# EPICS SMART CITY

## Spring 2019

EPICS / PURDUE

# Presentation Agenda

- **Problem**

- **Proposed Solution**

- **Teams:**

    - **Application Development Team**

    - **Website Team**

- **Future Development**

# The Problem



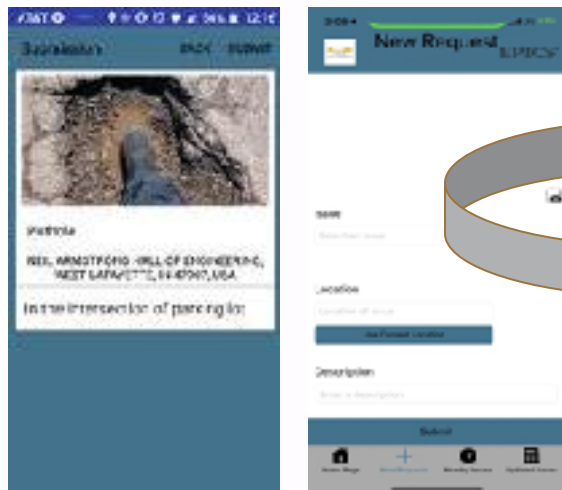Figure 1 [1]



Figure 2 [2]



Figure 3 [3]

# Current Solution



Figure 4 [4]



Figure 5 [5]

# Project Background - The Solution

**Phone Application**

**Website**



**Citizens of West Lafayette
Figure 7 [4]**

**Engineers of the City of West Lafayette
Figure 8 [4]**

# EPICS SMART CITY

## Application Development Team

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# Meet the App Team

| Name | Role |
|------|------|
| Nikhil | Design Lead |
| Alex | Project Partner Liaison |
| Connor | Android Developer |

# Competitive Analysis

Published: PublicStuff
company
Launch Time: 2017/2/23
Download: 10000+
Rate: 114 users
Ratings: 4.1 stars

Published: City of
Boston
Launch Time: 2010/11/5
Download: 10000+
Rate: 116 users
Ratings: 4.1 stars

Published: City of Seattle
Launch Time: 2013/5/9
Download: 10000+
Rate: 93 users
Ratings: 3.5 stars

# Cost Analysis of App Development

| Website | Platform | Development Cost | Maintenance Cost (~20% of development cost) |
|---|---|---|---|
| Otreva Calculator | Multi-platform and website | $167,400 | $33,480 |
| Estimate My App | Multi-platform and website | $130,500 | $26,100 |

# AWS vs Firebase

| | Pros | Cons | Cost of storage |
|---|---|---|---|
| AWS (Amazon Web Services) | ● Experience in the market (7 years)<br>● Flexibility of data storage location | ● Higher learning curve<br>● Billing is confusing<br>● Have experienced high level outages | ● For first 50TB/month - $0.04/GB |
| Firebase (Google) | ● Lower learning curve<br>● Ease of migrating into another service<br>● Easier to scale<br>● Highly secure | ● Relatively new service (launched in 2018)<br>● Expensive when scaling | ● For storing the reports, it's $0.026/GB<br>● For showing the reports on the app, it's $0.15/GB |

