

TEAM ID: PNT2022TMID16715

IoT Based Safety Gadget for Child Safety Monitoring and Notification

DOMAIN	INTERNET OF THINGS
TOPIC	IoT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING AND NOTIFICATION
TEAM ID	PNT2022TMID16715
TEAM MEMBERS	Karthi.D,Karthik Raja.S,Kalidasan.S,Logeshwaran.D



Anna University
PROGRESS THROUGH KNOWLEDGE

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Professional Readiness for Innovation, Employability & Entrepreneurship

INTERNET OF THINGS

**IoT Based Safety Gadget for Child Safety
Monitoring & Notification**

1.INTRODUCTION

Child safety is a challenging problem nowadays due to antisocial elements in the society. The crime rate is day by day increasing. Schools and working places need high surveillance for ensuring the safety among children. Smart Gadget major role for ensuring the safety, where some mobile based applications provide alert systems. During the emergency, Application alert the control room of nearby police station or caretakers of children. The literature shows that location tracking devices are available in the market, but it does not provide the complete solution to the problem. The solution to this problem is to design an IoT device, which senses the child's location and environment and during emergency, it should send the alert to the parents automatically.

1.1 Project Overview:

Basically, children cannot complain about abusements which they face in their daily life to their parents. They can't even realize what actually happens to them at their age. It is also difficult for parents to identify their children are being abused. Since to prevent children before being attacked, an autonomous real-time monitoring system is necessary for every child out there. In this system, the collected values from every sensor like temperature sensor, pulse rate detection sensor, metal detection sensor, and the location value from GPS are used to detect the status of the child and alerts the respective guardians using GSM accordingly.

,IoT is applied to propose a wearable smart band which helps parents to monitor and get known of their child's condition at anywhere and anytime even if they are not by their children side. Via the IoT smart band, children safety is guaranteed, and crime rate is reduced as immediate actions can be taken in case the child is in danger. Besides, unlike existing smart band, which is less focusing on child security aspect, the proposed system emphasizes in getting as much data as possible so that actual situation can be identified.

1.2 Purpose:

The main goal of this project is to create a smart wearable device for children that uses refined technology to assure their safety. The paper provides a smart solution for deflecting losing kids while going out alone or with their parents based on the Internet of Things(IoT). Our proposed strategy ensures utmost security and ensures live tracking for their kids. This paper proposes a model for child safety through smartphones that can track their children's location and give the precise coordinates of the child's location in real-time anywhere. By monitoring the activities the security state of the child is examined.

2.LITERATURE SURVEY

2.1 Existing Problem:

In the existing system, we use a voice recognition module in which the alert commands from the child are stored and kept for further reference. If the same child delivers the same command, it will compare with the alert command which was previously stored and sets an emergency level according to the alert command. The GSM has a SIM which is used to send an alert message or an alert call to the trusted peoples. GPS is used to track the live location and it is used when needed. The server will search the respective device ID from the database and search for respective contacts according to that device ID and helps in alerting the registered guardians.

The disadvantage of this project are :

- i. The child could not produce the exact alert command during a panic condition.
- ii. The command produced may not match with the previously stored command.
- iii. This project requires manual intervention.

2.2 References:

- [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
- [2] Authors: Dheeraj Sunehera, Pottabhatini Laxmi Priya. Title: Children Location Monitoring on Google Maps Using GPS and GSM.

[3] Dr. R. Kamalraj, ” A Hybrid Model on Child Security and Activities Monitoring System using IoT”, IEEE Xplore Compliant Part Number.

2.3 Problem Statement Definition:

Create a problem statement to Some previous studies have been included for designing the IoT-based child security smart band. It assists parents to monitor their children remotely. In case situations happen, notifications will be sent to parents so that actions can be taken.

Lack of child monitoring in school affect the child's behavior. Under age children may be premature in the way they act and places to be. Most of human behavior is shaped in childhood stage, in order to get morally acceptable behavior child monitoring system is necessary.

3. IDEATION AND PROPOSED SOLUTION

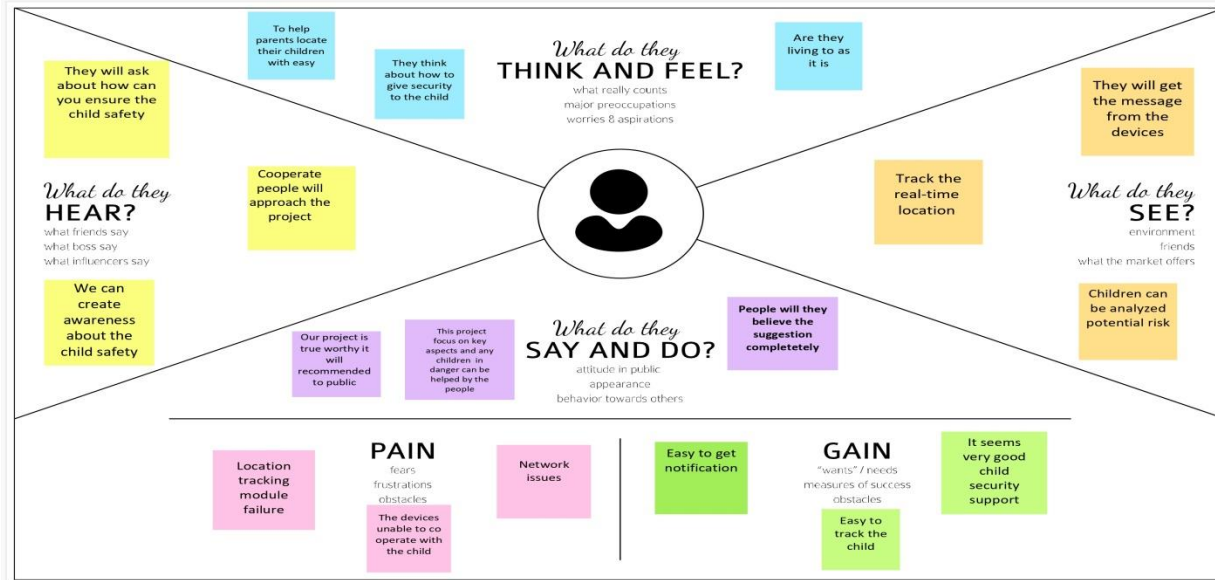
3.1 Empathy Map canvas:

Empathy Map Canvas

Gain insight and understanding on solving customer problems.

team
lead: karthi
team
member: Karthik
raja

team
member2: kalidhas
an
team
member3: logeshwar
an



Share your feedback

3.2 Ideation and Brainstorming:

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 48 minutes (approx)
- 1 hour to collaborate
- 24 people recommended

Before you collaborate

A detailed preparation goes along with this session. Here's what you need to do to get going.

