

EPICS SMART CITY Fall 2018



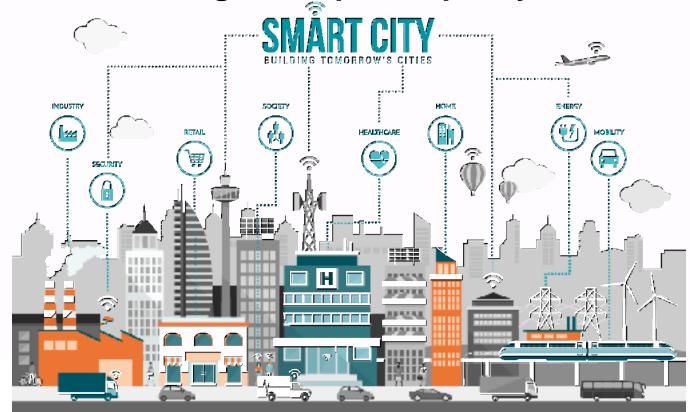


Presentation Agenda

- What is a Smart City?
- Project Background
- Fall 2018 Teams:
 - Application Development Team
 - Visualization Team
- Future Development

What is a Smart City?

• The ultimate goal: Implement technology and the internet of things to improve quality of life.



Project Background - The Problem







Project Background - The Solution



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Website

Citizens of West Lafayette

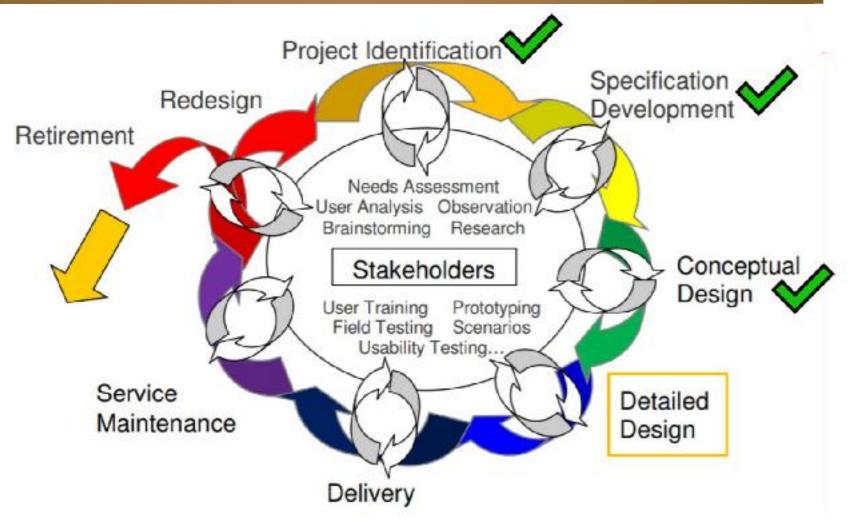
Engineers of the City of West Lafayette

Smart Cities Fall 2018 Teams

Application Development Team

Visualization Team

Smart Cities Design Approach





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Application Development Team





Meet the App Team

Name	Role
Sahil	Design Lead
Alex	Project Partner Liaison
Kirthi	Back-End Developer
Sultan	Back-End Developer

Meet the App Team

Name	Role
Aaref	Team Member
Connor	Team Member
Zhichao	Webmaster
Yu-Shen	Team Member

Competitive Analysis

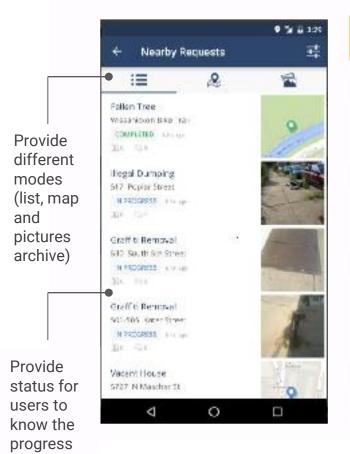






Published: PublicStuff company Launch Time: 2017/2/23 Download: 10000+ Rate: 114 users Ratings: 4.1 stars Published: City of Boston Launch Time: 2010/11/5 Download: 10000+ Rate: 116 users Ratings: 4.1 stars Published: City of Seattle Launch Time: 2013/5/9 Download: 10000+ Rate: 93 users Ratings: 3.5 stars

