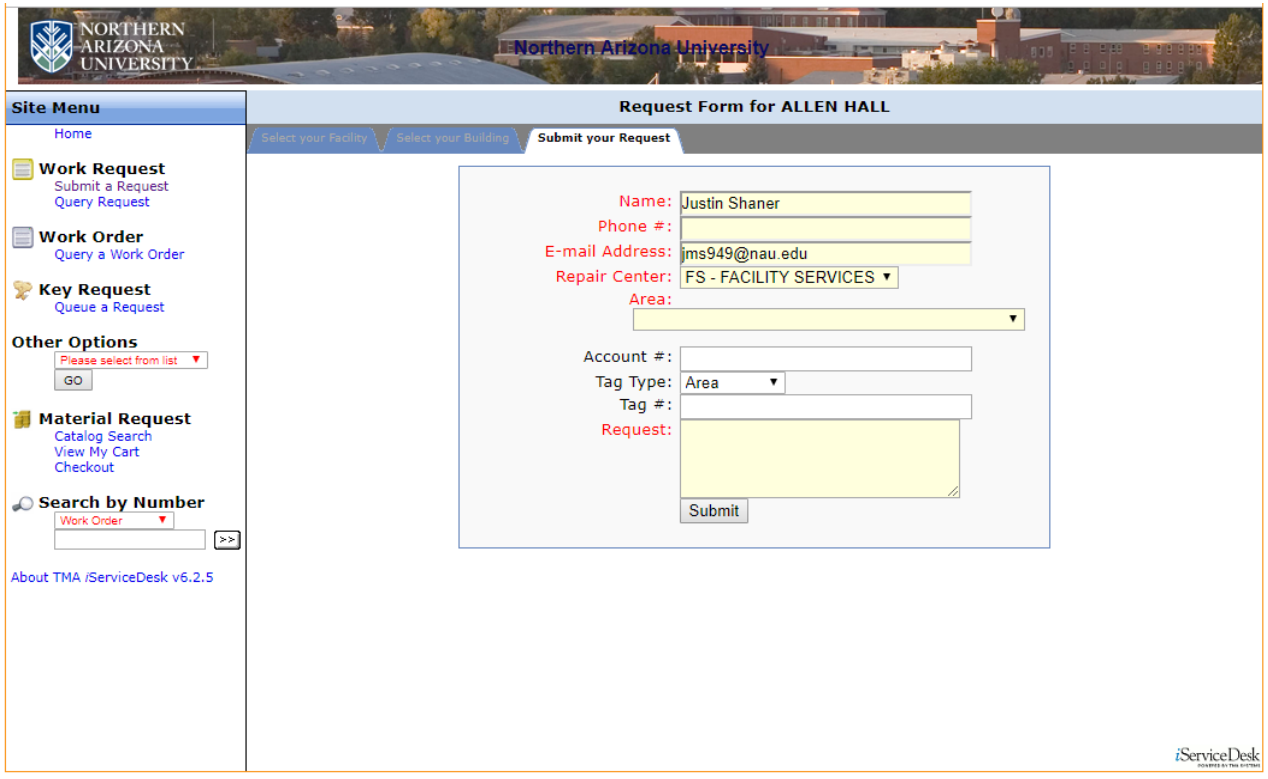
Problem Statement cont.





Problem Statement cont.





Solution Overview

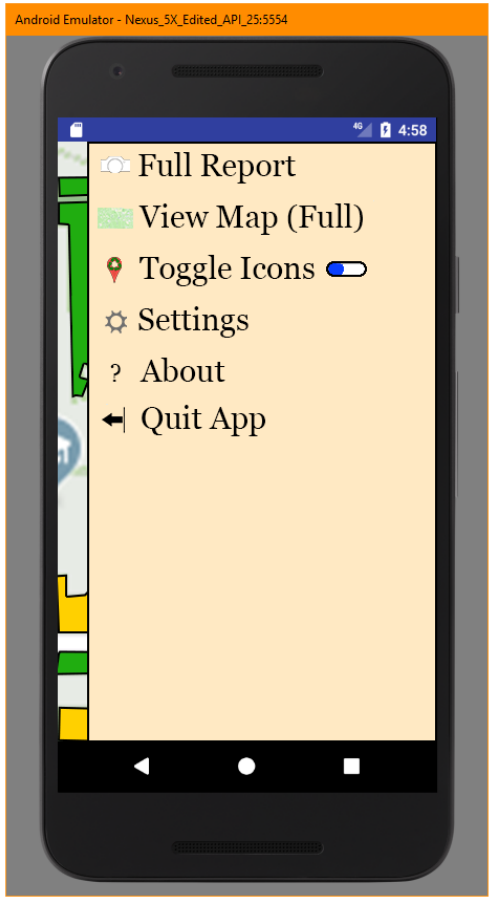
- Create an application for students and faculty
  - Allows users to locate areas that need cleaning
  - Faster reporting by zone
  - Motivation for a cleaner campus

- Website Portal
  - Allows admins to see reports and statistics
  - Create zones on their campus

Solution Overview cont.