- 1. **Topic clarity**
Before the start, prepare the session and content. Your short discussion is pre-labeled.
- 2. **Setting goals**
What do you want to achieve by the end of the session?
- 3. **Brainstorming rules**
Set the tone for the session. Be clear about the rules of the game.

Define your problem statement

What problem are you trying to solve? Frame your problem as a clear, high-level statement. This will be the focus of your brainstorm.

Example: How can we create a mobile app that helps parents track their child's location and movements?

Brainstorm

Unleash any ideas that come to mind for this challenge. No idea is too small.

KARTHI D

- Create a mobile application
- Send the exact location of child in case of emergency
- Measure temperature, pulse rate, heart rate of child and notify during emergency
- Continuous tracking and updating child's location
- Water & sweat proof
- Alerts if the given range is exceeded

KARTHIK RAJA S

- Create a mobile application
- GPS integrated watch to keep track of their child's movements
- Use the Child locator gadget
- Generating the child's movement
- Accurate sensors to detect Temperature, Heart rate
- Low levels of radiation

KALIDASAN S

- Create web Application
- Brilliant UI/UX design for Application
- Integration with Parent's mobile
- Integration with Cloud Services
- Comfortable & easily wearable

LOKESHANAN D

- Parental control features
- Use satellite calling in case of emergency
- Integrating the child's location through GPS
- User friendly application
- Better battery life
- Secure database

Group ideas

Take notes during your session while clustering similar or related ideas in a group. One of your notes will be the group's idea. If you have a lot of ideas, try to break it up into smaller sub-groups.

Example: GPS integrated watch to keep track of their child's movements

Prioritize

Your team should all be on the same page about which ideas are most important. Rank your ideas on the grid to determine which ideas are important and which are feasible.

After you collaborate

You can export the results as an important tool to document the results of your session. The right time to do this is right after the session.

Goals will be:

- 1. **Start the work**
Start the work by the end of the session. This is the first step in the process.
- 2. **Document the work**
Document the work by the end of the session. This is the second step in the process.

Next steps forward:

- 1. **Define the work**
Define the work by the end of the session. This is the third step in the process.
- 2. **Start the work**
Start the work by the end of the session. This is the fourth step in the process.

3.3 Proposed solution:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Child abductors continually abduct children from parents/legally appointed guardians to get the ransom for their benefit. Parents have no supplementary choice but to view the exact scenario of children's intuitions. The crisis out-turn of kidnapping can be highly cynical and perpetual, more measures must be taken to protect children against abduction and its impacts..
2.	Idea / Solution description	A Smart IoT device for tracking is developed to aid parents to detect and keep eye on their children. In this project, we are going to develop a wearable safety gadget to display the live location of a child at any time on the parent's mobile to set the seal on their safety.
3.	Novelty / Uniqueness	<p>The system software involuntarily alerts the parent/guardian by redirecting a text message where expeditious scrutinisation is essential for the child during a catastrophe.</p> <p>Contrary to other devices, it has plenty of characteristics such as the</p>

		<p>development of sensors technology, availability of internet-connected devices; data analysis algorithms making IoT devices act smart in emergencies without human interventionpopulated areas like cities or big towns. This means you will be able to see the identity of the participating devices and It helps to diminish their vulnerability in harmful situations and also protects the children in emergency situations.</p>
4.	Social Impact / Customer Satisfaction	<p>Child abduction is a scorching subject all over the world. It is a complex crime that can impair a child's future. Parents should ensure that their little ones are secure and are been protected from the menace of injury.</p>
5.	Business Model (Revenue Model)	<p>The Most desired in the contemporary market, as kids need more protection in the current times. The gadget can be acquired at an affordable rate.</p> <p>Our gadget possesses a lot of ingenious attributes and it will be accessible and beneficial to everyone so it is a foundation for a prominent revolution in merchandise.</p>

		It is a device with numerous subscriptions for tracing and notification assistance.
6.	Scalability of the Solution	<p>This methodology can be further enhanced by the installation of the mini camera inside a smart gadget for exemplary security and protection so that a glimpse can be caught on the live footage on the parental phone during panic circumstances.</p> <p>If an intricacy arises parents can see some of the attributes like the location, temperature and heartbeat of the child along with living perspective around the children without deterrence.</p>

3.4 Proposed solution Fit:

PROJECT DESIGN PHASE-1 SOLUTION FIT TEMPLATE

PROJECT TITLE: IOT-based safety gadget for child safety and notification system
TEAM ID : PNT2022TMD16715

Define cs, fit into cc	1. CUSTOMER SEGMENT(S) Working parents or busy parents Of 0-10 years old kids	6. CUSTOMER CONSTRAINTS Lack of affordable, reliable, and hassle-free technology, lack of availability of secure and easy UI	5. AVAILABLE SOLUTIONS There are existing solutions that offer location tracking for kids but they are not very efficient, cost-effective, and reliable all at the same time. This trade-off should be addressed.	Explore AS, differentiate
	2. JOBS-TO-BE-DONE/PROBLEMS Instantaneous tracking and updating of child's location, geofencing and notifying parents of any abnormalities	10. PROBLEM ROOT CAUSE Customers have to do this to protect their children from potential threats and to ensure their safety while being far away from them.	7. BEHAVIOUR Customers panic, prevent their children from going out on their own, and try using easily available technologies	
Focus on J&D, tap into BE, understand RC	3. TRIGGERS Coming across news about children being kidnapped and abducted, missing cases being reported.	9. OUR SOLUTION Building a reliable technology that can address all the customer needs while being reliable and secure ensuring efficient functioning.	8. CHANNELS OF BEHAVIOUR Online: Tracking their kid's location with their mobile phone's GPS, reading news about child safety and other child missing cases. Offline: Customers accompany their children to ensure safety, send them together with other reliable people, and seek protection in public places.	Focus on J&D, tap into BE, understand RC
Identify strong Tr & EM	4. EMOTIONS: BEFORE/AFTER Before: Feel insecure, worried, scared, and confused. After: Relieved calm, confident, happy.			Extract online & offline Ch of BE