# Past Semester-Android

- Basic but functional

- User interface needed updating

- Intuitive

- Could send data to database but could not receive any

# Last Semester - Android
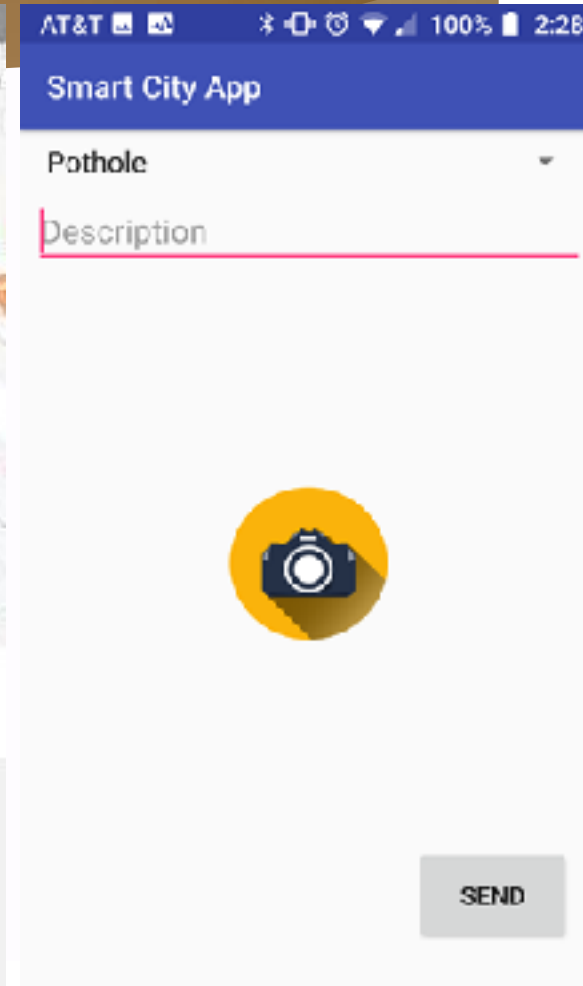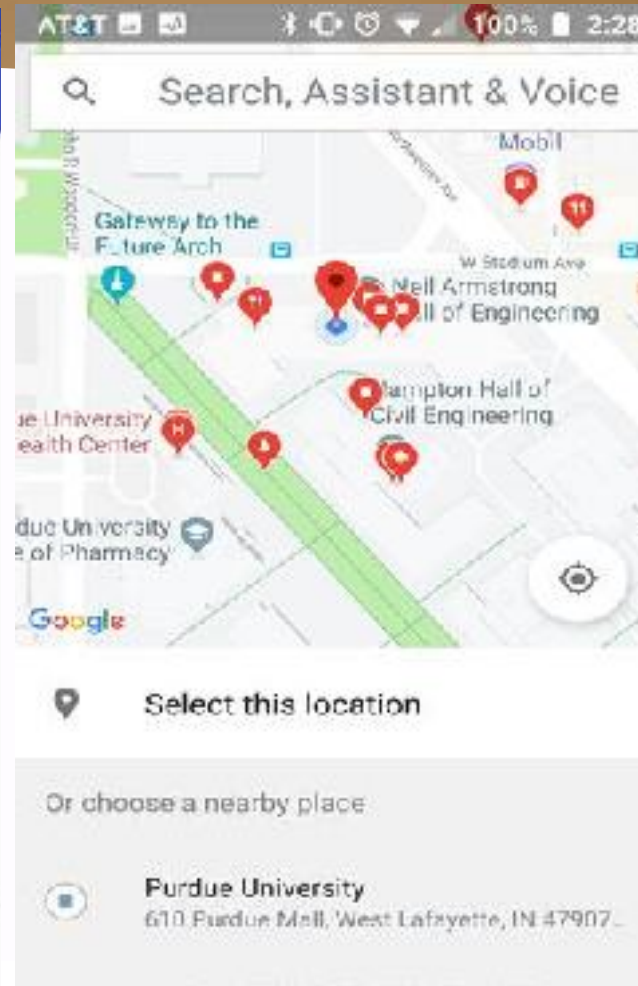


Figures 9 -11 [4]

# Current Semester - Android

- Alternate to transition completed
  - Compatible with certain features
    - Marker clustering

  - Things already implemented
    - Excessive Business markers
    - Easier to update in the future
    - Follows planned design
    - Access Saved pictures
    - Display nearby issues
    - Receive data from from server

# Current Semester - Android Demo



Figures 12 - 15 [4]

# Current Semester - iOS

- Features:
  - Home Page
    - View map and your current location

  - New Request Page
    - Add picture
      - Either from camera or photo gallery
    - Select what type of issue it is
    - Add a location
      - Either typed or with GPS coordinates
    - Add a description

