Incubate India Hackathon

Location Based Women Safety Application

Application Architecture Technical

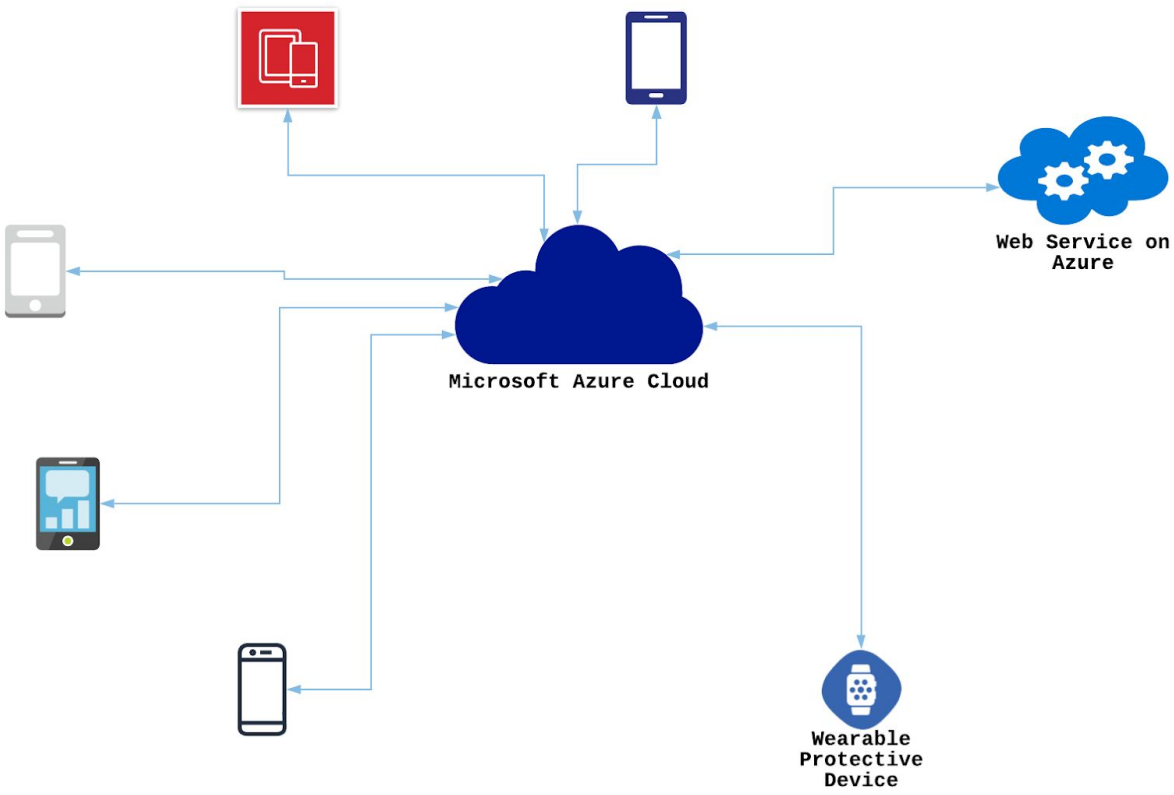

Fig 1. Architecture of the Application

Application architecture

The design consists of two parts. One is the *client application* and the other is the web service hosted on *Microsoft Azure Cloud platform.* The client application is responsible for collecting the location and the front end. The web service is responsible for collecting the location from the client application and share the crime statistics and other relevant data.

