

# Location tracking using Google Cloud Messaging on Android

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**Abstract:** Everyone in this world needed to know where is the family member and the most common way is “Make A Call To Each One “Is this a feasible way of doing ? What if someone is busy, or driving a vehicle, or he/she not able to take that call right now, so in that case what will you do drop a message (WhatsApp) is this what you thinking about then again think about it. You call a person he/she not taking your call then you drop a message to theme again “NO REPLY “but you desperately want to know his/her current location and you again and again call him or message but many times we are in some situation in which we are not able to reply that call/message and we also think that the person should know where am i. Today many people have smartphone running latest android operating system which can be useful to track them and to know their locations. In contrast to traditional solutions, where the calling to the person and asking for their locations is not a feasible and reliable solution. Aim of this application is to track the members by person sitting at home. This paper presents solution to track the locations and communicate with the members using Google MAPs API, GCM (Google Cloud Messaging) and Android Operating System.

**Keywords:** Track; Google Maps; Location; GCM (Google Cloud Messaging), Android.

## I. INTRODUCTION

The Google maps API are used to show all the devices on that are registered in web application which is running on your home. The smartphone contains android app which sends data at user define period to the web application. This tracking system especially designs for parents to monitor their children’s on the move. Consider a situation where a child lost a way to home or he or she meet with an accident in that case child use their tracker app to send alert notification to parents and the web application display it. The web application is design to handle various types of alert that broadcast from android app. We investigate the following fundamental question - how fast can we track a family member? And the answer that we got is by calling him but this is not a feasible or reliable solution. Many times it’s happen that you’re driving and you get the call but you’re in condition that you can’t answer that call. Now Think about a situation where you found that you lost something or simply you lost your way and then you make a call to someone at home but unfortunately he can’t answer your call so what will you do ? Try calling him again and again 80% of people do this while other try to ask some other person or ask any other in that area.

Now let’s take another example you’re driving back to home and your mom realize that she need some medicine that she takes daily or she need some ingredients for her recipe and she make a call to you but you’re driving and you can’t answer that call. So she try again to call but still you unable to answer that call due to some circumstances. In this case may people drop a sms or simply What’s app it but many mom or people still unaware of it they simple used sms which is cost something to him or her. To address this, we explore and evaluate a number of different ways and then we come to cross cutting solution which track you and anyone notify you for something

using his or her computer on your smartphone. The solution is based on free software stacks which are Google Maps, Android and Java J2EE. Google Maps are using word wide and it’s easy to integrate with other technology stack like java. Android is one the most advance and popular operating system for smartphones and its open source and free.

## II. LITERATURE SURVEY

2005-2006(February):-Google Maps goes live. Just two months later, we add satellite view sand directions to the product.

(April):-Google Maps comes to mobile phones in the U.S., offering driving directions and local information to people on the go. Our first Google Maps release in Europe is geared to U.K. users. France, Germany, Italy and Spain follow in 2006. Today, we offer driving directions in 190+ countries around the world.

(June):-Google Mobile Web Search is released, specially formulated for viewing search results on mobile phones.

We unveil Google Earth, a satellite imagery-based mapping service that lets you take a virtual journey to any location in the world. Google Earth has since been downloaded more than 1 billion times. The Google Maps API is released; developers can embed Google Maps on many kinds of mapping services and sites. Today there are 1 million active websites and apps using the API, reaching 1 billion people every week.

2007:-We add traffic information to Google Maps for 30+ cities around the U.S. Today, live traffic data is available in 50+ countries, covering highways, streets and more in 600+major cities.

2008:-Google Map Maker launches, enabling people to directly update geographic information in Google Maps and Google Earth—helping ensure that the map accurately

reflects the world. Today Map Maker is available in 200+ countries and territories across the globe.

2009(October):-Google Maps Navigation is a turn-by-turn GPS navigation system with 3D views, voice guidance and live traffic data.

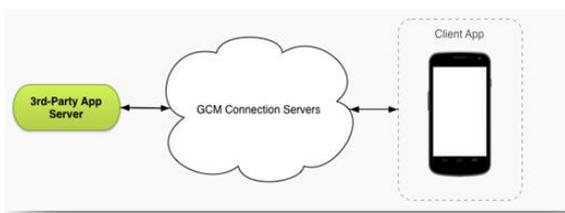
2010(March):-Bike directions and bike trail data come to Google Maps. Today, there are more than 330,000 miles (530,000 kilometers) of biking trails and paths in Google Maps to help you get around on your two wheels.

2013(July):-Just months after we preview the [new Maps for desktop](#) at Google I/O, we release the [updated Google Maps app for smartphones and tablets](#) part of our redesign of Maps across devices.

2014(April):-Street View in Google Maps now lets you [explore historical imagery](#) dating back to 2007.