Mock ups

Standard Screen

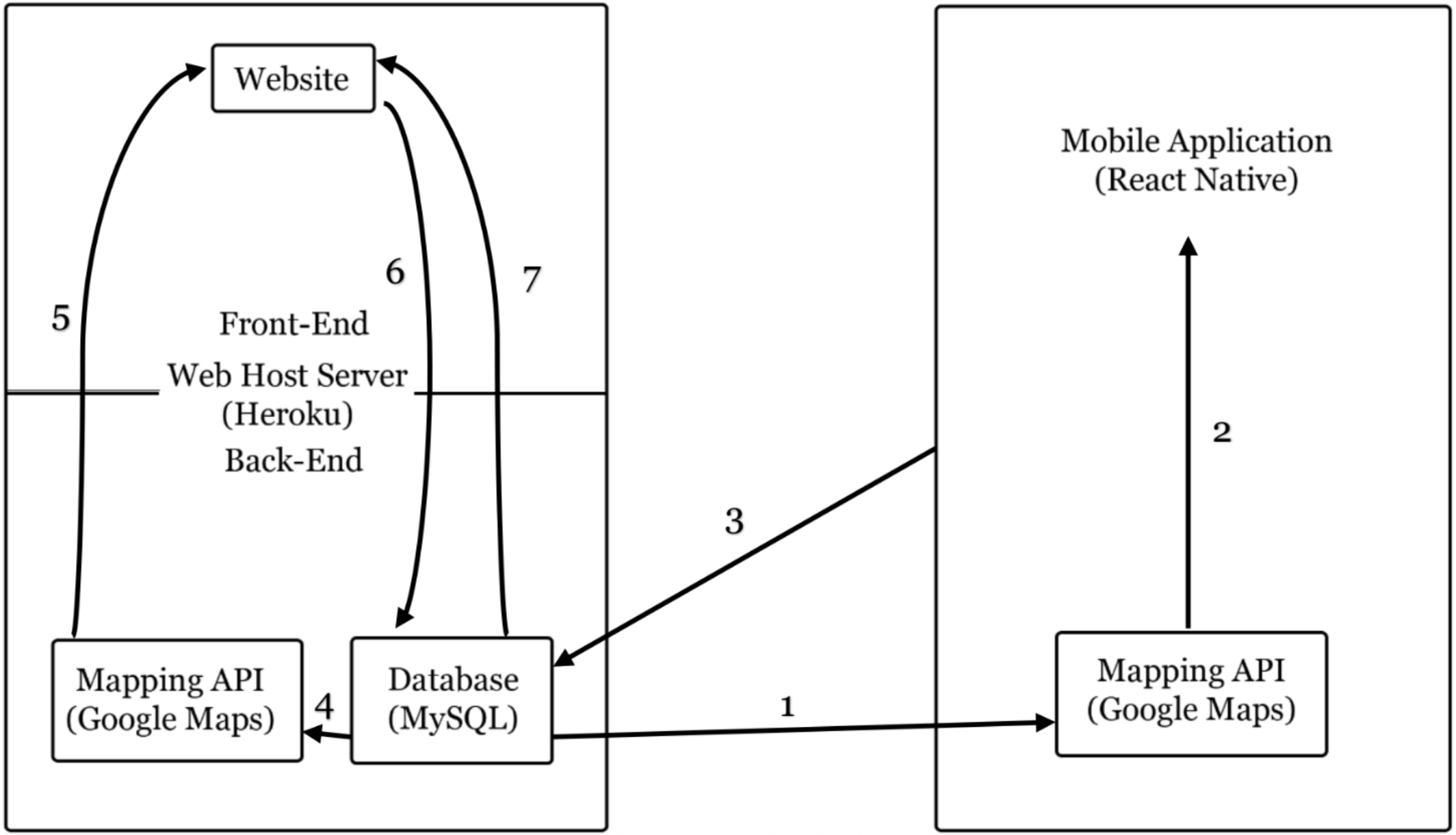


Menu Button Pressed

Solution Overview cont.

Tech choices and integration

- Google Maps: displays map zones and coloration
  - Main map interface, as shown
- MySQL: stores cleanliness reports, maintenance reports, and images
- Heroku: will host the website
  - XML, JavaScript, HTML
- React Native: framework used to create application
  - Does not lock out cross-platform capability



(**Figure 1**. Image representation of how our technologies will interact with each other.)

Key Requirements

Functional requirements for our minimal viable product:

- Create a profile
- Reporting
- Visualize campus areas
- View traffic data

Key Requirements cont.

- Reporting
  - Quick report
    - Litter
      - Data entry
      - Decrements region timer
    - Overflowing container
      - Position sent to Brock’s team
      - Decrements region timer
  - Full report
    - Take picture
    - Add comment
    - Submitted to Brock’s team
  - Claim area
    - Mark as clean
    - Mark as dirty

Key Requirements cont.