Competitive Analysis



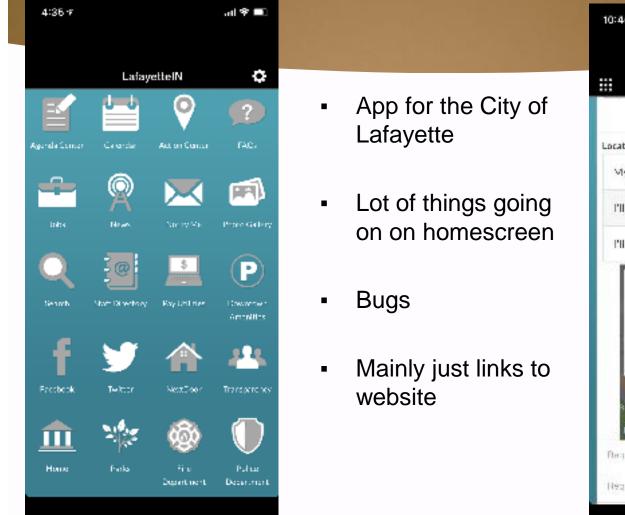
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Interview Findings

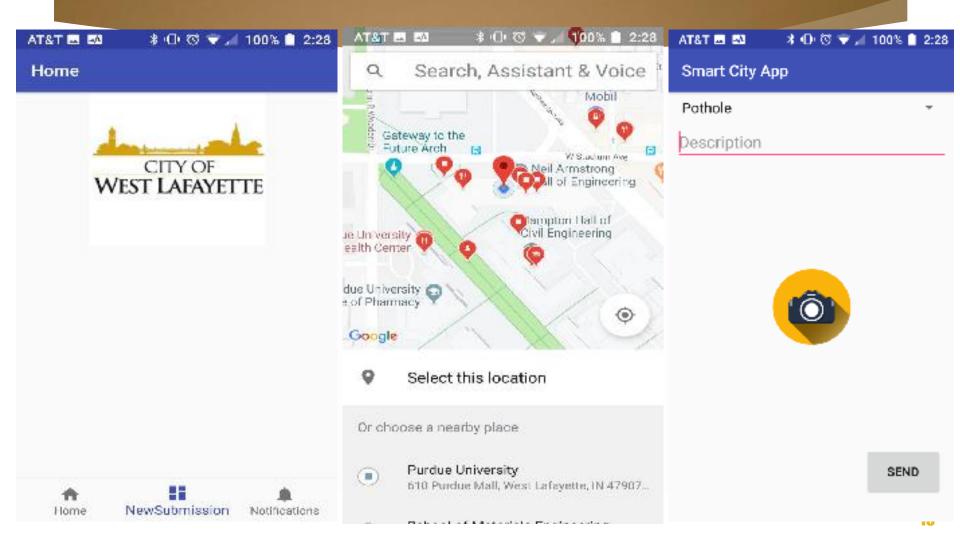
- Features to be implemented this semester:
 - Drop down menu for issues selecting
 - o Photo of the issue
 - o Progress updates
 - o "Like" issues to avoid duplicating reports
- Features for the coming semesters:
 - User mode
 - o Tutorial

Current App Used -- By Neighbor City



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Our App and Demo



Cost Analysis of App Development

Website	Platform	Development Cost	Maintenance Cost (~20% of development cost)
Otreva Calculator	Android and website	\$93,000	\$18,600
Otreva Calculator	Multi-platform and website	\$167,400	\$33,480
Estimate My App	Android and website	\$89,100	\$17,820
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) Flexibility of data storage location 	 Higher learning curve Billing is confusing Have experienced high level outages 	 5 GB of free storage each month for the first year \$0.023/GB for the first 50 TB \$0.022/GB for the next 450 TB
Firebase (Google)	 Lower learning curve Ease of migrating into another service Easier to scale Highly secure 	 Relatively new service Expensive when scaling 	 5 GB of free storage per month \$0.026/GB for any consecutive GB of storage

