

Council Alert

Project Research Document

OCTOBER 3, 2014
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Detailed Discussion

This project is aimed at reinventing a system to allow users the capability of reporting obscurities to the council using modern day technology rather than by telephone. This will encourage users to participate in notifying the council of such obscurities more frequently. This project will also aim to provide the council access to a web portal in which they can view a list of prioritized reports with corresponding statistics along with providing automatic dispersal of tasks to council workers. The idea for this project is to design and implement a multiple platform application with multiple tiers of access to control function permissions. This project will provide functionality for three main user groups with functionality catering for each user's requirements.

Core Functionality - User Stories

Citizen (User)

- As a citizen I want an easy accessible method of reporting obscurities to the council so that I do not have to call them.
- As a citizen I want to track my reported obscurities so that I can keep up to date with the progress being made
- As a citizen I want to see obscurities near my location so that I know if they have been reported already.
- As a citizen I want to receive notifications of reports in a set locality so that I can be aware of such reports.

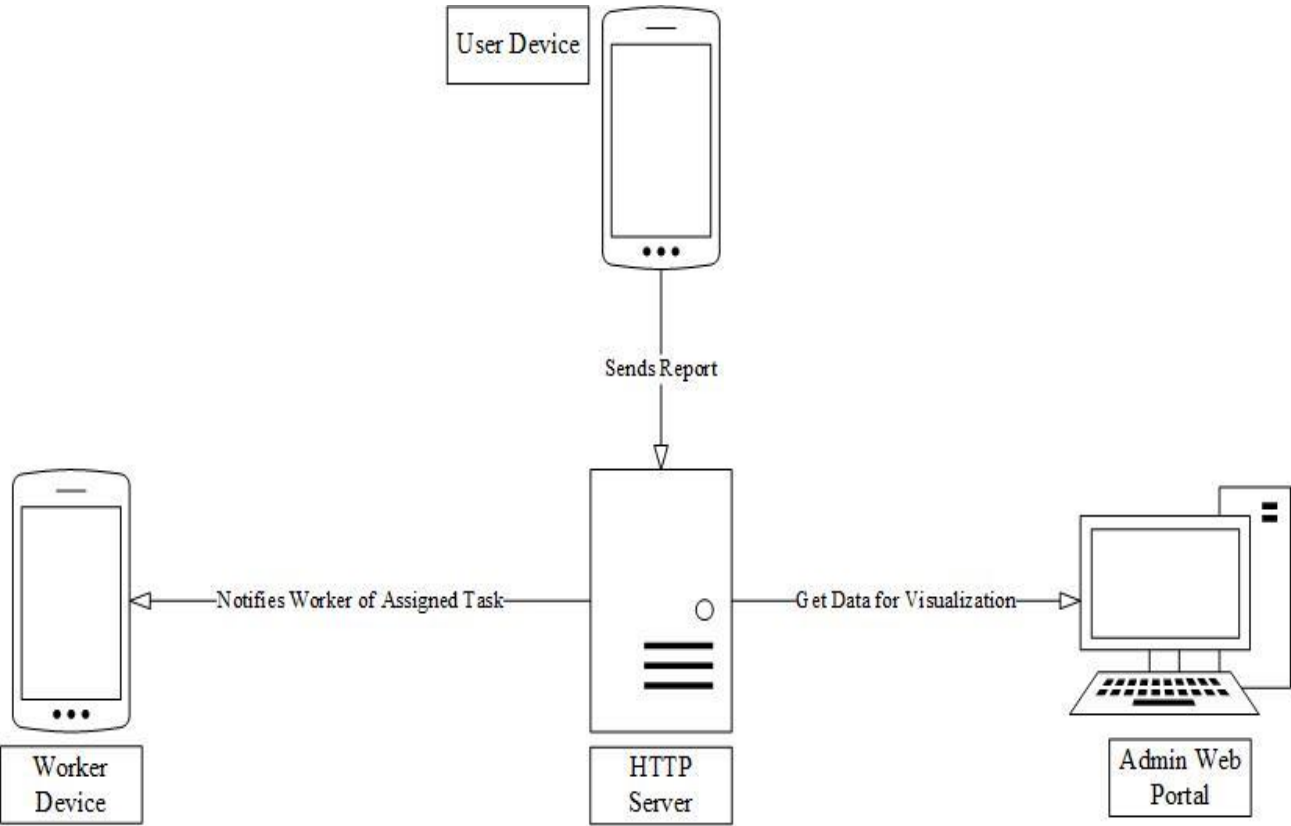
Worker (User)

- As a worker I want to have the option to mark my current task as complete so that I can be assigned a new job.
- As a worker I want notifications of any new tasks assigned to me so that I am aware of my currently assigned task.
- As a worker I want navigation to my currently assigned task so that I know exactly where my task is situated.

