

## Project Report

Date	12 November 2022
Team ID	PNT2022TMID36286
Project Name	Project - IoT Based Safety Gadget for Child Safety Monitoring and Notification

### 1. INTRODUCTION

#### 1.1 Project Overview

A tracker that helps parents track a child's location so that the child does not get into dangerous situations.

#### 1.2 Purpose

Now a day's Parents have more responsibility than older about their children's. Because Crimes rates are increasing day by day in our country, Crimes such as Child Amusement, Rapes, Murders, Illegal Relationship to avoid these kind of crimes parents must watch their children every step. Eventually mobile phones cause major allegations on our society. Many teens must be noticed by their own parents, it is our duty. But sometimes children are arguing with their parents for watching their steps, to overcome these issues, we need to watch them through online

### 2. LITERATURE SURVEY

#### 2.1 Existing Solution and Problem

[1] Authors: M Nandini Priyanka, S Murugan, K. N. H. Srinivas, T. D. S. Sarveswararao, E. Kusuma Kumari. Title: Smart IoT Device for Child Safety and Tracking. Published in: 2019 IEEE. The system is developed using Link-It ONE board programmed in embedded C and interfaced with temperature, heartbeat, touch sensors and also GPS, GSM & digital camera modules. The novelty of the work is that the system automatically alerts the parent/caretaker by sending SMS, when immediate attention is required for the child during emergency.

Merits: The parameters such as touch, temperature & heartbeat of the child are used for parametric analysis and results are plotted for the same.

**Demerits:** To implement the IoT device which ensures the complete solution for child safety problems.

[2] Authors: Akash Moodbidri, Hamid Shahnasser Title: Child safety wearable device. Published in: 2017 IEEE. The purpose of this device is to help the parents to locate their children with ease. At the moment there are many wearable's in the market which helps to track the daily activity of children and also helps to find the child using Wi-Fi and Bluetooth services present on the device.

Merits: This wearable over other wearable is that it can be used in any phone and it is not necessary that an expensive smartphone is required and doesn't want to be very tech savvy individual to operate.

**Demerits:** As, this device's battery gives short life-time.

[3] Authors: Aditi Gupta, Vibhor Harit. Published in: 2016 IEEE. Title: Child Safety & Tracking Management System by using GPS. This paper proposed a model for child safety through smart phones that provides the option to track the location of their children as well as in case of emergency children is able to send a quick message and its current location via Short Message services.

Merits: The advantages of smart phones which offers rich features like Google maps, GPS, SMS etc.

**Demerits:** This system is unable to sense human behaviour of child.

[4] Authors: Dheeraj Sunehera, Pottabhatini Laxmi Priya. Title: Children Location Monitoring on Google Maps Using GPS and GSM. Published in: 2016 IEEE. This paper provides an Android based solution for the parents to track their children in real time. Different devices relate to a single device through channels of internet. The concerned device is connected to server via internet. The device can be used by parents to track their children in real time or for women safety. The proposed solution takes the location services provided by GSM module. It allows the parents to get their child's current-location via SMS.

Merits: A child tracking system using android terminal and hoc networks.

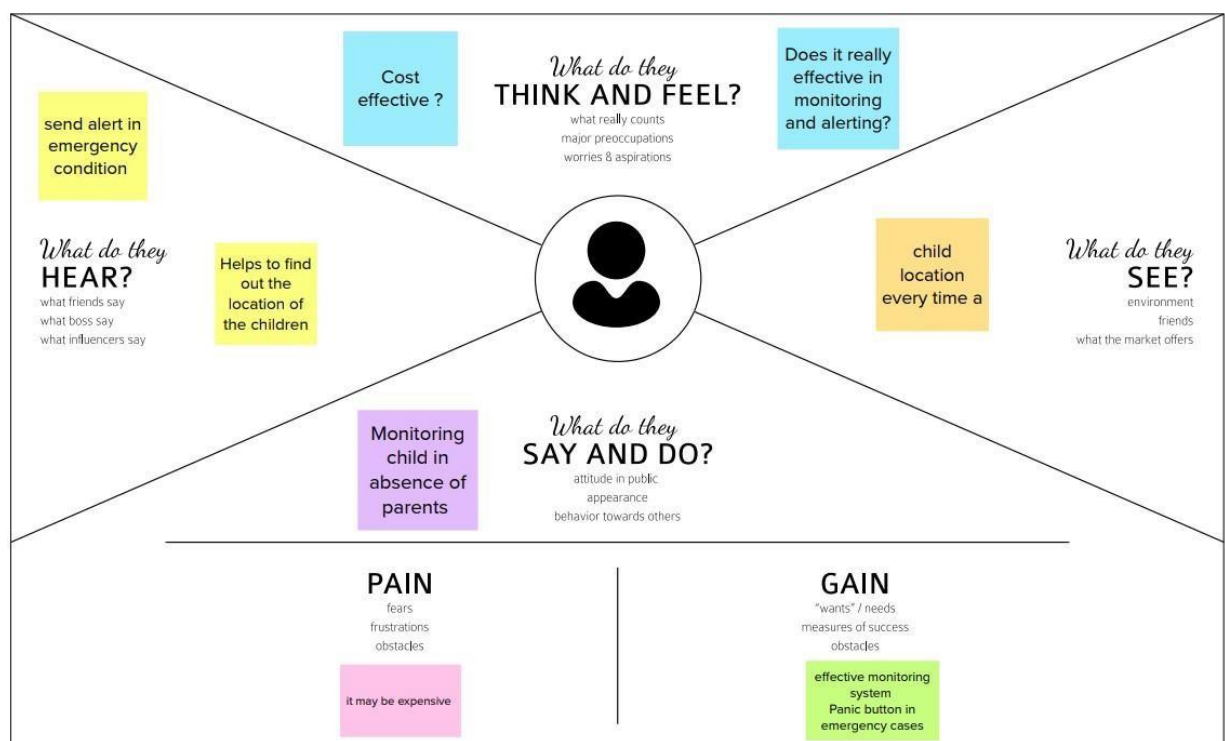
**Demerits:** This device cannot be used in rural areas.