  - Updated Issues Page
    - See all issues that people have sent in

# Current Semester - iOS Demo
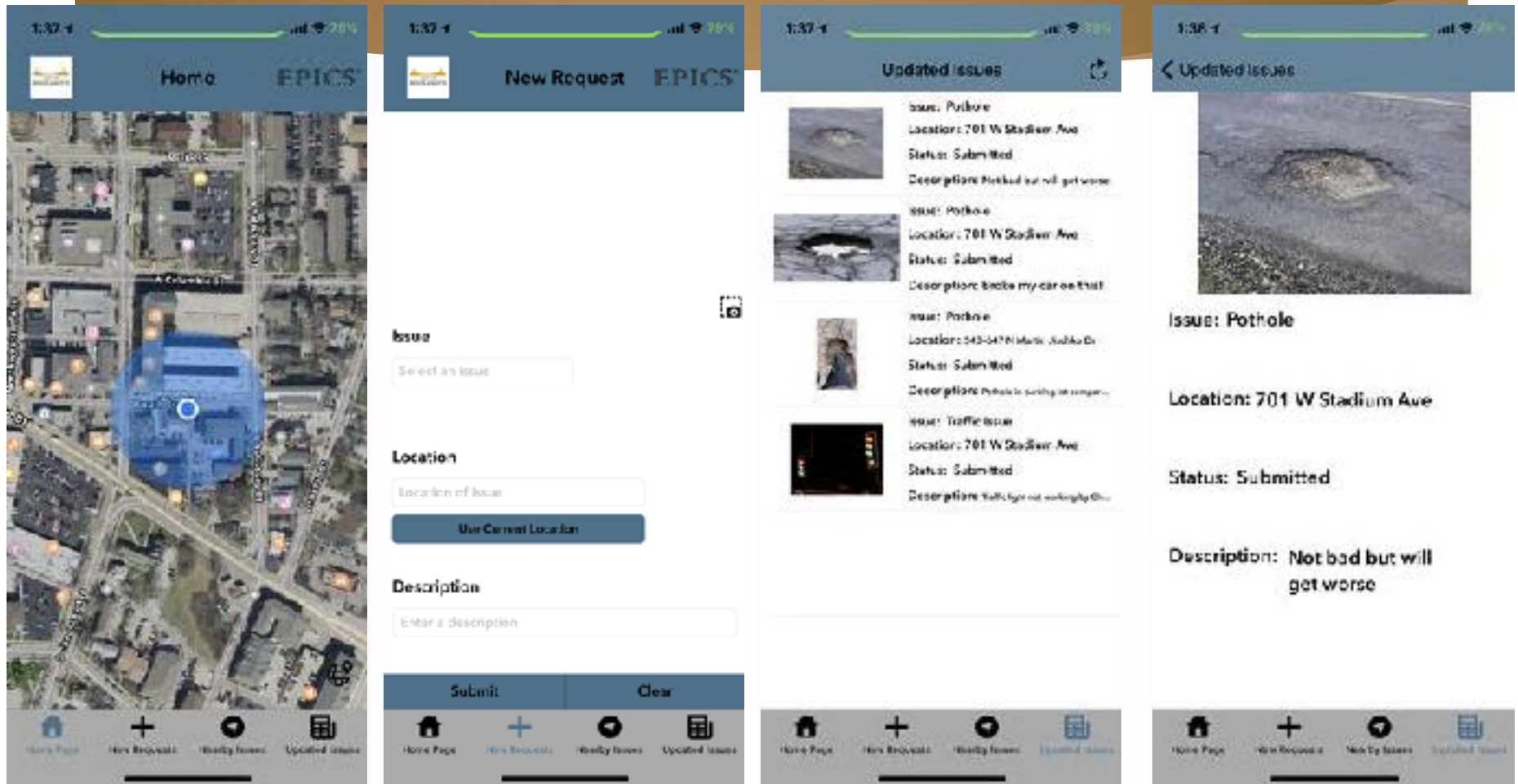


Figures 16-19 [4]

# Future Semesters - iOS

- Plan:
  - Clean up the look

  - Draw a boundary around Purdue's campus
    - Also, if the user is in the boundary, do not let the request be sent

  - Check for invalid reports
    - Having no image means you need a description etc.

Figure 20 [6]

# Layout Introduction

On the homepage, users will see announcements from government. There are two categories, problems reported and solved, which are labeled for green and red color.

On the bottom of page, we provide shortcut keys to allow users easy to initiate a request.
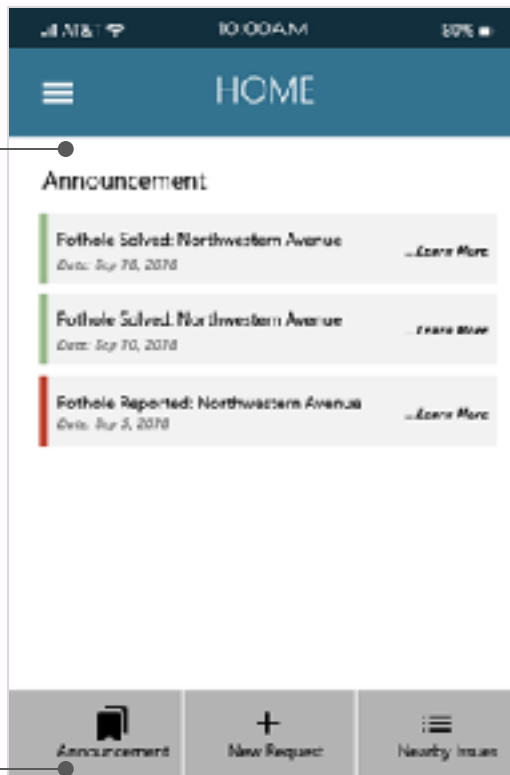
When users start a new request, it will show the nearby requests, users can click "thumb up" icon to save time and avoid duplicating report.