### III. GOOGLE CLOUD MESSAGING PROJECT

Google Cloud Messaging (GCM) is a free service that enables developers to send messages between servers and client apps. This includes downstream messages from servers to client apps, and upstream messages from client apps to servers. For example, a lightweight downstream message could inform a client app that there is new data to be fetched from the server, as in the case of a "new email" notification. For use cases such as instant messaging, a GCM message can transfer up to 4kb of payload to the client app. The GCM service handles all aspects of queuing of messages and delivery to and from the target client app. A GCM implementation includes a Google connection server, an app server in your environment that interacts with the connection server via HTTP or XMPP protocol, and a client app.



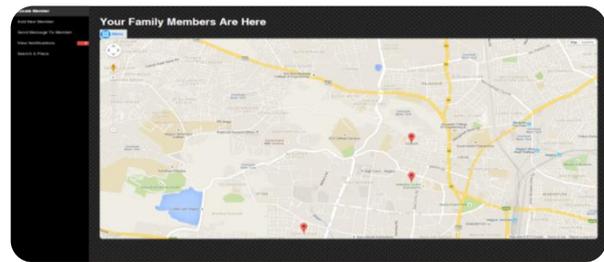
This is how these components interact:

- Google GCM Connection Servers take messages from your app server and send them to a client app.
- On your app server in our case it was our Web Application in which we implement HTTP protocol to communicate with the GCM connection server(s). App servers send messages to a GCM connection server; the connection server enqueues and stores the message, and then sends it to the client app. For more information, see About GCM Connection Server.
- The Client App is a GCM-enabled client app in our case Location Tracker App. To receive GCM messages, this app must register with GCM and get a unique identifier called a registration token. If you are using the XMPP connection server, the client app can send "upstream" messages back to the app server. For more information on how to implement the client app, see the documentation for your platform.

### IV. LOCATION TRACKER WEB APPLICATION OVERVIEW

#### A. Landing Page

The overall ui (user interface) is created using jsp, html5, JavaScript and bootstrap framework. To build a simple and easy to use UI we have used various plugins of bootstraps and with help of css3 and html5 it's possible to deliver a quite simple and minimalist design and we also try to bring as much responsiveness in the UI to enable multi-screen supports with the help of bootstrap frame work.

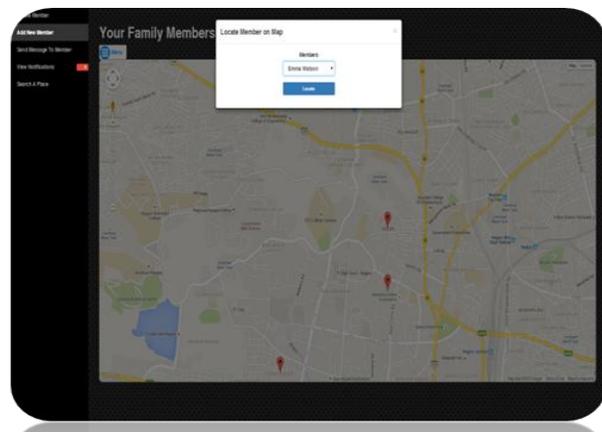


The landing page present with the google map and side menu bar with the following menus.

- **Locate Member**  
To Locate a member on Map
- **Add New Member**  
To register new member
- **Send Message To member**  
To Send push notification on member device app
- **View Notifications**  
To view all messages received from the gtrack app
- **Search A Place**  
To Search a place on map using Google Map Search Box

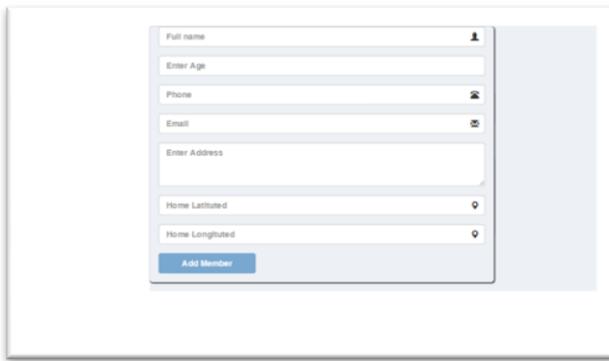
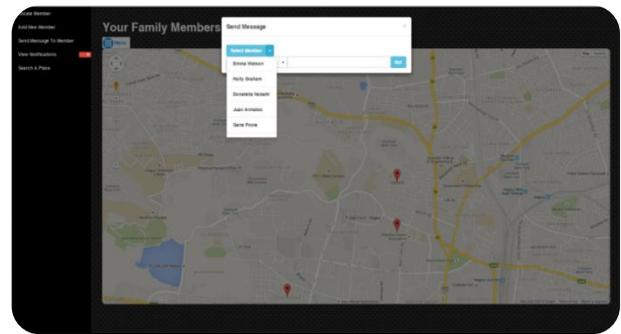
#### B. Locate Member

The locate member is simply shows a popup dialog with all the members name in a drop down. Once we select a member and click on locate button it will move maps to member marker position.