## 2.2 References

- [1] M Nandini Priyanka, S Murugan, K. N. H. Srinivas, T. D. S. Sarveswararao, E. Kusuma Kumari, 'Smart IoT Device for Child Safety and Tracking' International Journal of Innovative Technology and Exploring Engineering, Volume 8, Issue 8, June 2019.
- [2] Akash Moodbidri, Hamid Shahnasser (Jan. 2017) 'Child safety wearable device', International Journal for Research in Applied Science & Engineering Technology, Vol. 6 Issue 2, pp. 438-444.
- [3] Aditi Gupta, Vibhor Harit, 'Child Safety & Tracking Management System by using GPS, GeoFencing & Android Application: An Analysis,' 2016 Second International Conference on Computational Intelligence & Communication Technology.
- [4] Dheeraj Sunehera, Pottabhatini Laxmi Priya, 'Children Location Monitoring on Google Maps Using GPS and GSM,' 2016 IEEE 6th International Conference on Advanced Computing.

## 2.3 Problem Statement Definition

Child tracker helps the parents in continuously monitoring the child's location. They can simply leave their children in school or parks and create a geofence around the particular location. By continuously checking the child's location notifications will be generated if the child crosses the geofence. Notifications will be sent according to the child's location to their parents or caretakers.



### 3. IDEATION & PROPOSED SOLUTION

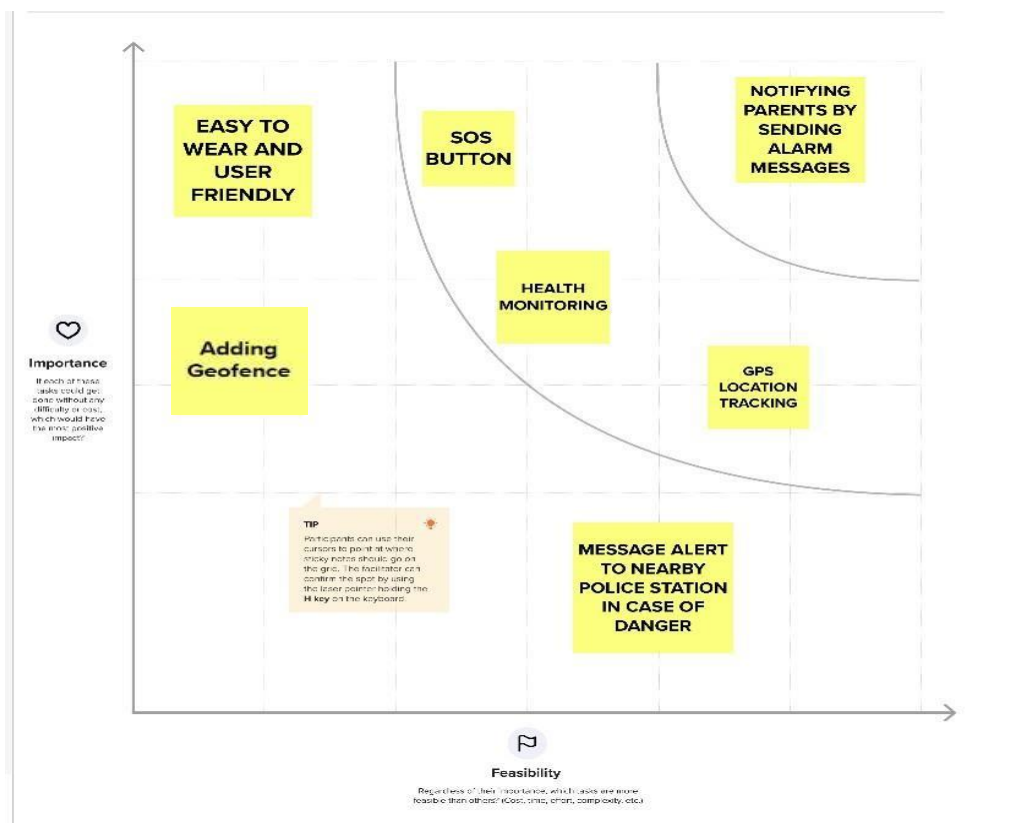
#### 3.1 Empathy Map Canvas

#### 3.2 Ideation & Brainstorming

##### Brainstorming



##### Ideation Prioritization



### 3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	A tracker that helps parents track a child's location so that the child does not get into dangerous situations.
2.	Idea / Solution description	<ul style="list-style-type: none"><li>• Child tracker helps the parents in continuously monitoring the child's location.</li><li>• They can simply leave their children in school or parks and create a geofence around the particular location.</li><li>• By continuously checking the child's location notifications will be generated if the child crosses the geofence. Notifications will be sent according to the child's location to their parents or caretakers. The entire location data will be stored in the database.</li></ul>
3.	Novelty / Uniqueness	<ul style="list-style-type: none"><li>• A tracker used for child's safety and protection, such that it won't interfere with the day-to-day life of the child as well as be a very easy to use interface for parents has not been developed yet.</li><li>• Hence, the proposed solution will ensure that there is a device that can be used in all areas, and uses different sorts of software's integrated together to maintain accuracy and ensure the safety of the child.</li></ul>
4.	Social Impact / Customer Satisfaction	<ul style="list-style-type: none"><li>• Reduce the anxiety, worry and nervousness of a parent when they are not around the child. Having a peace of mind on the child's whereabouts will increase customer satisfaction, as well as the inclusion of an easy to use and interactive user interface.</li><li>• The reduction of child kidnappings, injuries, accidents, and missing children in the country</li></ul>
5.	Business Model (Revenue Model)	<ul style="list-style-type: none"><li>• Business to Consumer Model Licensing Model Subscription Model Freemium Model</li></ul>
6.	Scalability of the Solution	<ul style="list-style-type: none"><li>• By adopting multiple data storage technologies,controlling the IoT data pipeline, and using automated bootstrapping we ensure that thedevice is highly scalable.</li></ul>