Figures 21-22 [4]

# Layout Introduction
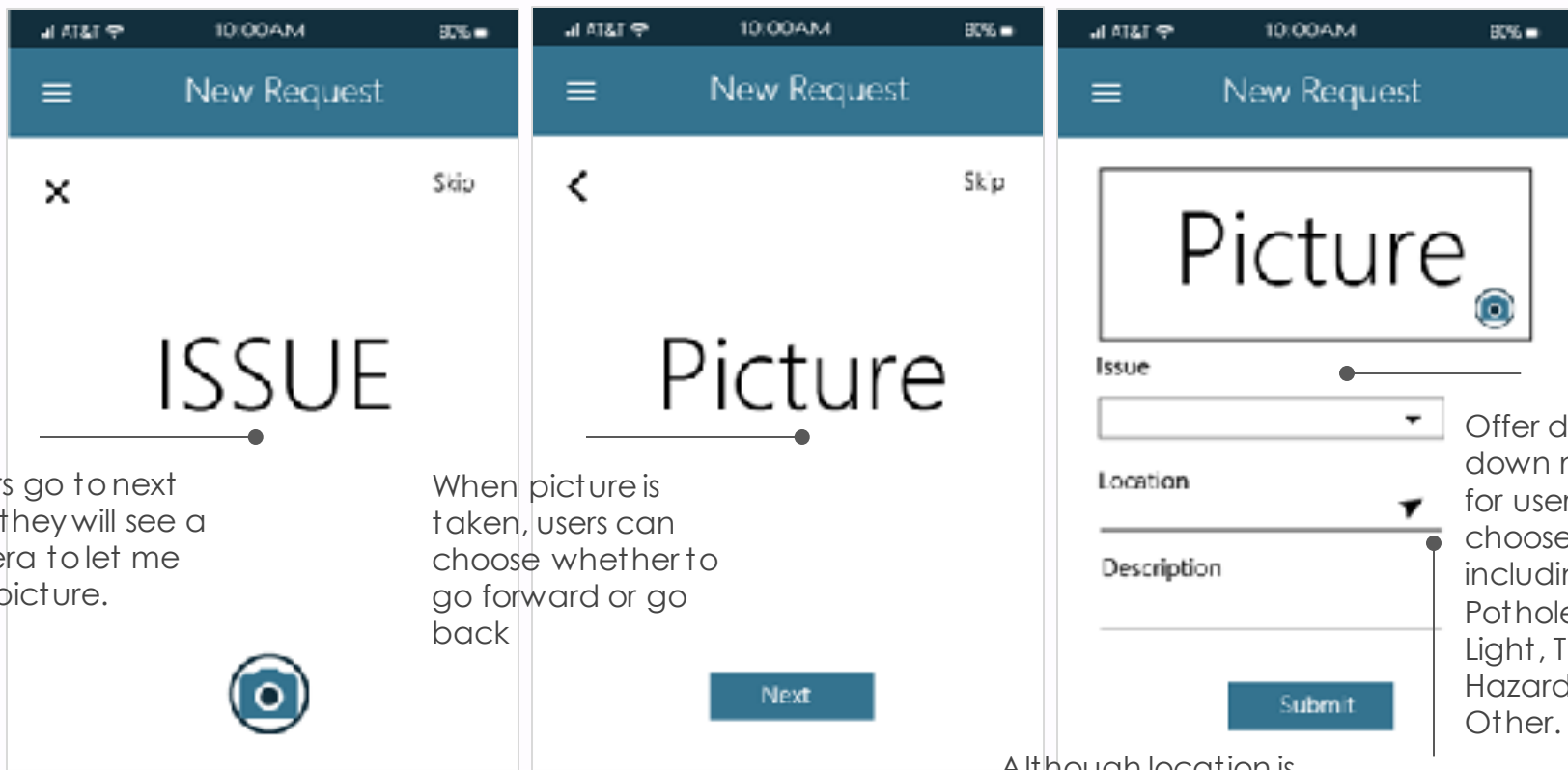


If users go to next step, they will see a camera to let me take picture.

When picture is taken, users can choose whether to go forward or go back

Offer drop-down menu for users to choose issue, including Pothole, Traffic Light, Tripping Hazard, and Other.

Although location is automatically detected by system, users still can click the button to change it

Figures 23-25 [4]

# Layout Introduction



There are two modes, list and map.