Client application

Major responsibilities of the client application are:

- ➔ Accurate location detection
- ➔ Request one of the services provided by the web service hosted on Azure
    - ◆ Request for the safety standard statistics, crime rates, level of safety of the place, safe time to visit the place, etc.
    - ◆ Location and contact details of the nearest Police Station, Hospital, Ambulance, Doctors, etc.
    - ◆ Emergency actions -
        - *Decent Internet connection* - Send the location details, camera visuals, audio, video stream
        - *No Internet connection* - Send the location details using SMS technology.
- ➔ Front End Management

Web services host on Microsoft Azure Cloud Platform

Major responsibilities of the web services upon receiving the location data are:

- ➔ Locate the nearest Police Station, Hospital, Ambulance, Doctors, etc using the maps API. Collect their contact details using the same API or needs to perform some web scraping. Then send this data to the client application.
- ➔ Use an API or database to find the crime statistics, level of safety of the place, safe time to visit the place. Then send this data to the client application.
- ➔ When an emergency request is received send the data directly to the nearest police station, hospital, doctors, ambulance, etc

Wearable Protective Devices

This is a backup protective device if the mobile of the client is taken away. This is responsible to send time to time location details of the client to the web service.

Technical Details

Web services hosted on Microsoft Azure Cloud Platform

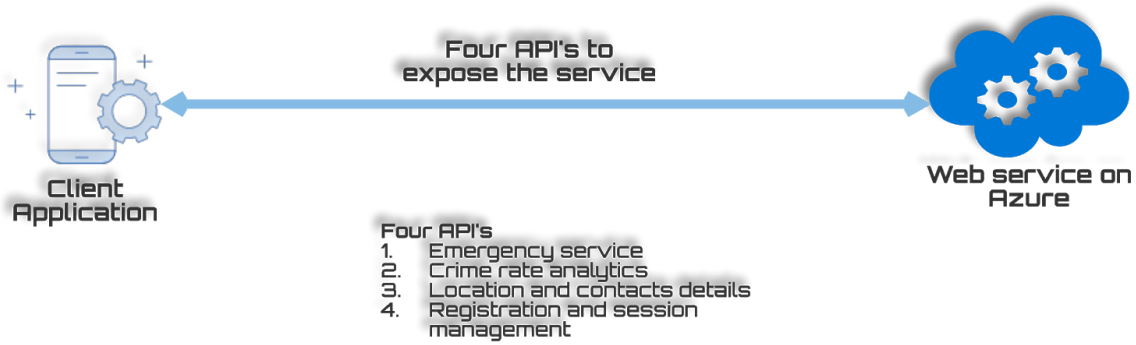

Fig 2. APIs to expose the services

We expose the services provided by the service using four APIs. The four APIs are:

- ➔ *Crime Rate Analytics (push from service to client)* - We have two options.
  - ◆ Find an API which can be used to get the crime stats, safety level, safe time for visit (to avoid acts like chain snatching) of the location. This is a simple method and is highly recommended for the hackathon.
  - ◆ Get a dataset and then perform a through analytics on the crime database and then based on the results send the *crime stats, safety level, safe time for visit.* This is a time consuming method and will require to contact the police for the database. This approach is suitable for production level applications, as reliability on the third party APIs is low.
  - ◆ Use dummy data just for demonstration. This approach is to be used if we aren't able to find a third party API.
- ➔ *Location and contact details module (push from service to client)*-
  - ◆ Locations of the nearest police station, hospital, ambulance, doctors, media, etc can be extracted using third party APIs such as ***Google Maps APIs, MapMyIndia APIs.***

- The contact details of these above places can be extracted using the ***same above APIs or by performing some web scraping (Scraping is a worst case solution).***

➔ *Emergency Solution (requested by client on emergency)* - This service has the highest priority. Send the victim's details, location, photo and video streams from the victim's phone to the nearest police. Technical details of this service is yet to be thought about.