### 3.4 Problem Solution fit

Define CS, fit in, to CC	<b>1. CUSTOMER SEGMENT(S)</b> <span>CS</span> <p>Children in the age below 4 years and their parents are our customers.</p> <p>We are targetting the school going children because they are in high risk of child trafficking</p>	<b>6. CUSTOMER CONSTRAINTS</b> <span>CC</span> <p>Child trafficking is becoming more common nowadays. To reduce the child trafficking and to ensure protection of children from any kind of abuse, a cost efficient device is designed. This device also provides health monitoring facility to the parents by which they can monitor the health condition of their children</p>	<b>5. AVAILABLE SOLUTIONS</b> <span>AS</span> <p>Children need to carry mobile phones in order to contact their parents.</p> <p>Location need to be found using GPS tracking in case the child is reported missing.</p>	Explore AS, differentiate
Focus on J&P, tap into BE, understand HC	<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <span>J&amp;P</span> <p>Continuous tracking of the children by the means of microchip present in the device which ensure the safety of children.</p> <p>Instant notification to their parents and to their close relative if the children is in danger.</p> <p>Health monitoring and reporting the health condition to their parents.</p>	<b>9. PROBLEM ROOT CAUSE</b> <span>RC</span> <p>Due to carelessness of parents and lack of awareness of children about child trafficking.</p> <p>Children do not have access to contact their parents or nearby police station in case of emergency.</p> <p>If child feels physically weak or if their body condition is abnormal, they are out of help in such scenarios.</p>	<b>7. BEHAVIOUR</b> <span>BE</span> <p>Click the notify the parents in case of any emergency.</p> <p>Never hesitate to contact parents if they find any doubtful strangers.</p> <p>Can also contact the nearby police station if they are in need of them.</p> <p>Charge the device regularly.</p>	Focus on J&P, tap into BE, understand RC
	<b>3. TRIGGERS</b> <span>TR</span> <ul style="list-style-type: none"> <li>The child is reported missing</li> <li>When child is in danger</li> <li>When the child has poor or abnormal health condition</li> </ul> <b>4. EMOTIONS: BEFORE / AFTER</b> <span>EM</span> <ul style="list-style-type: none"> <li>Insecure</li> <li>Unhappy</li> <li>Bad</li> <li>Negative</li> </ul>	<b>10. YOUR SOLUTION</b> <span>SL</span> <p>An easily wearable gadget has been proposed that is cost efficient and easily accessible by everyone. It would contain GPS, GSM, Accelerometer sensor, pulse sensor and IoT module all embedded in it and would record all the data such as location, health conditions and sudden rapid movements made and would instantly update all the information to the cloud through which anyone who has the access can view it. It also has a SOS button through which if it is pressed an automatic alarm will be sent to the relatives and the nearby police. It also monitors the health condition of the child and reports it to his/her parents. By optimizing it we can reduce the latency, increase the response rate and smaller the size making it easy to wear.</p>	<b>8. CHANNELS of BEHAVIOUR</b> <span>CH</span> <p><b>ONLINE</b></p> <ul style="list-style-type: none"> <li>Keep track of their location</li> <li>Keep monitoring their health condition</li> <li>Notify to the parents</li> </ul> <p><b>OFFLINE</b></p> <ul style="list-style-type: none"> <li>Contact the nearby police station</li> <li>Contact the parents in case of abnormal situations.</li> </ul>	

database.

## 4. REQUIREMENT ANALYSIS

### 4.1 Functional requirement

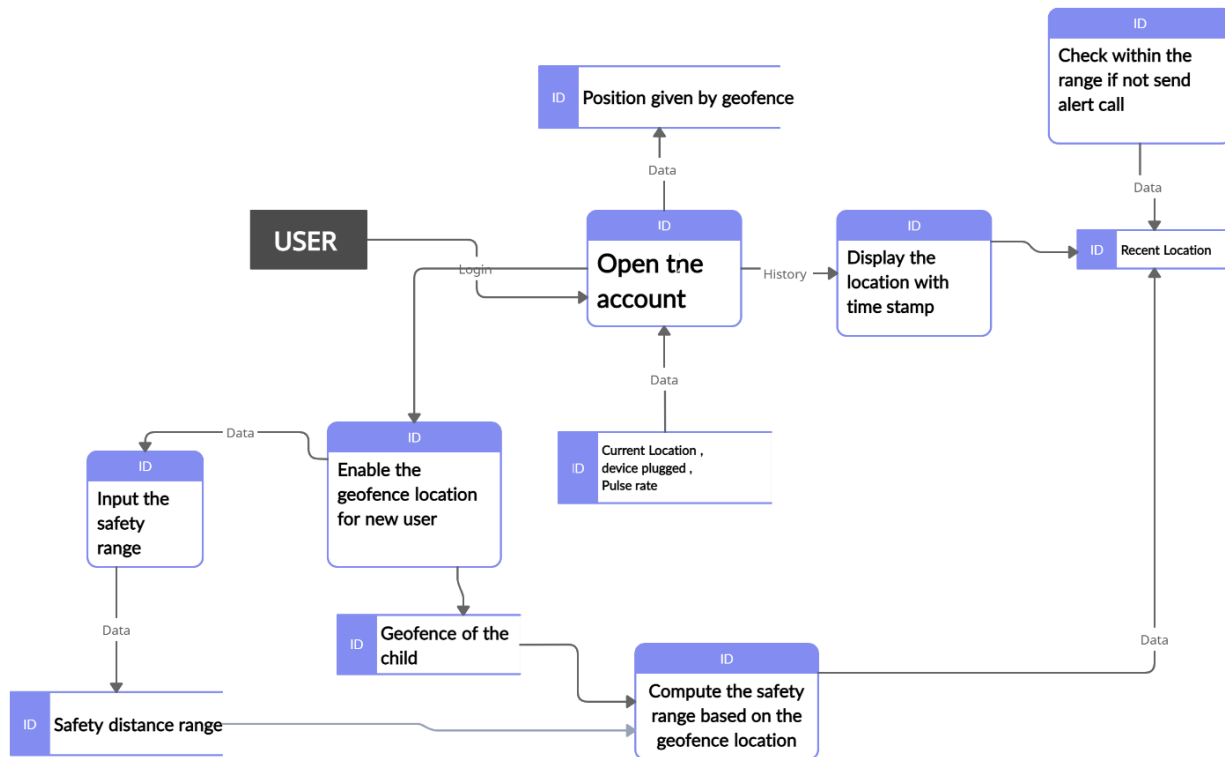
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Notification	Notification Via Mobile App and normal message
FR-4	Monitoring	App to monitor the child location