GANTT Chart & Our Goals

=teamgantt

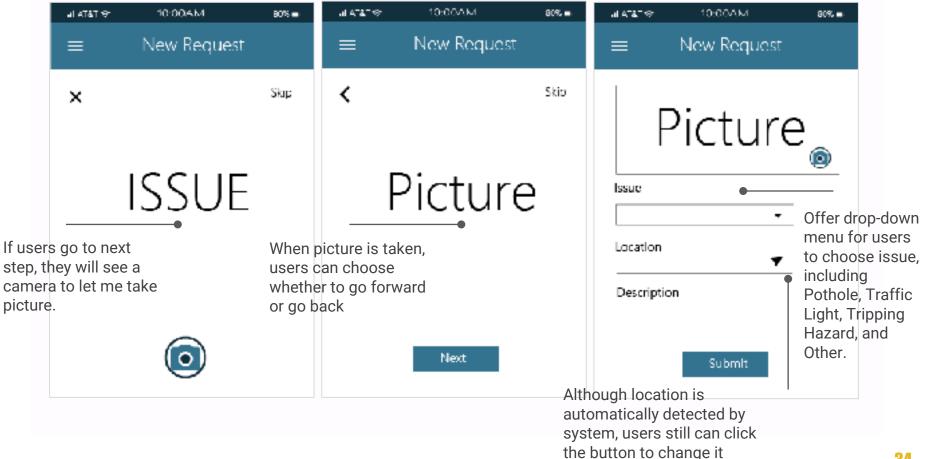
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App Team	etart	end		-	
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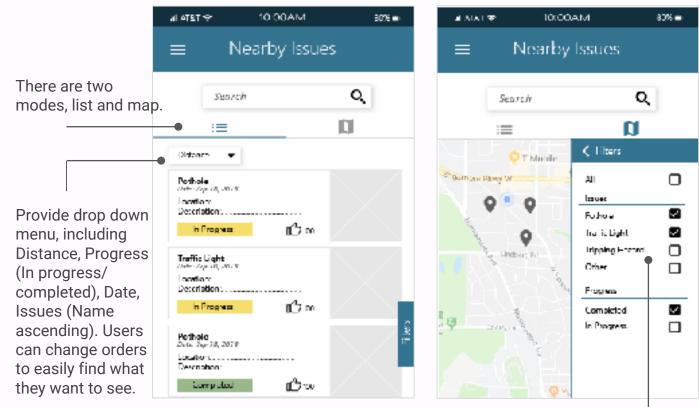
Layout Introduction

10-00AM al ALSI 오 10:00AM 80% 🔲 al ATST 😌 80% = LIOM! New Request Announcement. On the homepage, When users start a is there any issue that look the same as users will see you want to report now? Please dick Pothole Solved, Northwestern Avenue new request, it will Langer Masor thumb up to save your time! Serc: Ser 15, 2015 announcements from show the nearby government. There requests, users can Pathole Solved, Northwestern Avenue Pothole Inner Mare Unte: Sep 15, 2715 are two categories, Serc: Ser 10, 2015 click "thumb up" icon location. problems reported Description: to save time and Pothole Reported, Northwestern Asence Loarn Name ישל∬ and solved, which are In Program. Data, Say 5, 2978 avoid duplicating labeled for green and report. Irallis Light red color. Localion மீ∞ In Fragress On the bottom of page, we provide shortcut keys to allow No, go to next step users easy to initiate a = request. **Announcemer** New Request Nearty bases

Layout Introduction



Layout Introduction



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

Database Info

Database currently storing:

- Description
- Location
- Report status
- Report type
- Time reported
- Image

Fields that could be added:

- User (the user reporting the issue)
- Contact information

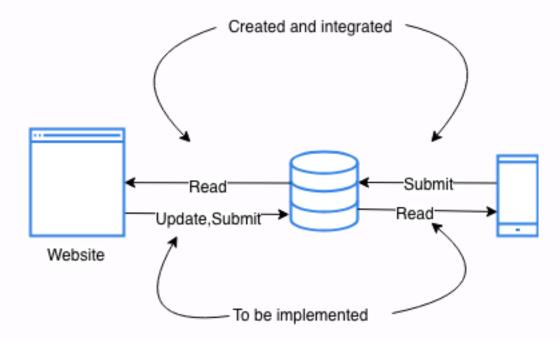
Sample of the data sent to Firebase

- - LQiwgfwvGn33lkrm9QR

- -LQIwwDoHM7_Z-sdTmvM

- --- description: "new Submission 11:15 pm "
- -- encodedImage: "/91/4AAQSkZJRgABAQAAAQA3AAD/2wBDAAEBAQEBAQEBAQE..."
- --- latitude: '40.430947499999995"
- --- longitude: "-86.91518546875"
- --- status: "submitted"
- -- timeStamp: '2018.11.07.11.14.02'
- -LRI27oDdGLJc9v979t3
 - --- description: " "
 - --- encodedImage: "no image"
 - --- latitude: '40.43094249999999'
 - --- longitude: "-86.91517578125"
 - -- status: 'submitted'
 - -- timeStamp: '2018.11.14.11.27.28'
 - --- type: "Pothole"

Current Communications





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Visualization Team





Meet the Visualization Team

Name	Role
Jason	Design Lead
Reese	Project Archivist
Reece	Team Member
Javier	Team Member

Previous Semester Highlights

- Initiated server conversion from AWS to Firebase
 - o More features
- Created a website prototype
 - Laid groundwork
- Hard coded data
 - o Idea of how website should work

Current Semester Goals

- Connect the website and the app using the database
- Make sure the rest of the website elements are functional (viewing issues, Google Maps, etc.)
- Make website useable for city of West Lafayette engineers
- Engineers can visualize issues

Current Semester Progress

- Created a Github File Repository
- Setup Filter Table
- Implemented Map Markers
- Connected Website to Database

Current Website

- Table
 - Real Time Data
 - Filter
 - Location
 - Date
 - Issue Type
- Map
 - Functional
 - Markers



Reports

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- Compatibility Issues
 - o Combination of different languages
- Glitches
 - o Google Maps
- Documentation
 - o Took time to orient project

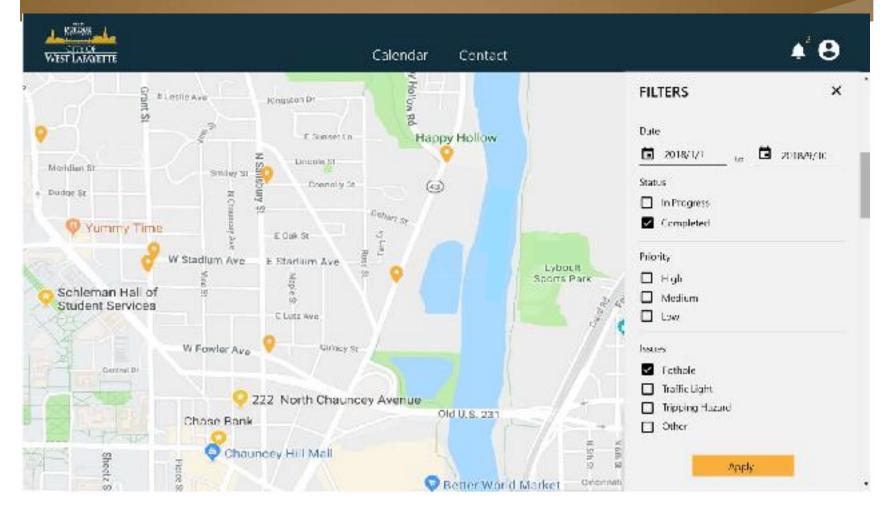
Future Website Development

- Take input from the website and upload to the database
 - o Update Issue Status
 - Push notifications
- Polish website
 - o Visually
 - CSS
 - o Functionality
 - Javascript