Provide drop down menu, including Distance, Progress (In progress/ completed), Date, Issues (Name ascending). Users can change orders to easily find what they want to see.
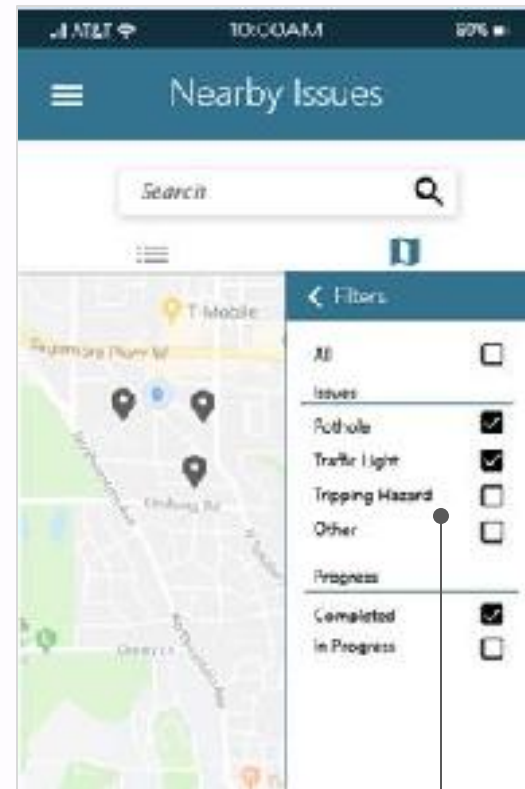
Figures 26-27 [4]

Provide filters to let users choose what issue they want to see.

# This Semester Progress

- Android app received a UI update and can receive information from database

- iOS app was started from scratch and brought up to speed with the Android app

# GANTT Chart & Our Goals



| App Team Spring '19 | start | end | 95% |
|---|---|---|---|
| **iOS** | 02/06/19 | 04/09/19 | 100% |
| Basic UI | 02/06 | 03/14 | 100% |
| Camera Function | 02/25 | 04/03 | 100% |
| Send Function | 02/25 | 04/09 | 100% |
| Description Function | 02/25 | 04/09 | 100% |
| **Android** | 02/16/19 | 04/14/19 | 86% |
| Import Data From Firebase | 02/16 | 04/14 | 95% |
| Clean UI | 03/11 | 04/14 | 70% |
| **If Time Permits** | · | · | 0% |
| Accept Manually Pushed Data | · | · | 0% |
| User Testing | · | · | 0% |
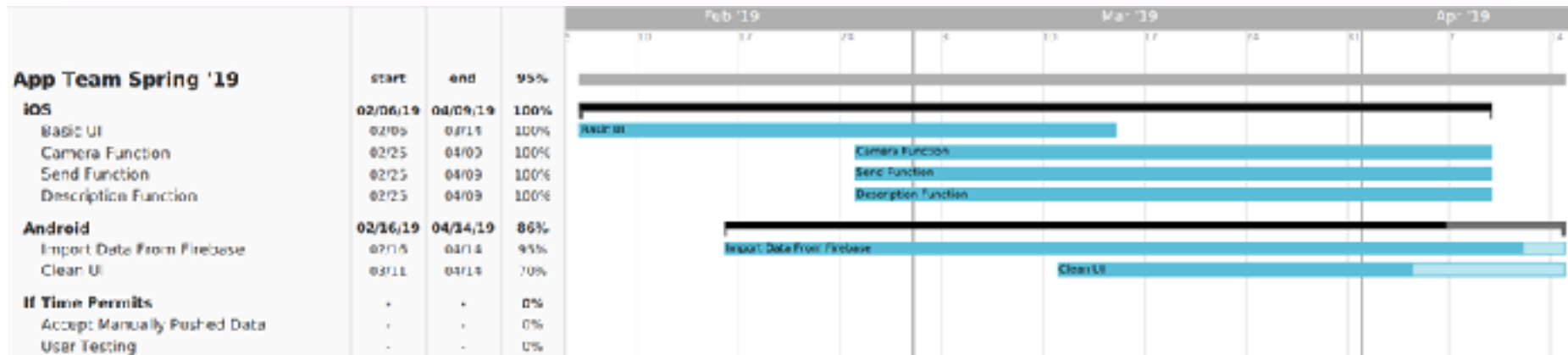
# Current Communications

Website

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## Website Team

# Meet the Website Team

| Name | Role |
|------|------|
| Ishaan Ahuja | Design Lead |
| Sreekara Yachamaneni | Webmaster |
| Owen Price | Financial Officer |