### 4.2 Non-Functional requirements

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	This model can help to notify the parents in case of emergency
NFR-2	<b>Security</b>	Parents can feel secure because if the child leave the desired location and immediately a notification will be sent
NFR-3	<b>Reliability</b>	Easy to use Portable Flexible Cost effective
NFR-4	<b>Performance</b>	Create a Child tracker which helps the parents with continuously monitoring the child's location. The notification will be sent according to the child's location to their parents or caretakers.
NFR-5	<b>Availability</b>	Track your child even in a crowd Know the current location
NFR-6	<b>Scalability</b>	This model ensures the safety and tracking of the children. Parents need not worry about their children.

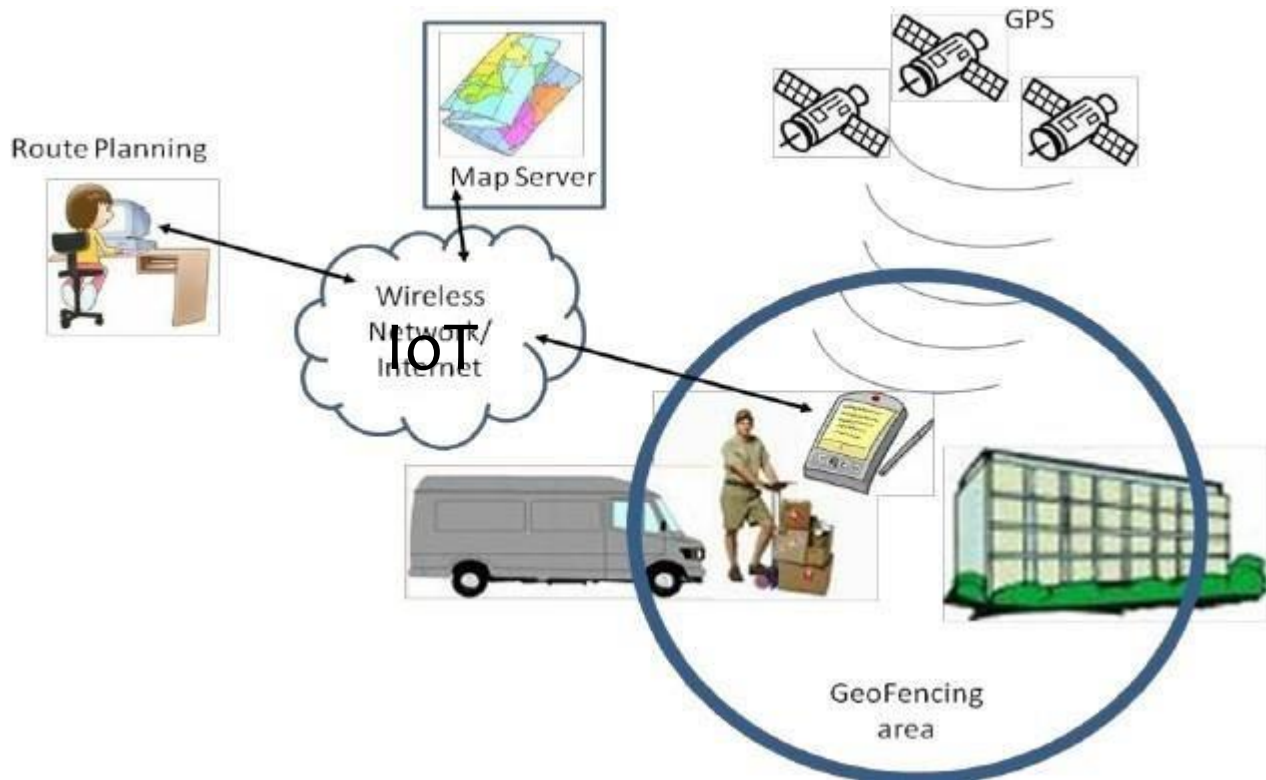
## 5. PROJECT DESIGN

### 5.1 Data Flow Diagrams



## 5.2 Solution & Technical Architecture

### ⑨ Solution Architecture



### ⑩ Technical Architecture



**Table-1: Components & Technologies:**

S. No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	Java
2.	Application Logic-1	Logic for a process in the application	Java
3.	Database	Data Type, Configurations etc.	Firebase
4.	External API-1	Purpose of External API used in the application	Google Maps API
5.	Notification	Alert Notification when exited the geofence	Firebase Cloud Messaging

**Table-2: Application Characteristics:**

S.No	Characteristics	Description	Technology
1.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	We are using the Google Maps <u>API</u> , so for every instance of time it updates the current location of the children to their parents/caretakers.
2.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	The technology is used to monitor and send alert notification.
3.	Availability	Justify the availability of applications (e.g. use of load balancers, distributed servers etc.)	We are using the geofence, a service that triggers an action when a device enters a set location
4.	Performance	Design consideration for the performance of the application	We are using Firebase , to send the notification

## 5.3 User Stories



### Document an existing experience

Narrow your focus to a specific scenario or process within an existing product or service. In the **Steps** row, document the step-by-step process someone typically experiences, then add detail to each of the other rows.

**Tip**  
As you document the experience to record and share, focus on understanding expanding a little more to give more background.