Functional requirements for our “comfortable” solution:

- Ability to accrue points and form teams, high score system
- Map icons and interfaces/filters
- Geolocation (exact user locations)

Key Requirements cont.

Performance Requirements:

- Our main performance requirements are simplicity, usability, and reliability
- Simplicity:
  - 3 main views: map GUI, quick report button (on main map), swipe to full menu
- Usability:
  - Quick reports should be able to be made by the average user in less than a minute and full reports in 2 minutes
- Reliability:
  - We expect our application to be able to handle at least 30,000 reports at one time

Key Requirements cont.

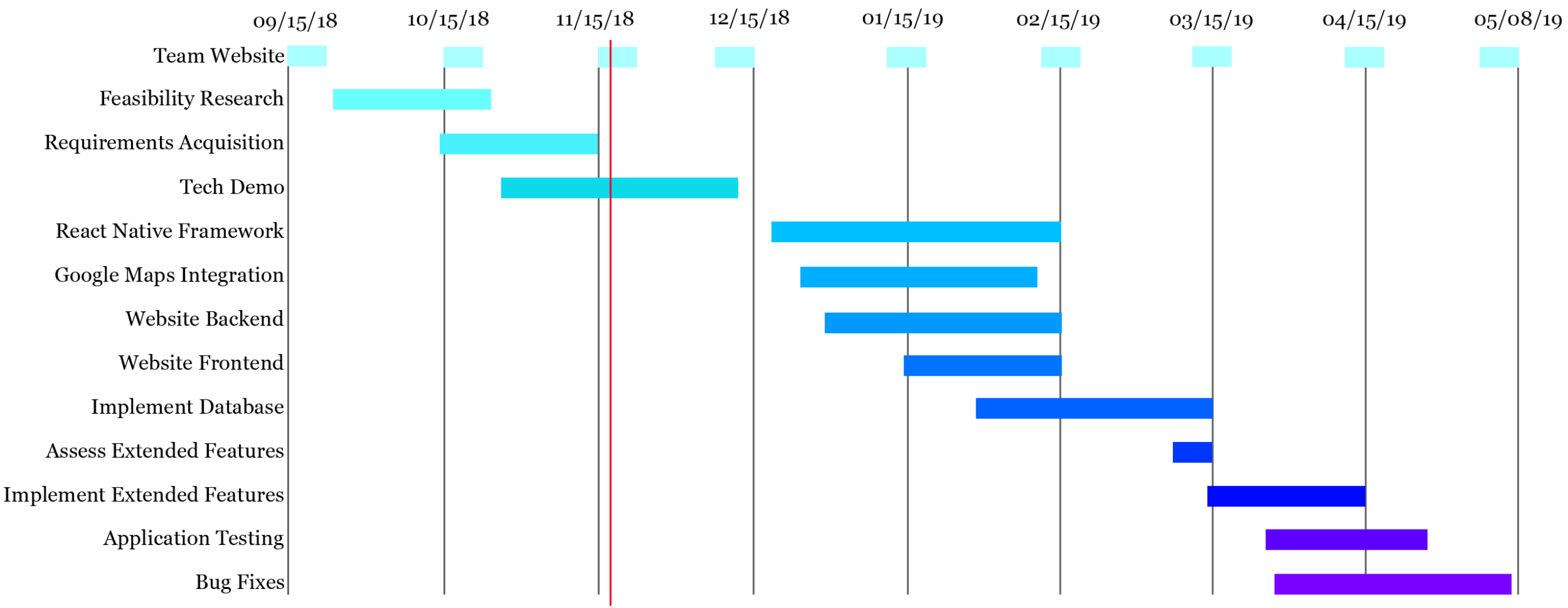
Environmental Requirements:

- Cross-compatibility:
  - Clients would prefer this application to be cross-compatible if possible
- Gamification:
  - Allocate database space for use of future gamification features
  - Store information in a way that allows assigning point values to user tasks
- Google Maps API:
  - Few competitors and widely supported
- Hosting service:
  - Compatibility with the database we want to use to display statistics

Risk and Feasibility

- Most of our risks involving feasibility are regarding cost and can subsequently affect our clients
  - Not an issue with low traffic on one campus
- Students can send multiple fake maintenance reports
  - Unexpected, but will add logic rules to prevent spam reports
  - Database and hosting service can handle large amounts of traffic
- Any student can report an area as cleaned without actually making any effort, no proof of cleaning required
  - Overhead to implement some proof mechanism is not justified based on expected traffic and user-base

Schedule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02/15/19
03/15/19
04/15/19
05/08/19
Team Website
Feasibility Research
Requirements Acquisition
Tech Demo
React Native Framework
Google Maps Integration
Website Backend
Website Frontend
Implement Database
Assess Extended Features
Implement Extended Features
Application Testing
Bug Fixes

Conclusion

- Problems:
  - Outdated reporting methods and lack of community involvement
- Solution:
  - Mobile application with a simple interface enabling quick reports
  - Administrators have access to reporting data and visual representation of data
- This application will be a template to deploy to other campuses
- Facilitate community engagement and change how people view their communities

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