4.REQUIREMENTS ANALYSIS

4.1 Functional requirements:

FR No.	Functional Requirement (Epic)	Sub Requirement (Story/ Sub-Task)
FR-1	External Interfaces	These requirements include interaction logic between software and user, screen layouts, buttons, functions on every screen, hardware interfaces (here a team describes what devices the software is created for), and other relevant particularities.
FR-2	Reporting	Reporting Requirements means any applicable laws, rules, regulations, instruments, orders or directives and any requirements of a regulatory or supervisory organization that mandate reporting and/or retention of safety and similar information
FR-3	Authentication	<i>The system sends an approval request after the user enters personal information</i>
FR-4	User Interface	It should be the connector between the various systems or between other part or unit of the system
FR-5	Software interface	This includes embedded application that will be used in supporting the various functions of the system Eg: GPS, WebServer and Database..

4.2 Non-Functional Requirements:

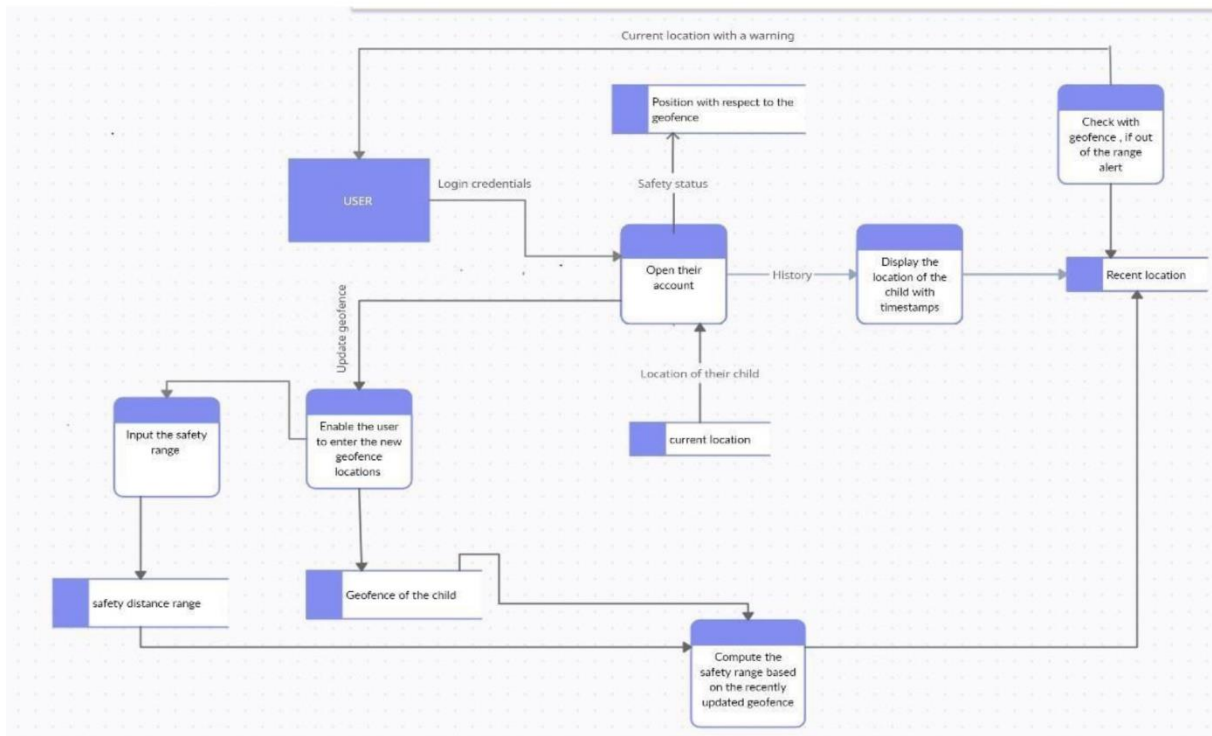
FR No.	Non-Functional Requirement	Description
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NFR-1	Usability	Usability is a non-functional requirement, because in its essence it doesn't specify parts of the system functionality, only how that functionality is to be perceived by the user, for instance how easy it must be to learn and how efficient it must be for carrying out user tasks
NFR-2	Security	Security is a non-functional requirement assuring all data inside the system or its part will be protected against malware attacks or unauthorized access.
NFR-3	Reliability	Reliability is the extent to which the software system consistently performs the specified functions without failure. ELICITATION: Reliability requirements address the user concern for the system's immunity to failure.
NFR-4	Performance	The website's load time should not be more than one second for users.
NFR-5	Availability	Employers can post jobs on the website throughout the week at any time during the day.

5.PROJECT DESIGN

5.1 Data flow diagrams:

DATA FLOW DIAGRAM



INTRODUCTION:

Solution architecture is a complex process with many data sources that bridges the void between industrial obstacles and technology solutions. Its goals are to

- Discover the finest tech solution to decipher subsisting business crises.
- Outlines the composition, attributes, behaviour, and other aspects of the software to project stakeholders.
- Define properties, development chapter, and quick fix essentials.
- Produce stipulation in accord to which the solution is interpreted, controlled, and dispatched.

Every quick fix architecture delineation holds 6 to 7 phases, these caliber should be followed by all evolution teams to secure the standard of the software, so the software is scalable, multifaceted, and metaphoric.