Scenario Child Monitoring and alerting	Entice How child's location is monitored?	Enter How message is sent to the parent?	Engage In the time parents in the process, what happens?	Exit What do people typically experience as the process finished?	Extend What happens after the experience is over?
<b>Steps</b> What does the person or group typically experience?	Create an app By app parents can view the location in the app	When child click panic button by using app module message is sent to the parents	Alert message sent to the parents update the location every first	Review of application	Alert Parents
<b>Interactions</b> What interactions do they have at each step along the way? • People: Who do they see or talk to? • Places: Where are they? • Things: What objects, touchpoints or physical objects would they use?	Regular monitoring Interacting with child	updating the location everytime	Parents needs are met		Consider interaction when parents of our notification can be seen
<b>Goals &amp; motivations</b> As which step this is a parent's primary goal or motivation? ("I informed" or "I'm worried")	Monitoring Child Protect child in same		Telling user of child in absence	Notify when child is entering the fence Notify when child's button is pressed	Alert message is sent
<b>Positive moments</b> What steps does a typical person find enjoyable, productive, fun, motivating, delightful, or meaningful?	Happy parents	Child taken care without parents	Regular updates	User Friendly	Cost Effective and easy to use
<b>Negative moments</b> What steps does a typical person find frustrating, confusing, annoying, costly, or time-consuming?	Alert Sound is not given		Message along with location not sent		Change in location not sent via message
<b>Areas of opportunity</b> How might we make each step better? What does the user want? What have others suggested?		"I worried" of child Alert user's device via message	Alert sound in case of emergency	Can be used when parent is working	



## 6. PROJECT PLANNING & SCHEDULING

### 6.1 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	3	High
Sprint-1		USN-2	As a user, I will receive verification email once I have registered for the application.	3	High
Sprint-1		USN-4	As a user, I can register for the application	3	Medium
Sprint-2	Login	USN-3	As a user, I can log into the application by entering email & password	5	High

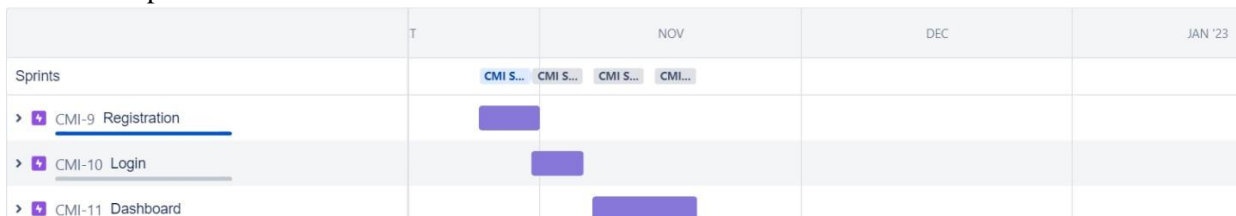
Sprint-4	Dashboard	USN-6	As a user, I can receive alert notifications if the movement is beyond the geofence.	13	High
Sprint-3		USN-7	As a user I can add the geofence	10	Medium
Sprint-3		USN-8	As a user I can update the <u>geofence whenever</u> necessary.	13	Medium

### 6.2 Sprint Delivery Schedule

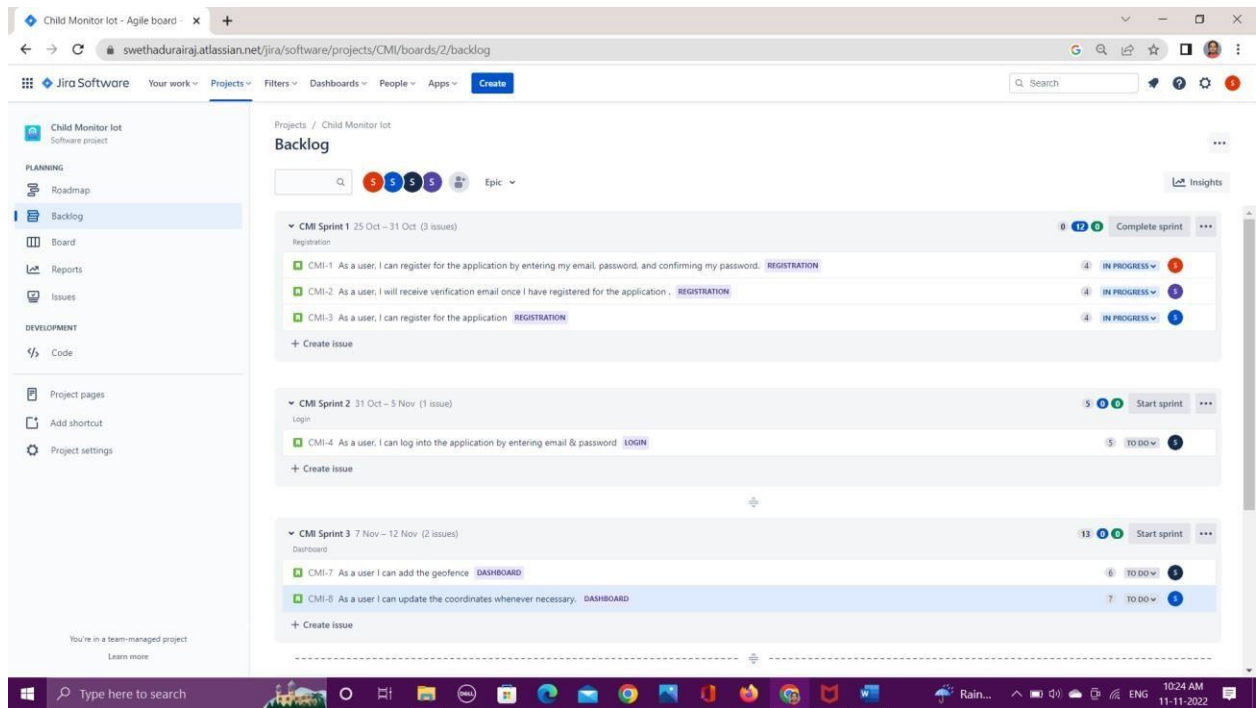
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	12	6 Days	24 Oct 2022	29 Oct 2022	12	29 Oct 2022
Sprint-2	10	6 Days	31 Oct 2022	05 Nov 2022	10	05 Nov 2022
Sprint-3	13	6 Days	07 Nov 2022	12 Nov 2022	13	12 Nov 2022
Sprint-4	13	6 Days	14 Nov 2022	19 Nov 2022	13	19 Nov 2022