Manager (Admin)

- As a manager I want an automated system to disperse jobs between workers so that I don't have to manually make such calculations.
- As a manager I want to store my employee information in a database or storage so that it can be retrieved at any given time.
- As a manager I want a prioritized feed of unfixed reported obscurities so that I know which reports should be dealt with first.
- As a manager I want statistical visualizations of reports against geolocation so that I can see current trends and if a location wide repair should be implemented.
- As a manager I want a statistical visualizations of reports fixed against reported over time so that we can prepare for future reports and try to prevent them.
- As a manager I want to archive reports so that they can be retrieved at any time.

High Level Architecture



Existing Applications

Comparison Table

	Council Alert	FixMyStreet	Mobile Alert	Dublin County Council
Mobile Application	Yes	Yes	Yes	No
Web Application	Yes	Yes	No	Yes
Requires Photo Capture	No	App - Yes	Yes	No
Pre-made Selections	Yes	Requires manual entry of details	Yes but not entirely user friendly	No
Constant use of GPS	No – The app will use GPS only when required.	Mobile - Yes. Web app allows option to enter address and pinpoint on map	Yes.	Web app allows option to enter address and pinpoint on map
Admin/Worker Access	Yes	This service sends emails to the local council	No	Unknown – most likely
Registration Option	(Stretch Goal) Yes	Yes – Track your current reports	No	No – Logged in as anon. user
View Local Reports	(Stretch Goal) Yes	App – No Web App - Yes	No	No

*Mobile applications tested using Android 4.4.3 on a HTC One M8

Platform, Technologies and Libraries

Java/Android SDK

The project development will be aimed towards the Android platform using the strong combination of Java and the Android SDK.

Google Maps API

The project will manipulate a Google Maps API to portray mapped reports for both the worker's mobile device and the admin web portal.

Google Cloud Messaging

Google Cloud Messaging (GCM) will be used to send push notifications to the worker's mobile device upon new assignment of tasks.

JSON (GSON)

All interactions with the server will involve JSON objects for lightweight communication. GSON is a Java library in which can easily map a POJO to JSON object and vice versa.

XML

XML will be used in Android development for UI development, menu and theme development and also for declaring constant strings.

Cloud Backend (Azure/AWS)

Using a cloud backend will be a viable approach in relation to this project as it would provide both the deployment and scalability in which the multi-platform applications can communicate with using HTTP requests.

Tomcat

Tomcat can be used as the servlet to process any HTTP requests coming into the server. This will provide a second layer of authentication before the data reaches any databases or storage.

Play Framework/Spring Framework/Django Framework

A web framework will be used for the admin web portal. The selection of development language will be decided at a later stage as a conclusion to a more in depth research is undergone.

SQL/NOSQL

The database technology used will be selected at a later stage as server compatibility is of high importance to take into account. As it stands, the system is not dependant on either a SQL or NoSQL database.

Risk Assessment

Problem Areas and Pitfalls

- Users may need to be restricted to a certain number of reports submitted in a given period of time.
- Authentication restrictions – ideally the application should not require user registration or login as it restricts the application usability. There may still be an option for registration/login for users wishing to track their reports.
- Number of councils – initially this app will be prototyped aimed towards providing functionality for one unified council. If time allows, a breakdown of reports into specific council areas will be provided.

System Scope

- As this project aims to produce a multiple platform system, it is important that each system is functionally developed on time and to a high standard in relation to user experience.

Novelty

- As FixMyStreet is a popular mobile and web application, it is important that the project aims to provide a novel attribute and to improve on any existing implemented systems.