REQUIREMENT:

This project is done utilising the embedded C and python framework for AVR, ARM, and in addition to (based on Wiring) Device BootLoader. IBM Cloud workspace is used for depository and APIs. The front end is done using XML for android.

DESIGN:

All the requisite are used to draft the Application. The layout and architecture of the software are done in a distinctive approach so the software can be employed and developed imminently. The Arduino acquires the region from the GPS equipment and consigns it to the cloud to inspect if the end user is within the confined zone. If the user is further away from the confined zone, an alert is sent to the catalogued mobile through the cloud. When the requisition is opened, the locality is obtained from the cloud and unveiled on the mobile.

IMPLEMENTATION:

The implementation mechanism is done and execution is terminated by progressing the logic by coding. All the vital packages are imported and for each router specific logic is developed in accordance to the usage. Development of a safety device for kids to guarantee their security in the absence of an understated examination of their parents. The various aspects involve:

- GPS

- Notify alert signal

UNIT TESTING:

Each portion of the software is designed by discrete team members, and it is

tested individually by the python unit testing IoT.

INTEGRATION AND TESTING:

After unit testing, all software sections are integrated and tried out ultimately, so the flask program can be run on any platform. The testing progression encompasses Alpha testing and Beta testing.

DEPLOYMENT:

The flask application in the long run is distributed in the IAAS rostrum like IBM cloud assistance, so it can be run in HTTPS protocol alongside SSL. In the deployment process, a real-time database is fastened on the edge of real-time file storage.

MAINTENANCE:

In the wake of victorious deployment, if there is a conglomeration refurbish, it is accomplished in the software.

CATASTROPHIC FEATURES IN THE DEVICE:

ALARM RING:

The safety system redirects a warning to your phone at any occasion, it determines any pursuit. Arming methodology decides which category of alerts you get.

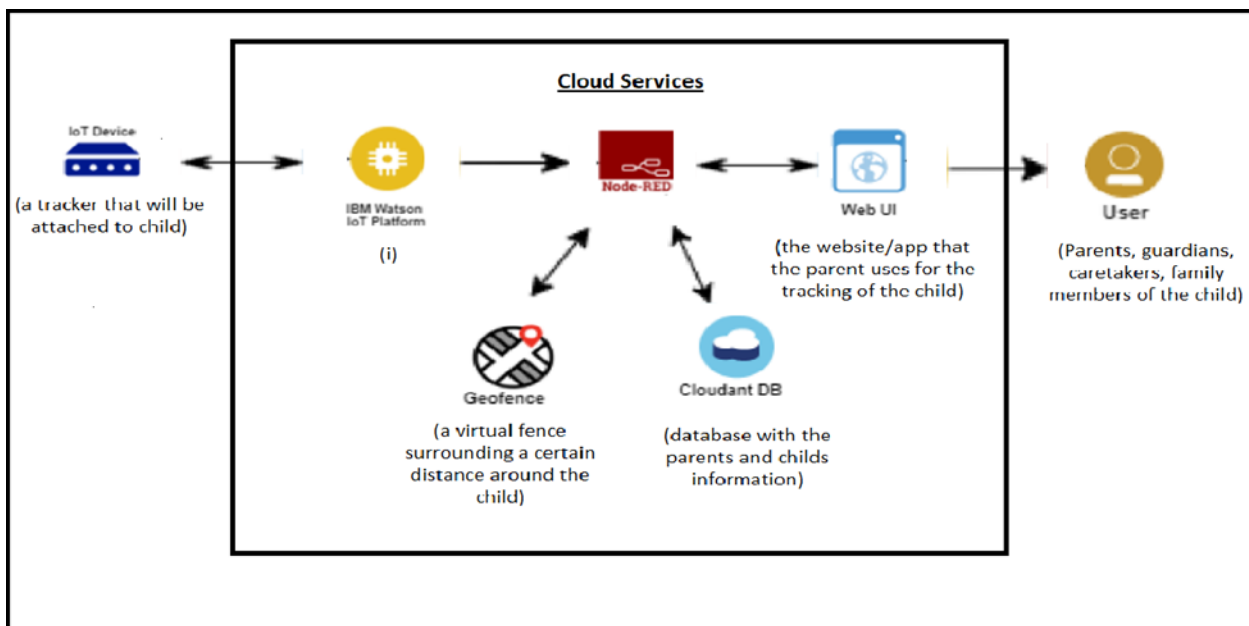
EMERGENCY NOTIFICATION:

An emergency notification system is a labour-saving mechanism to get in touch with a group of people within a corporation and assign salient information during a crisis.

GPS:

The GPS helps to escalate protection and fitness characteristics on the device. Depending upon the device, it can alert parents about their child's location in case of any crisis and helps to trace their route duration and distance.

5.2 Solution and Technical Architecture :



5.3 User Stories :

Product Backlog, Sprint Schedule, and Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	1
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	1
Sprint-1		USN-3	As a user, I can register for the application through Gmail	2	Low	2
Sprint-1		USN-4	As a user, I can log into the application by entering email & password	2	Medium	2
Sprint-1	Login	USN-5	As a User, I can Navigate to the Dashboard after successfully Login to the Application.	1	High	3
Sprint-2	Support	USN-6	As a User, I can connect with Experts for clearing Queries and facing any Challenges by interact they can help to overcome that.	3	Medium	4
Sprint-3	Administrator	USN-7	As an Administrator, I can enter my Details as phone number, Gmail, and So on while Registration or Login Process. As an Administrator, I will Manage the Recycle Bin, Backup and Security. As an Administrator, I can Set the Geofence Location Limit. As an Administrator, I am able to View the Notifications from the Gadget.	3	High	4