### 6.3 Reports from JIRA

#### ⑨ RoadMap



#### ⑨ Backlog



## 7. CODING & SOLUTIONING (Explain the features added in the project along with code)

### 7.1 Feature 1(Adding Geofence)

- ⑨ Geofence is like a round wall covering the given location. So parents can use them to mark the location where their children is going .
- ⑨ Multiple Geofence can be added.

```
8. package com.example.geofence; import
   android.app.PendingIntent; import
   android.content.Context; import
   android.content.ContextWrapper; import
   android.content.Intent; import
   android.widget.Toast;

import com.google.android.gms.common.api.ApiException; import
com.google.android.gms.location.Geofence;
import com.google.android.gms.location.GeofenceStatusCodes;
import com.google.android.gms.location.GeofencingRequest; import
com.google.android.gms.maps.model.LatLng; public class
GeofenceHelper extends ContextWrapper {

    private static final String TAG = "GeofenceHelper"; PendingIntent
    pendingIntent;

    public GeofenceHelper(Context base) { super(base);
    }

    public GeofencingRequest getGeofencingRequest(Geofence geofence) { return
        new GeofencingRequest.Builder()
            .addGeofence(geofence)
```

```

.setInitialTrigger(GeofencingRequest.INITIAL_TRIGGER_ENTER)
    .build();
}

    public Geofence getGeofence(String ID, LatLng latLng, float radius,
int transitionTypes) {
        return new Geofence.Builder()
            .setCircularRegion(latLng.latitude, latLng.longitude,
radius)
            .setRequestId(ID)
            .setTransitionTypes(transitionTypes)
            .setLoiteringDelay(5000)
            .setExpirationDuration(Geofence.NEVER_EXPIRE) .build();
    }

    public PendingIntent getPendingIntent() { if
        (pendingIntent != null) { return
        pendingIntent;
        }
        Intent intent = new Intent(this, GeofenceBroadcastReceiver.class);
        pendingIntent = PendingIntent.getBroadcast(this, 2607, intent,
        PendingIntent.FLAG_IMMUTABLE);

        return pendingIntent;
    }

    public String getErrorString(Exception e) { if (e
        instanceof ApiException) {
        ApiException apiException = (ApiException) e;
        switch (apiException.getStatusCode()) { case
        GeofenceStatusCodes
            .GEOFENCE_NOT_AVAILABLE:
            return "GEOFENCE_NOT_AVAILABLE";
        case GeofenceStatusCodes
            .GEOFENCE_TOO_MANY_GEOFENCES:
            return "GEOFENCE_TOO_MANY_GEOFENCES";
        case GeofenceStatusCodes
            .GEOFENCE_TOO_MANY_PENDING_INTENTS:
            return "GEOFENCE_TOO_MANY_PENDING_INTENTS";
        }
    }
    return e.getLocalizedMessage(); }
}

```

## 7.2 Feature 2 (Alert Notification)

⑨ Once geofence is added , when the child enters the geofence a notification will be sent ⑨

When the child leaves the geofence a notification will be sent .

```
8 package com.example.geofence;
import    android.content.BroadcastReceiver;
import    android.content.Context;    import
android.content.Intent;              import
android.location.Location;            import
android.os.CountDownTimer;
```

```

import android.util.Log; import
android.widget.Toast;

import com.google.android.gms.location.Geofence; import
com.google.android.gms.location.GeofencingEvent;

import java.util.List; import
android.os.Handler;

public class GeofenceBroadcastReceiver extends BroadcastReceiver { private

    static final String TAG = "GeofenceBroadcastReceiv";

    @Override
    public void onReceive(Context context, Intent intent) {
        // TODO: This method is called when the BroadcastReceiver is
receiving
        // an Intent broadcast //.
        /*Toast.makeText(context, "GEOFENCE_ENTERED",
Toast.LENGTH_SHORT).show();

        final Toast mToastToShow;
        int toastDurationInMilliseconds = 1200000;
        mToastToShow = Toast.makeText(context, "GEOFENCE_EXITED",
Toast.LENGTH_LONG);

        // Set the countdown to display the toast CountdownTimer
toastCountDown;
        toastCountDown = new CountdownTimer(toastDurationInMilliseconds,
100000) { public void onTick(long millisUntilFinished) {
            mToastToShow.show();
        }

        public void onFinish() { mToastToShow.cancel();
        }
    };

        // Show the toast and starts the countdown
mToastToShow.show(); toastCountDown.start();*/

        NotificationHelper notificationHelper = new NotificationHelper(context);
notificationHelper.sendHighPriorityNotification("GEOFENCE_TRANSITION_ENTER
", "", MapsActivity.class);

        GeofencingEvent geofencingEvent = GeofencingEvent.fromIntent(intent);

        if (geofencingEvent.hasError()) {
            Log.d(TAG, "onReceive: Error receiving geofence event...");

```

```

        return;
    }

    List<Geofence> geofenceList =
    geofencingEvent.getTriggeringGeofences();
    for (Geofence geofence: geofenceList) {
        Log.d(TAG, "onReceive: " + geofence.getRequestId()); }
    // Location location = geofencingEvent.getTriggeringLocation(); int
    transitionType = geofencingEvent.getGeofenceTransition();
    switch (transitionType) { case
        Geofence.GEOFENCE_TRANSITION_ENTER:
    notificationHelper.sendHighPriorityNotification("Entered
    the Location", "", MapsActivity.class); break; case
        Geofence.GEOFENCE_TRANSITION_EXIT:
        notificationHelper.sendHighPriorityNotification("Exited
    the Location ", "", MapsActivity.class); break;
    }
}
}