➔ *Registration and session management* -

- Database service to store the users personal details and emergency contact details.
- Authentication mechanism - Some third party solution. Eg- Google's OAuth

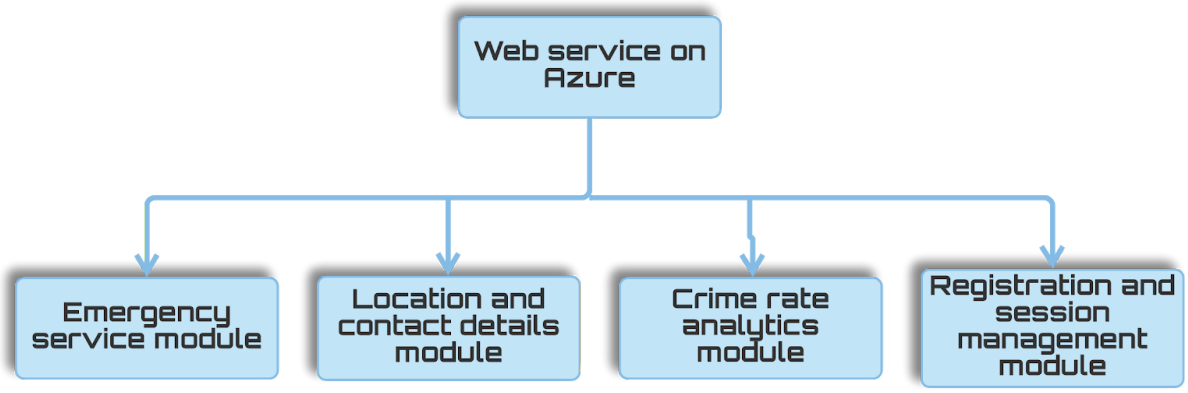

Fig 3. Web service modules

Client application

The client application will avail the services from the web service hosted on Azure cloud platform using the *four APIs* exposed by it. The four major client application's modules are:

➔ *Location module* - Get the location details from the phone. (Simple)

➔ *Call APIs* - Needs the ability to perform API calls from the application sending location details along with it. (Simple)

➔ *Front End* - Deciding how the data received from the APIs needs to be presented. (Complicated)

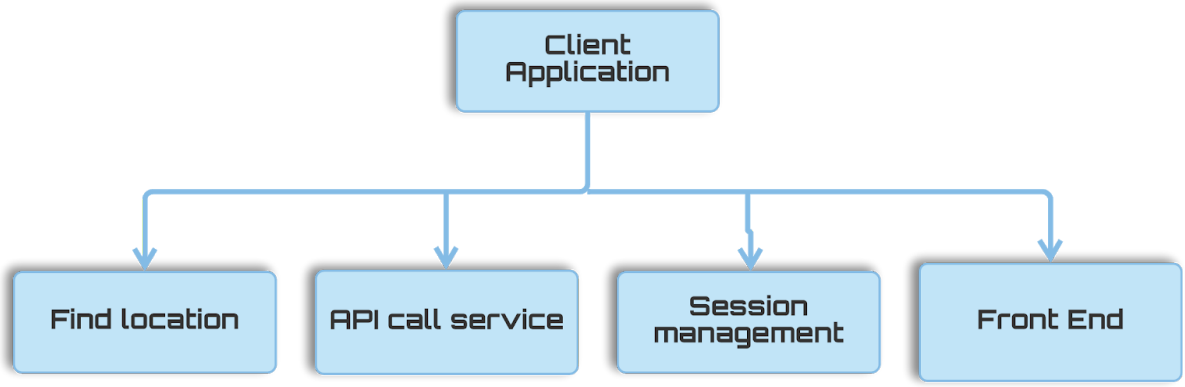

Fig 4. Client application modules

Summary of the major technologies to be know

- ➔ *Web services*
  - ◆ Google Maps APIs
  - ◆ MapMyIndia APIs
  - ◆ Web Scraping (may or may not use)
  - ◆ Crime rate APIs or a Dataset or a dummy data
  - ◆ Some technology to share the location and the video stream, photos, audio from the victim's phone to police
  - ◆ Database for session management and registration
- ➔ *Client application -*
  - ◆ Interacting with the client location service.
  - ◆ Calling APIs
  - ◆ A decent front end
- ➔ Hosting the web service on Microsoft Azure Cloud Platform.
- ➔ Creating the web service and which technology to be used for the creation of the service