6.PROJECT PLANNING AND SCHEDULING

6.1 Estimation:

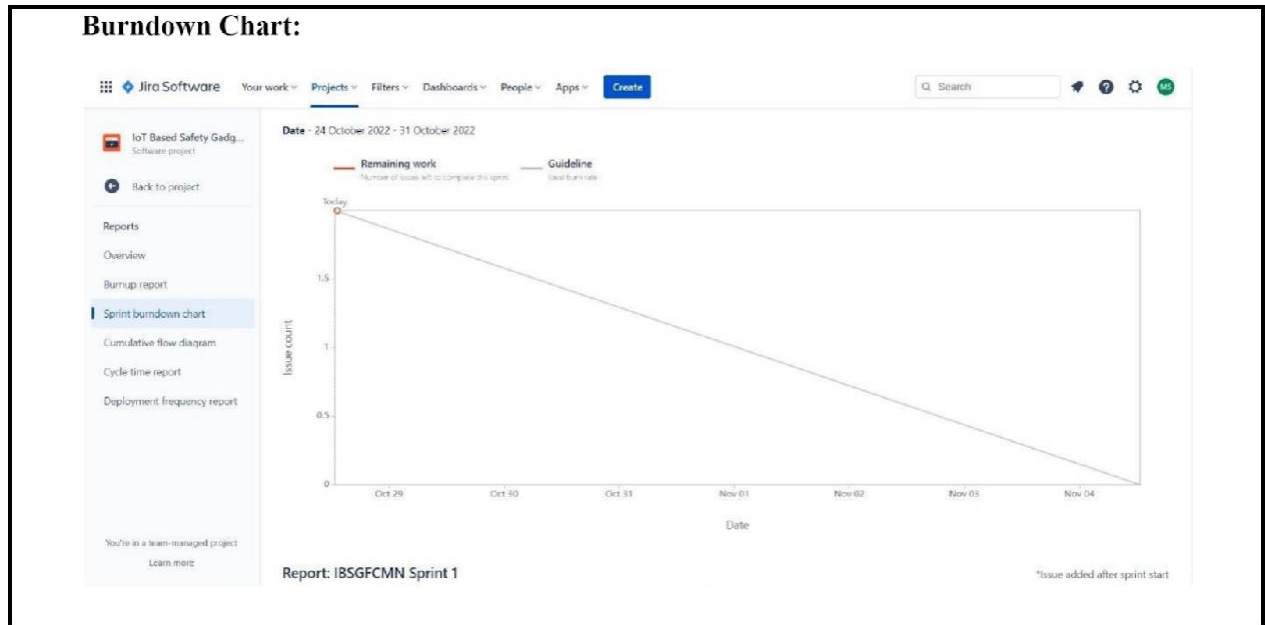
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

6.2 Sprint Delivery Schedule:

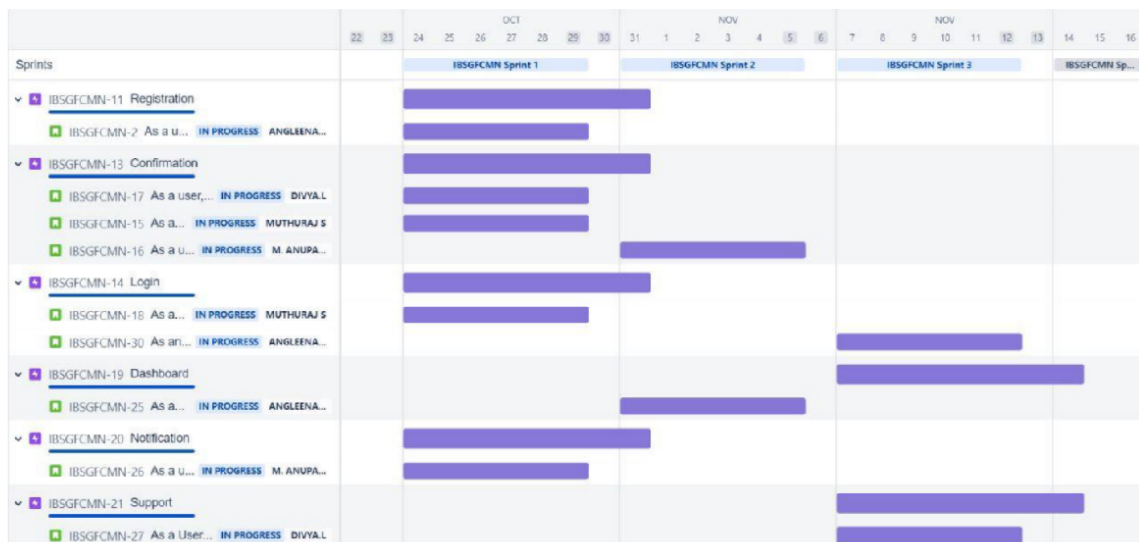
Sprint	Duration	Sprint Start Date	Sprint End Date (Planned)	Sprint Release Date (Actual)
Sprint-1	6 Days	24 Oct 2022	29 Oct 2022	29 Oct 2022
Sprint-2	6 Days	31 Oct 2022	05 Nov 2022	05 Nov 2022
Sprint-3	6 Days	07 Nov 2022	12 Nov 2022	12 Nov 2022
Sprint-4	6 Days	14 Nov 2022	19 Nov 2022	19 Nov 2022

6.3 Reports from JIRA:

Sprint 1:

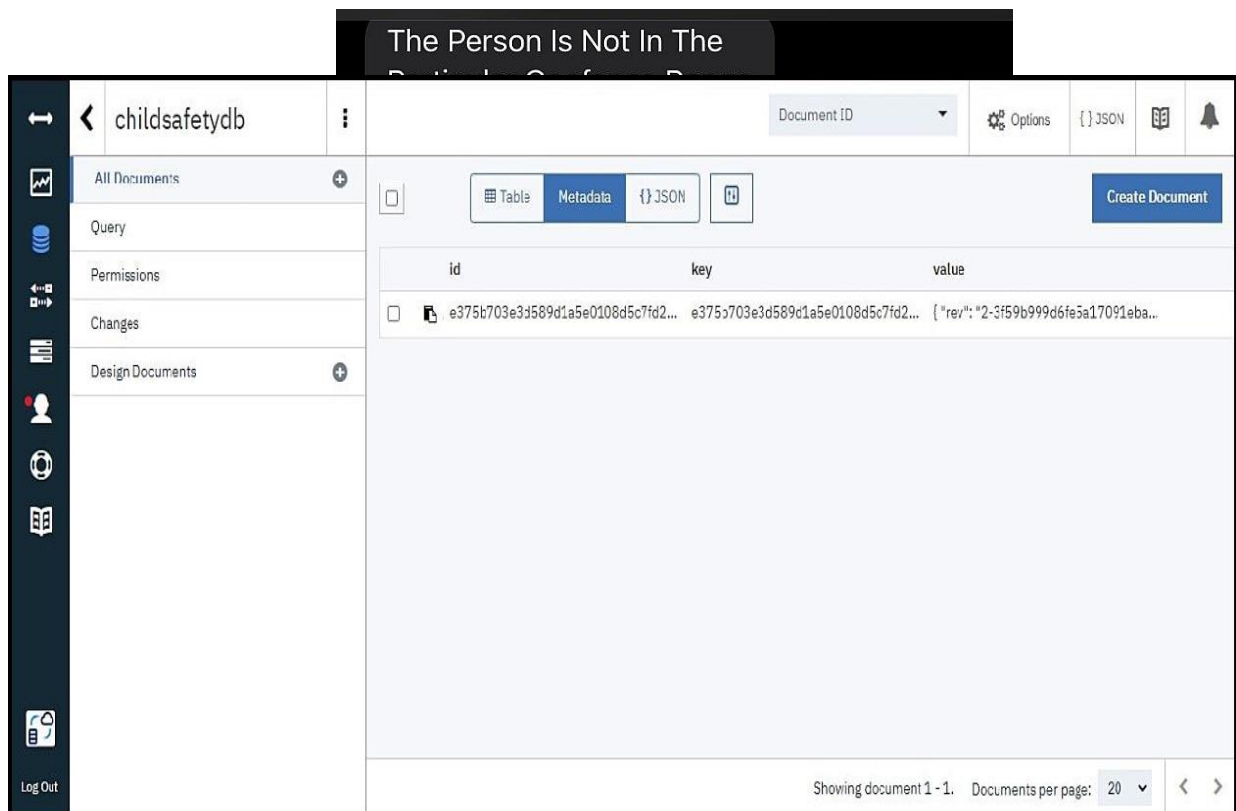
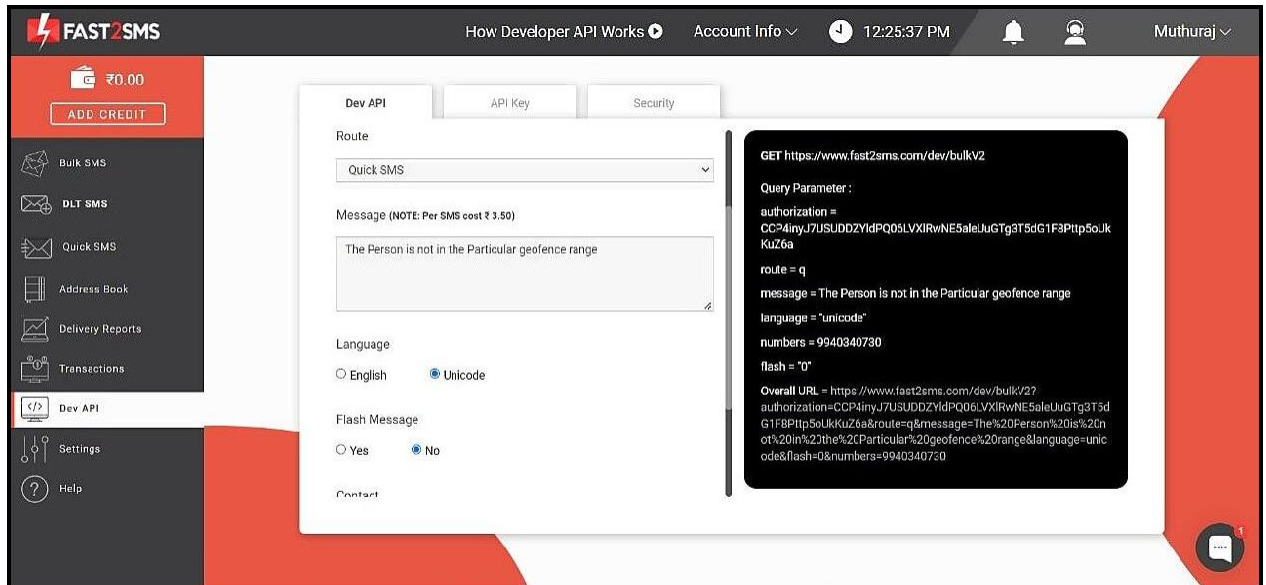


Road Map:



7. CODING & SOLUTIONING

7.1 Feature



7.2 DATABASE SCHEMA :

Code:

```
#include <WiFi.h>
#include <WiFiClient.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>
#include <TinyGPS++.h>
#define RXD2 16
#define TXD2 17
HardwareSerial neogps(1);

TinyGPSPlus gps;
char arr[100];

const char* ssid = "Redmi";
const char* password = "krish@08";

#define ID "17cmwk"
#define DEVICE_TYPE "Tracker"
#define DEVICE_ID "gps1"
#define TOKEN "childtracker1"

char server[] = ID ".messaging.internetofthings.ibmcloud.com";
char publish_Topic1[] = "iot-2/evt/Data1/fmt/json";
char publish_Topic2[] = "iot-2/evt/Data2/fmt/json";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ID ":" DEVICE_TYPE ":" DEVICE_ID;

WiFiClient wifiClient;
PubSubClient client(server, 1883, NULL, wifiClient);

void setup() {
    Serial.begin(115200);
```

```

    Serial.println();
    wifi_init();
}

long previous_message = 0;

void loop() {
    client.loop();
    String payload = getLocationPayload();
    if(payload=="{}"){
        return;
    }

    Serial.print("Sending payload: ");
    Serial.println(payload);
    if (client.publish(publish_Topic1, arr)) {
        Serial.println("Published successfully");
    } else {
        Serial.println("Failed");
    }
    delay(2000);
}

void wifi_init(){
    WiFi.begin(ssid, password);
    neogps.begin(9600,SERIAL_8N1,RXD2,TXD2);
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }
    Serial.println("");
    Serial.println(WiFi.localIP());

    if (!client.connected()) {