```

## 8. TESTING

### 8.1 Test Cases

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
LoginPage_TC_O1	Functional	Home Page	Verify user is able to see the Login/Signup popup when user clicked on App		1.Enter App 3.Verify login/Signup popup displayed as expected		Login/Signup popup should display	Working as expected	Pass		Y		SnehaShri , Swetha
LoginPage_TC_O2	UI	Home Page	Verify the UI elements in Login/Signup popup		1.Enter App 2.Verify login/Signup popup with below UI elements: a.email text box b.password text box c.Login button d.New customer? Register		Application should show below UI elements: a.email text box b.password text box c.Login button with orange colour d.New customer? Register	Working as expected	Pass		Y		Shamugapriya , Swetha
LoginPage_TC_O3	Functional	Home page	Verify user is able to log into application with Valid credentials		1.Enter App 2.Enter Valid username/email in Email text box 3.Enter valid password in password text box 4. Click on login button	Username: sbcd@gmail.com password: Testing123	User should navigate to user account homepage	Working as expected	Pass		Y		Shakthi
LoginPage_TC_O4	Functional	Login page	Verify user is able to log into application with Invalid credentials		1.Enter App 2.Enter Invalid username/email in Email text box 3.Enter valid password in password text box 4. Click on login button	Username: sbcd@gmail.com password: Testing123	Application should show "Login error. There is no user record corresponding to the identifier"	Working as expected	Pass		Y		Shakthi , Shamugapriya
LoginPage_TC_O4	Functional	Login page	Verify user is able to log into application with Invalid credentials		1.Enter App 2.Enter Valid username/email in Email text box 3.Enter Invalid password in password text box 4. Click on login button	Username: scc19ec020@airmailtop.cd a.in password: Testing123678686786876	Application should show "the Password is invalid"	Working as expected	Pass		Y		Shreetha B, SnehaShri
LoginPage_TC_O5	Functional	Login page	Verify user is able to log into application with Invalid credentials		1.Enter App 2.Enter Invalid username/email in Email text box 3.Enter Invalid password in password text box 4. Click on login button	Username: sbcd password: Testing123678686786876	Application should show "Login error. There is no user record corresponding to the identifier"	Working as expected	Pass		Y		Swetha
Dashboard	Functional	Dashboard	Adding geofence in the location need		1.Enter App 2.Enter the valid username and password		Application show a red circle around the location	Working as expected	Pass		Y		Sneha Shri
Alert Notification	Functional	Notification	Notification when the user entered the geofence		1.Enter App 2.Enter the valid username and password 3.Add the Geofence		Application sent the notification "Entered the location"	Working as expected	Pass		Y		Shamugapriya , Swetha
Alert Notification	Functional	Notification	Notification when the user exited the geofence		1.Enter App 2.Enter the valid username and password		Application sent the notification "Exited the location"	Working as expected	Pass		Y		Shakthi , Swetha



## 8.2 User Acceptance Testing

### 1. Defect Analysis

Resolution	Severit y1	Severit y2	Severit y3	Severit y4	Subtotal
By Design	11	4	2	2	19
Duplicate	1	1	2	0	4
External	2	3	0	1	6
Fixed	10	2	3	20	35
Not Reproduced	0	0	2	0	2
Skipped	0	0	2	1	3
Won't Fix	0	5	2	1	8
Totals	24	15	13	25	77

### 2. Test Case Analysis

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	5	0	1	4
Client Application	47	0	2	45
Security	3	0	0	3
Outsource Shipping	2	0	0	2
Exception Reporting	11	0	2	9
Final Report Output	5	0	0	5
Version Control	3	0	1	2


## 9 RESULTS

### 1. User Registration :

User gets registered to the app using their mail and create their password. On the user is registered a verification mail will be sent to the user mail id. The user needs to verify the account. All user details are stored in the firebase and verification mail is sent by firebase authentication .

#### Registration Page :

Geofence

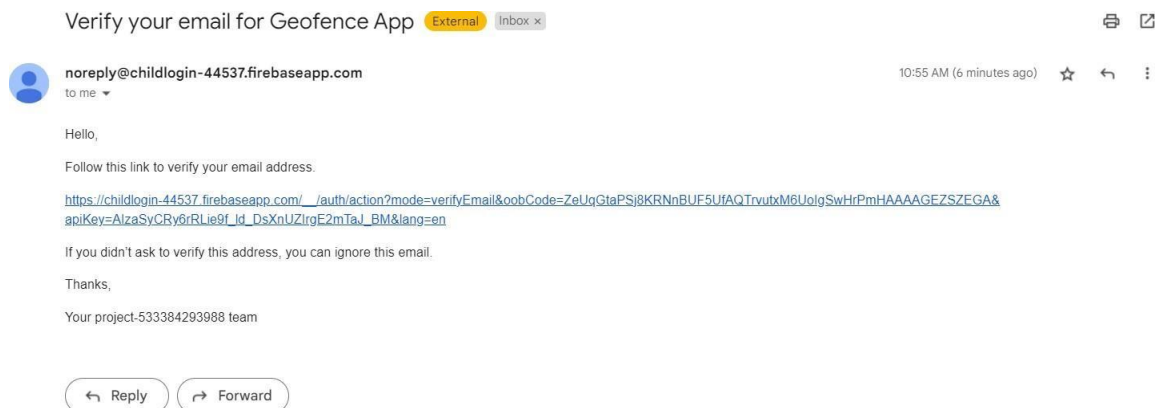


Register

REGISTER

Already registered [Login here](#)

#### Verification mail



### 2. User Login

User with their registered mail and password will login to the account . As the details are stored in firebase, when invalid mail or password is entered a message say invalid mail or password occur **Login page :**

## Geofence



Login

LOGIN

Not registered yet [Register here](#)