#### C. Add new Member

This will shows a popup with the forms to with sets of fields that needed to fields in order to add the member.

**D. Send Message to Member**

This will show model dialog which allows to send the messages to the selected member. in order to send the message use need to select the types of message also which will shows different popup in Location Tracker app. Following are the types of Message and their Popup Icon

- Its Urgent



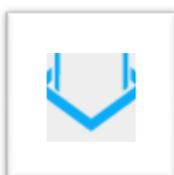
- Call Notice



- Request

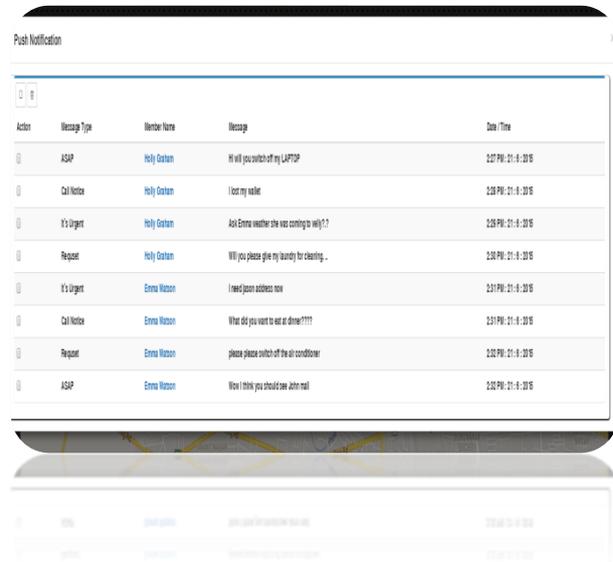


- ASAP



**E. View Notifications**

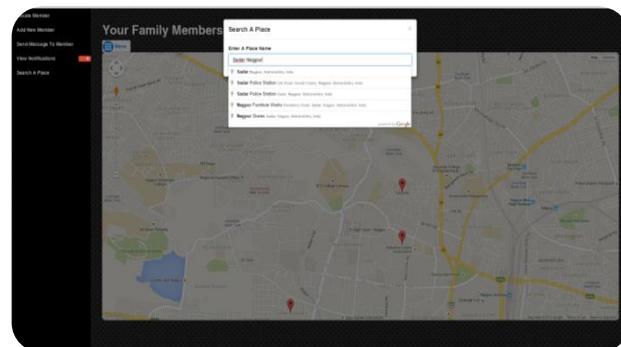
This shows all the notification received from members



Action	Message Type	Member Name	Message	Date/Time
📧	ASAP	Holy Galban	Hi will you switch off my LAPTOP	2:27 PM: 21-8-2015
📞	Call Notice	Holy Galban	I lost my wallet	2:28 PM: 21-8-2015
📧	It's Urgent	Holy Galban	Ask Emma weather she was coming to why??	2:28 PM: 21-8-2015
📧	Request	Holy Galban	Will you please give my bandy for cleaning..	2:28 PM: 21-8-2015
📧	It's Urgent	Emma Watson	I need your address now	2:31 PM: 21-8-2015
📞	Call Notice	Emma Watson	What did you want to eat at dine????	2:31 PM: 21-8-2015
📧	Request	Emma Watson	please please switch off the air conditioner	2:32 PM: 21-8-2015
📧	ASAP	Emma Watson	Wow i think you should see john mail	2:32 PM: 21-8-2015

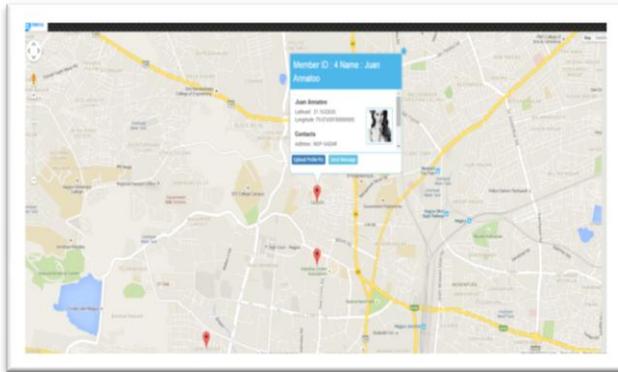
**F. Search A Place**

This will shows the search box embedded with the Google maps search API.



**G. Google Maps Markers Overview**

Following information shows in the marker on google map.



Once you click on the marker it will opens an infowindow which contains the details of the member with their picture and options to send the message or upload the member picture.



## V. CONCLUSION

This paper determines that applications on an Android device don't need to be running to receive messages. The system will wake up the application via a mechanism called Intent Broadcast when the message arrives, as long as the application is set up with the proper broadcast receiver and permissions. GCM does not provide any built-in user interface or other handling for message data. Instead, it simply passes raw message data received straight to the application, which has full control of how to handle it. For example, the application might post a notification, display a custom user interface, or silently sync data.

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