# Previous Semester Highlights
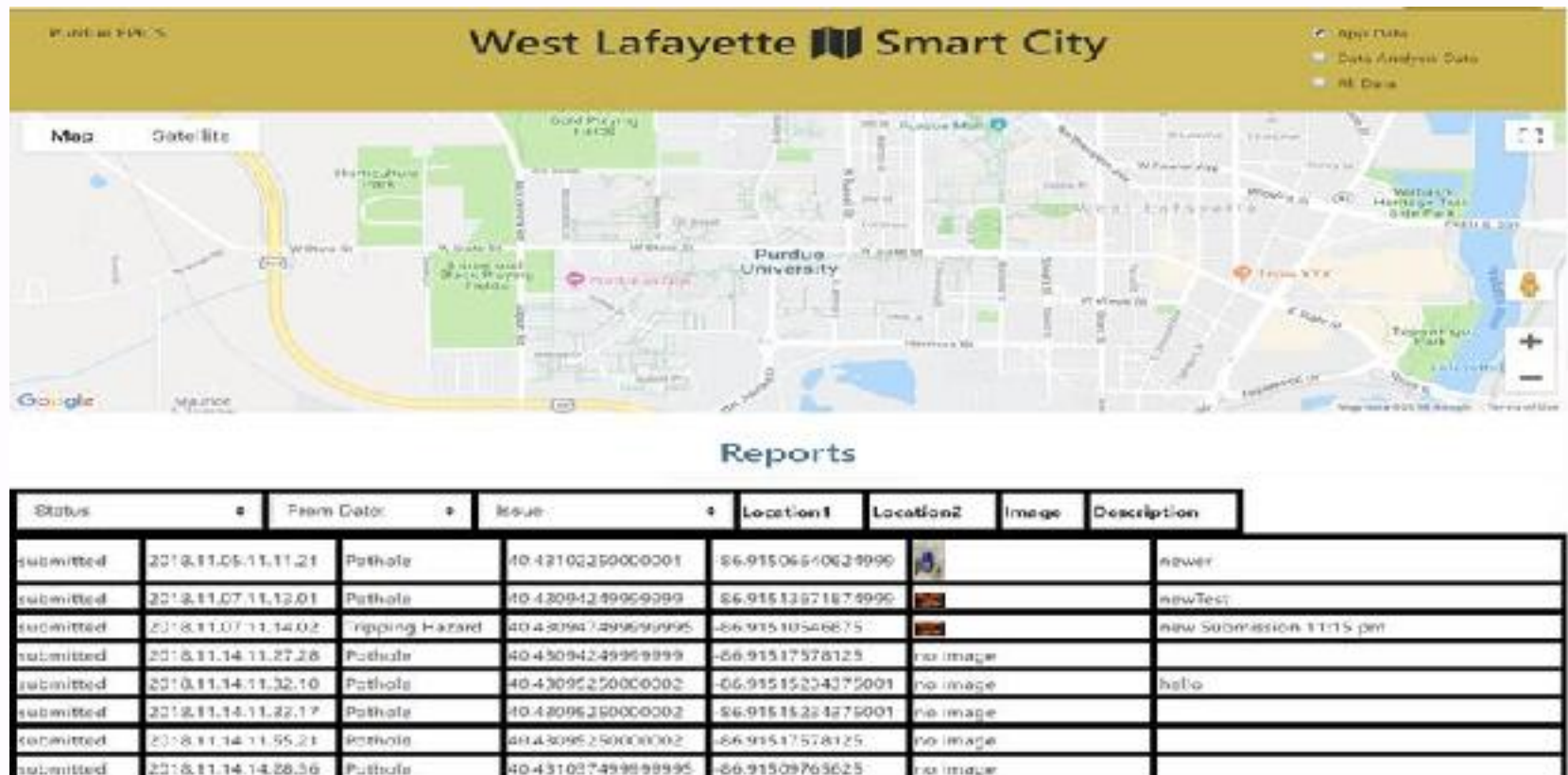


Figure 28 [4]

# Current Semester Progress

- Got the google maps to function properly

- Added markers on the map for corresponding issues in the report

- Filtering of the issues is complete with the map

- Added information about each marker when its clicked on

Figure 29 [4]

Figure 30 [4]

Figure 31 [4]

# Remaining Things

- Communication from the website to the app for updates from city engineers to the public.