### User Details

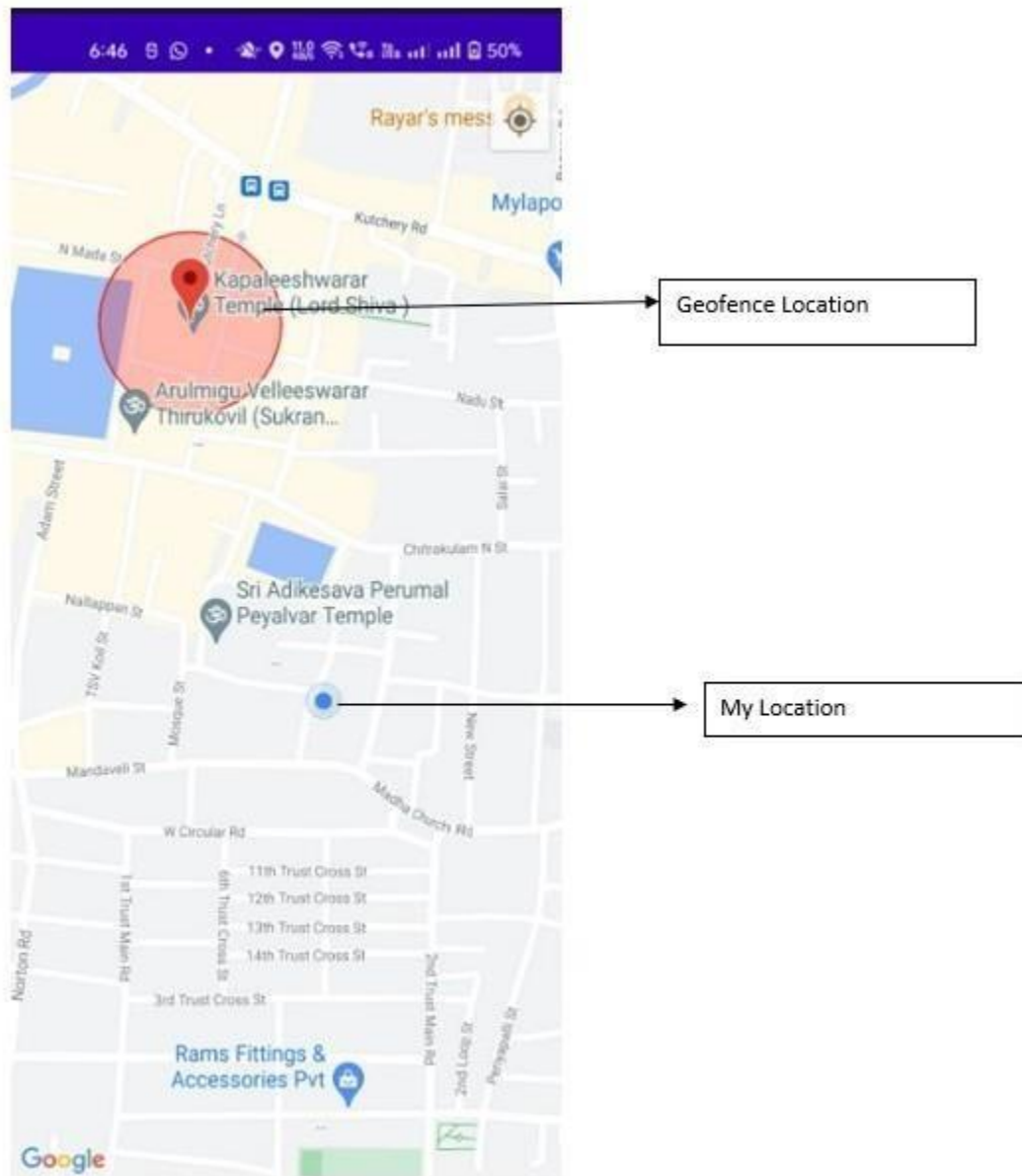
The screenshot shows the Firebase Authentication console. On the left is a sidebar with navigation options: Project Overview, Authentication, Build, Release & Monitor, Analytics, Engage, and All products. The main area is titled 'Authentication' and has tabs for Users, Sign-in method, Templates, Usage, and Settings. The 'Users' tab is active, displaying a table of users. The table has columns for Identifier, Providers, Created, Signed in, and User UID. There are two users listed, both created on Nov 11, 2022. At the bottom right, it shows 'Rows per page: 50' and '1 - 2 of 2'.

Identifier	Providers	Created	Signed in	User UID
ggbatq123@gmail.com	Google	Nov 11, 2022		OTPKXwzRcag5Bu0XpIwDc3z5...
seetha.durais2002@gmail...	Google	Nov 11, 2022		Q9Q3eCL7HANduS2AKBfSRNdJk3

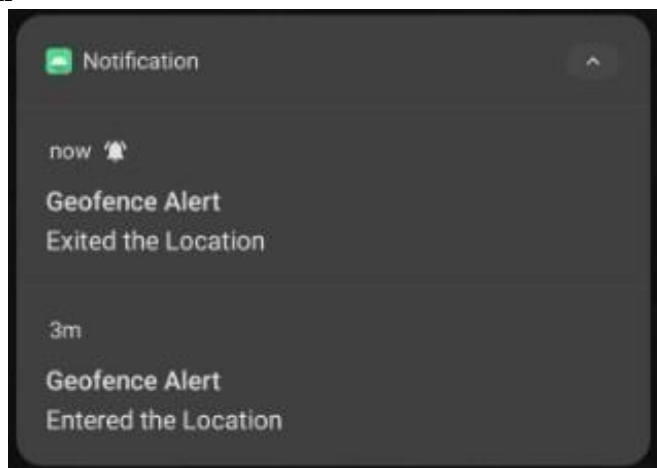
### 3. Adding Geofence and Alert Notification

User can add geofence in the location where they want to add or where their child is going play so they can monitor the child location . Once the child enter the geofence alert notification says entered the location will be displayed . When the child leaves the geofence alert notification says exited the location will displayed.

## Geofence



## Notification



## 10 ADVANTAGES & DISADVANTAGES ADVANTAGES:

Simple and easy to use

Parents can feel secure because if the child leave the desired location and immediately a notification will be sent

Geofence can be added easily

**DISADVANTAGES:**

Multiple geofence can be a problem

## **11 CONCLUSION**

This research demonstrates Smart IoT device for child safety and tracking, to help the parents to locate and monitor their children. Through this device, the parent can track and monitor their child with just a simple app. It is not possible to always stay beside children as most of the parents need to go for work. With this project, parents can track the location of their children and get alerts whenever the child out of the geofence. It becomes easy for parents to look after their child while working. This device is efficient to use. Thus, by keeping in mind the advantages and applications we are developing a child monitoring device. In order to avoid kidnapping cases, the child monitoring system is needed.

## **12 FUTURE SCOPE**

The future work would be to further develop and implement the safety wearable device so that it could be watch or sown into a fabric that could be worn, using synthetic fibers.

## **13 APPENDIX**

Source Code

<https://github.com/SWETHA-DURAIRAJ/childapp>

GitHub

<https://github.com/IBM-EPBL/IBM-Project-54851-1662542156>