Future Website Development

- Add reverse geolocation function
- Add map markers (colored)
- Add filters to map

Digital Mockups



Digital Mockups

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Website Demo

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Gantt Chart

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Smart Cities Visualization

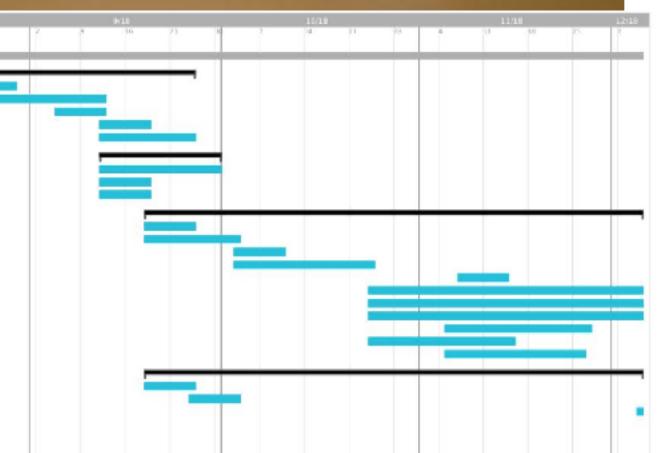
Initial Tasks
Meet team members and set meetin
Read previous semester documentat
Meet with city of West Lafayette and
Deploy previous website prototype o
Determine specific features and requ
Determine specific features and requili

Website Starter

AMORALLE PLUE DEL	
Get website to deploy on Firebase	
Troubleshoot Cloud9 code and file di	
Call Firebase and meet with local Fir	
Website Features	
Develop desired layout for the websi	
Add interactive Google Maps	
Add drop down menus	
Add filter to the table	
Color scheme to match the app and	
Be able to securely receive data from	
Manuel	
Transition Document	
Design Document	
Create code to sort table by certain c	
Debug,Comment,and Improve Code	
Design Reviews	
Brannen for Mock Mid Competing Cort	

Design Reviews	Des	ign	Rev	ews	
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Prepare for Mock Mid-Semester Desi... Prepare for Mid-Semester Design Rev... Prepare for Final Design Review





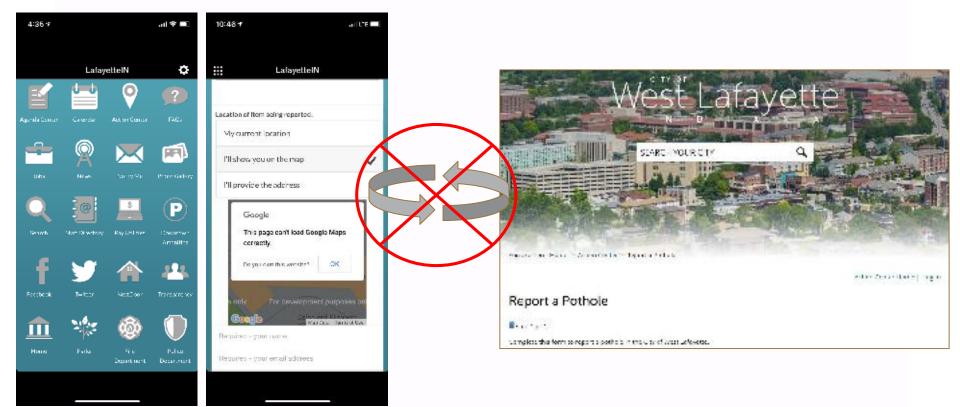
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Summary





Problem



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Future Development



Future Development







Future Development



CITY OF West Lafayette

Thank you!

Questions or comments?