# Gantt Chart

# Digital Mockups
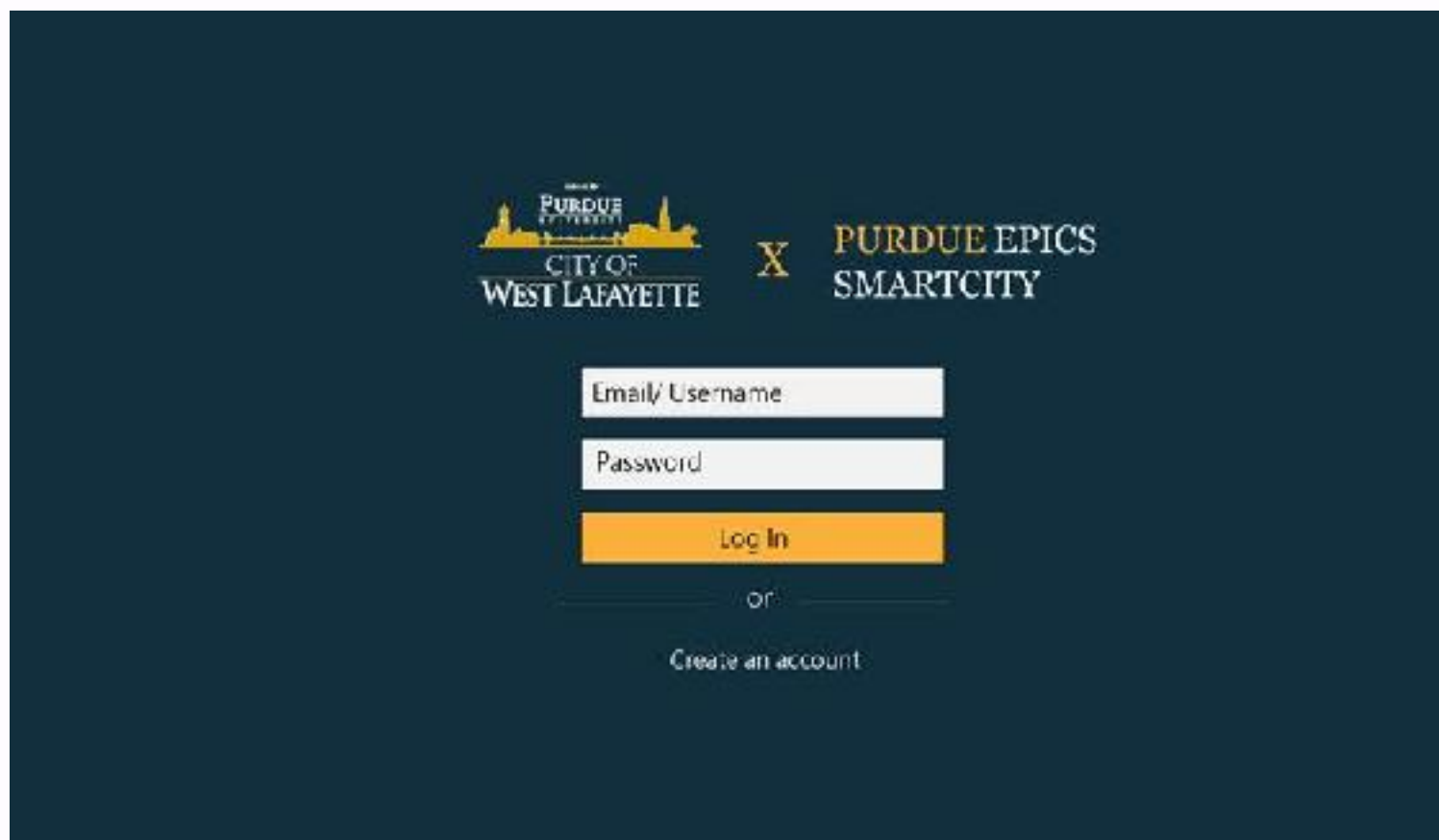


Figure 32 [4]