```



```

    Serial.print("Reconnecting client to ");
    Serial.println(server);
    while (!client.connect(clientId, authMethod, token)) {
        Serial.print(".");
        delay(500);
    }
    Serial.println("Connected TO IBM IoT cloud!");
}
}

String getLocationPayload(){
    boolean newData = false;
    for(unsigned long start = millis();millis()-start<1000;){
        while(neogps.available()){
            if(gps.encode(neogps.read())){
                newData = true;
            }
        }
    }
    String payload;
    if(newData == true){
        newData = false;
        payload = locationPayloadGenerator();
    }
    else{
        Serial.println("No data");
        payload = "{}";
    }
    return payload;
}

String locationPayloadGenerator(){
    String payload = "{}";
    if(gps.location.isValid()){

```

```

float lat = gps.location.lat();
float lon = gps.location.lng();
payload = "{\"latitude\" : "+String(lat)+"\", \"longitude\" : "+String(lon)+"}";
create_json(lat,lon);
}
return payload;
}

void create_json(float lat,float lon){
    StaticJsonDocument<100> doc;
    JsonObject root = doc.to<JsonObject>();
    root["name"]="Child";
    root["latitude"] = lat;
    root["longitude"] = lon;
    serializeJsonPretty(doc,arr);
}

```

7.3 Database Schema:

A database schema defines how data is organized within a relational database; this is inclusive of logical constraints such as, table names, fields, data types, and the relationships between these entities. Schemas commonly use visual representations to communicate the architecture of the database, becoming the foundation for an organization's data management discipline.

A database schema is considered the “blueprint” of a database which describes how the data may relate to other tables or other data models. However, the schema does not actually contain data.

key benefits of database schemas include:

- **Access and security:** Database schema design helps organize data into separate entities, making it easier to share a single schema within another database.
- **Organization and communication:** Documentation of database schemas allow for more organization and better communication among internal stakeholders.
- **Integrity:** This organization and communication also helps to ensure data validity.
-

8. TESTING

8.1 Test Cases :

				Date	16 November 2022							
				Team ID	PN720221MED7117							
				Project Name	Project - IoT Based Safety Gadget for Child Safety Monitoring & Notification							
				Maximum Marks	4 marks							
Test case ID	Feature Type	Component	Test Scenario	Pre-Requirement	Steps To Execute	Test Data	Expected Result	Actual Result	Status	TC for Automation (Y/N)	BUG ID	Executed By
IBM CLOUD_TC_001	Functional	IBM Cloud Service	Verify the login cloud services	Software	1. Login in using cloud.ibm.com 2. Obtain promocode in IoT 3. Then apply code the and Login 4. The page will be directed to the IBM cloud account	email: 110819106301@gmail.com Password: PN7110M0B022	Successfully created the IBM account	Working as expected	Pass	YES	NIL	1.MUTHURAJ S 2.ANGELEENA REJI 3.ANUPAMA M 4.DIVYA L
IBM Watson IoT Platform_TC_002	Functional	IBM Cloud Service	Verify create a device in the IBM Watson IoT platform and get the device credentials	IBM Cloud Service	1.In IBM Cloud Service go to catalog 2.Create and launch the IBM Watson IoT Platform 3.Login to the Platform by clicking organization ID 4.Create a device & configure the device type and ID 5.Generate the API Key	Create a device & integrate with code	{name: 'Smartbridge', lat: 17.4219272, 'lon': 78.3488780}	Working as expected	Pass	YES	NIL	1.MUTHURAJ S 2.ANGELEENA REJI 3.ANUPAMA M 4.DIVYA L
PythonCode_TC_003	Code	Python 3.9	Verify wheather the python code is without error by running it	Software	1.Download the python version 3.9 2.Type the program and save it with the extension .py 3.Verify it by compiling the code	import json import smtplib import time import random myConfig = { "deviceId": " "apiKey": "4a1c9b6"	025-11-18 12:25:37.235 smtp.ssh.device client. DeviceClient INFO Connected successfully 4a1c9b6 deviceIdType 12345	Working as expected	Pass	YES	NIL	1.MUTHURAJ S 2.ANGELEENA REJI 3.ANUPAMA M 4.DIVYA L
Node-Red_TC_004	Non-Functional	IBM Cloud Service	Verify to create a node-red services	IBM cloud services	1. In IBM cloud go to catalog 2. To create a Node-Red app 3. Click onto Deploy App 4. Visit the app URL 5. We need to connect the Node-Red with the IBM watson	We use a grafana node to form a circle shaped range whether the child is present in the circle or not.	Successfully created the node-red	Working as expected	Pass	NO	NIL	1.MUTHURAJ S 2.ANGELEENA REJI 3.ANUPAMA M 4.DIVYA L
CloudantDB_TC_005	Dataset	IBM Cloud Service	Verify the events is stored in the database	IBM Cloud Service	1.Go to IBM Cloud Services 2.In resources list, click onto cloudant 3.Click onto the launch dashboard to redirect to the cloud DB 4.Click onto create DB	Document tracker	Successfully created the Database	Working as expected	Pass	NO	NIL	1.MUTHURAJ S 2.ANGELEENA REJI 3.ANUPAMA M 4.DIVYA L
Web UI_TC_006	Functional	Node-Red Service	To create a web UI to interact with user	Node-Red Service	1. Go to Node-Red Dashboard 2. Make the necessary connection and deploy it. 3. Copy the URL and paste it in the new tab with "ui" extension. 4. Upload the child and guardian location.	Shows the location of parent and child	And as expected it displays the Position of the child and parent	Working as expected	Pass	NO	NIL	1.MUTHURAJ S 2.ANGELEENA REJI 3.ANUPAMA M 4.DIVYA L
FlashSMS Service_TC_007	Functional	FlashSMS Service	To send SMS to the particular child's guardian	Software	1.Login to FlashSMS Service 2.GO to Dev API and select quick API 3.SMS will be sent using Flash SMS option to the registered number	Show the pop up SMS	Alert: The person is not in the particular geofence area	Working as expected	Pass	NO	NIL	1.MUTHURAJ S 2.ANGELEENA REJI 3.ANUPAMA M 4.DIVYA L

Test Scenarios

- 1.) Verify the login cloud services
- 2.) Verify create a device in the IBM Watson IoT platform and get the device credentials.
- 3.) Verify wheather the python code is without error by running it
- 4.) Verify to create a node-red services
- 5.) Verify the events is stored in the database
- 6.) To create a web UI to interact with user
- 7.) To send SMS to the particular child's guardian

8.2 User Acceptance Testing

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the [ProductName] project at the time of the release to User Acceptance Testing (UAT).

2. Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	4	4	2	0	10
Duplicate	0	0	0	1	1
External	2	0	0	1	3
Fixed	7	2	0	0	9
Not Reproduced	0	1	1	0	2
Skipped	0	0	0	0	0
Won't Fix	0	0	0	0	0
Totals	13	7	3	2	25

3. Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	1	0	0	1
Client Application	1	0	0	1
Security	1	0	0	1
Outsource Shipping	1	0	0	1
Exception Reporting	1	0	0	1
Final Report Output	1	0	0	1
Version Control	1	0	0	1

9. RESULTS

9.1 Performance Metrics:

			NFT - Risk Assessment			
S No	Project Name	Scope/feature	Functional Changes	Hardware Changes	Risk Score	Justification
1	IoT Based Safety Gadget for Child Safety Monitoring & Notification	New	No Changes	No Changes	GREEN	As we have completed the project successfully
			NFT - Detailed Test Plan			
			S No	Project Overview	NFT Test Approach	
			1	This project proposes a model for child safety through smartphones that can track their children's location and give the precise coordinates of the child's location in real-time anywhere.	Load Test	
			End Of Test Report			
S No	Project Overview	NFT Test approach	NFR - Met	Test Outcome	Approvals/SignOff	
1	The application aside from conceding you to track down your childrens when they're within five-feet range, also functions when your kids go farther afield. Its competence as a tracker is outstanding if you live in densely populated areas like cities or big towns.	Load Test	Nil	Response time meet the actual Result	Approved	

NFT Test approach	
Load Test	
Scenario Name	Load Test - Location Tracker SAMPLE PROJECT
Scenario Type	Load Test - Duration 15 minutes
Scenario Objectives	To Stimulate Python Code(Location Details) and to monitor the performance of Location Tracker SAMPLE PROJECT
Steps	1. We have integrate IBM Watson IoT Platform in order to get this Location details from python program. 2. We also integrate fast SMS service in order to send an alert to guardian or parent
Entry Criteria	Test data is set-up. All the Components(software & hardware) is set-up. It is completed successfully.
Exit Criteria	Response time meets the actual Result. Test completion report is agreed upon by mentors

10. ADVANTAGES

- 1.) Trace whereabouts and Minimise the Tragedy
- 2.) Create unassailable environment
- 3.) Toddlers in hamlet and metropolis can be saved
- 4.) ceaseless Surveillance and instantaneous notification regime
- 5.) High dependability and data accuracy
- 6.) Eradicates ambiguity and Pays way for a tech-driven community

DISADVANTAGES

- 1.) Inadequate battery supply leads to switching off the device
- 2.) Impractical to use the device forever
- 3.) Improper weather condition
- 4.) Improper connectivity
- 5.) Misplacement or losing the tag
- 6.) Over usage of data

11. CONCLUSION

The System put forward this paper to ensure the safety of children and increase their confidence. Many experimenters are operating in this area and have formulated different technologies to aid children. The key represented in this paper takes the advantage of smartphones which proposes affluent elements like Google maps, SMS, etc. The child safety and protection device is proficient in acting as a smart IoT device. It equips parents with real-time location, the surrounding temperature, and along with an alarm buzzer for their child's circumstances and the capability to locate their child. This paper depicts the fundamental design concept and functionality along with the anticipated consequence.

The application aside from conceding you to track down your children when they're within Bluetooth range, it also functions when your kids go farther afield. Its competence as a tracker is outstanding and if you live in densely populated areas like cities or big towns. This means you will be able to see the identity of the participating devices and It helps to diminish their vulnerability in harmful situations and also protects the children in emergency situations.

Parents take measures both at home and outdoors to safeguard their kids from hurting themselves. But sometimes, it's impossible to pre-empt what can cause a treacherous encounter. However, it's possible to prevent such hazards with some forethought and simple measures using these safety gadgets.

12. FUTURE SCOPE

Ceaseless Surveillance :

If any deviant readings are disclosed by the sensor, then an SMS and phonecalls are set off to the parent's mobile.

Create unassailable environment :

Precisely predicting the circumstances of the children and swiftly sensing the problems around children will make parents at ease. It helps to diminish their vulnerability in harmful situations and also protects the children in emergency situations.

Pays way for a tech-driven community :

Children and their parents are veering around to digital solutions more than ever to support children's cognition and it notifies the information about the child in a web application.

13. APPENDIX

Source Code :

```
import json
import wiotp.sdk.device
import time
myConfig = {

    "identity":{
        "orgId": "4o1qxb",
        "typeId": "TestDeviceType",
        "deviceId": "12345"
    },
    "auth": {
        "token": "pnhXvzN-sWMKv&hxyi"
    }
}
client= wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()

while True:
    name = "Smartbridge"
    #in area location

    #latitude = 17.4225176
    #longitude = 78.5456842

    #out area location
```

```
latitude= 17.4219272
longitude= 78.5488783
myData={'name': name, 'lat':latitude, 'lon': longitude}
client.publishEvent (eventId="status",
msgFormat="json", data=myData,
qos=0, onPublish=None)
print("Data published to IBM IoT platfrom:
",myData)time.sleep(5)

client.disconnect()
```

GitHub:

gh repo clone IBM-EPBL/IBM-Project-918-1658330867