# Digital Mockups
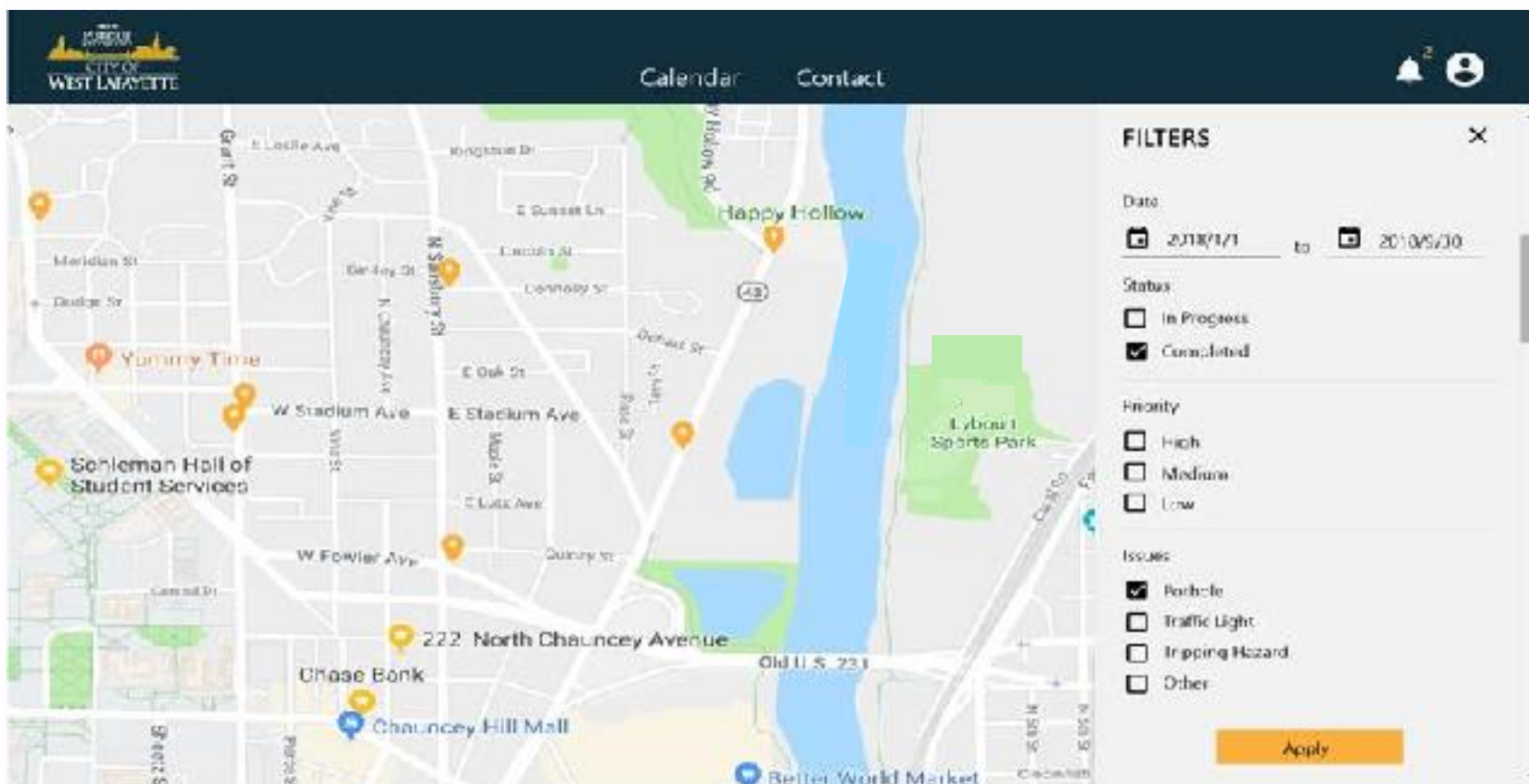


Figure 33 [4]

# Digital Mockups



Figure 34 [4]

# Website Demo

# DEMO

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Summary

# Project Purpose
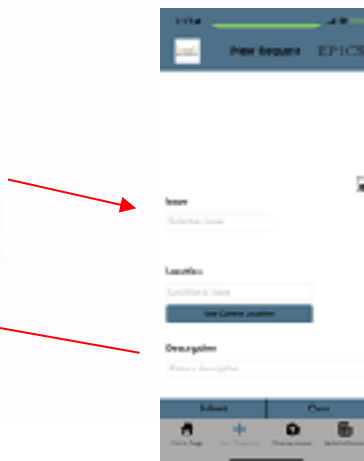


Figures 35-37 [4]

# Future Development

# Thank You!

Questions or comments?

# References

[1] https://www.wibc.com/sites/g/files/exi441/f/styles/large_730/public/article-images-featured/554676-391326.jpg?itok=VPAnqxDA
[2]
https://cdn11.bigcommerce.com/s-10c6f/images/stencil/500x659/products/1053/1852/Caution2_TrippingHazard__27983.1368544078.jpg?c=2&imbypass=on
[3]
https://cdn11.bigcommerce.com/s-10c6f/images/stencil/500x659/products/1053/1852/Caution2_TrippingHazard__27983.1368544078.jpg?c=2&imbypass=on
[4]
Photos taken by the team
[5]
https://pbs.twimg.com/media/Da7cz0yX4AEYCAA.jpg
[6]
https://www.freepik.com/free-icon/apple-logo_748451.htm