

TEAM ID:PNT2022TMID23814

TEAM LEADER: GOWSIGA.V

TEAM MEMBERS:1.CHEREDDY TEJASRI

2.GOPIKA.R

3.HARSHANAA.S

ABSTRACT

As we know in present era everything is based on digital technology. Human being is going to connect each other by using mobile network. This project proposes an SMS based solution to reduced parents insecurity and to track children's in real time. Different devices are connected with a single device. The concerned device is connected to mobile via SMS. 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. The entire location data will be stored in the database. An Android app was designed and developed to collect the location data from cloud database to compute the relative distance location of a child when he or she leaves the maximum set distance, using node-red services. Finally, a user study was conducted to analyze the user experience of the system developed.

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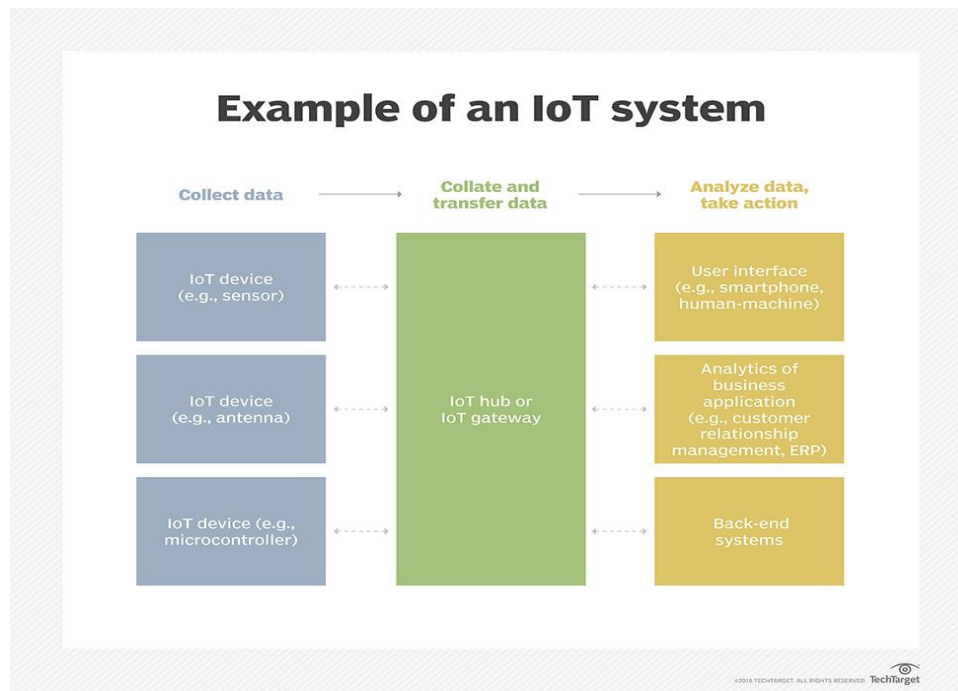
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1. INTRODUCTION

Internet of Things (IoT) is a network of physical objects or people called “things” that are embedded with software, electronics, network, and sensors that allows these objects to collect and exchange data. The goal of IoT is to extend to internet connectivity from standard devices like computer, mobile, tablet to relatively dumb devices like a toaster. IoT makes virtually everything “smart,” by improving aspects of our life with the power of data collection, AI algorithm, and networks. The thing in IoT can also be a person with a diabetes monitor implant, an animal with tracking devices, etc.

How IoT works?



An IoT ecosystem consists of web-enabled smart devices that use embedded systems, such as processors, sensors and communication hardware, to collect, send and act on data they acquire from their environments. **IoT devices** share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analyzed or analyzed locally. Sometimes, these devices communicate with other related devices and act on the information they get from one another. The devices do most of the work without human intervention, although people can interact with the devices -- for instance, to set them up, give them instructions or access the data.

PROJECT OVERVIEW

Child safety is a major concern in any society due to the vulnerability of a child and consequently, higher rates of crimes against children. With this issue on our hands, a smart wearable Internet of Things sensor network for monitoring the environment of a child can be developed to help parents ensure the safety of their children. It must also necessarily include a mechanism for tracking the child. An advantage of this wearable device is that, according to its design, it can be accessed from any mobile device and does not mandate a lot of technical knowledge from the user to operate.

PROJECT FLOW

- ✓ The GPS coordinates of the child will be sent to the IBM IoT platform.
- ✓ Location can be viewed in the Web Application.
- ✓ A parent can create a geofence in the web application.
- ✓ The web application will check if the child is inside or outside the geofence. Notifies
- ✓ the parents if the child goes out of the geofence.

To accomplish this, we have to complete all the activities and tasks listed below:

- ✓ Create and configure IBM Cloud Services
 - ii. Create IBM Watson IoT Platform
 - iii. Create a device & configure the IBM IoT Platform
 - iv. Create Node-RED service
 - v. Create a database in Cloudbant DB to store location data
- ✓ Develop a web Application using Node-RED Service.
 - vii. Develop the web application using Node-RED.
 - viii. Integrate the geofence & google map.
- ✓ Develop a python script to publish the location details to the IBM IoT platform.

PURPOSE

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. The entire location data will be stored in database.

2. LITERATURE SURVEY

& 2.2 Existing problem and Reference

1. Smart IoT Device for Child Safety and Tracking.

Authors: M Nandini Priyanka, S Murugan, K. N. H. Srinivas, T. D. S. Sarveswararao, E. Kusuma Kumari.

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 an 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. Child safety wearable device.

Authors: Akash Moodbidri, Hamid Shahnasser

Published in: 2017 IEEE.

The purpose of this device is to help parents to locate their children with ease. At the moment there are many wearables 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 wearables 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. High power efficient model will have to be used which can be capable of giving the battery life for a longer time.

3. Child Safety & Tracking Management System by using GPS.

Authors: Aditi Gupta, Vibhor Harit.

Published in: 2016 IEEE.

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 can send a quickmessage 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 behavior of child.

4. Children Location Monitoring on Google Maps Using GPS and GSM.

Authors: Dheeraj Sunehera, Pottabhatini Laxmi Priya.

Published in: 2016 IEEE.

This paper provides an Android-based solution for parents to track their children in real time. Different devices are connected with a single device through channels of internet. The concerned device is connected to a server via the Internet. The device can be used by parents to tracktheir children in real time or for women's 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.

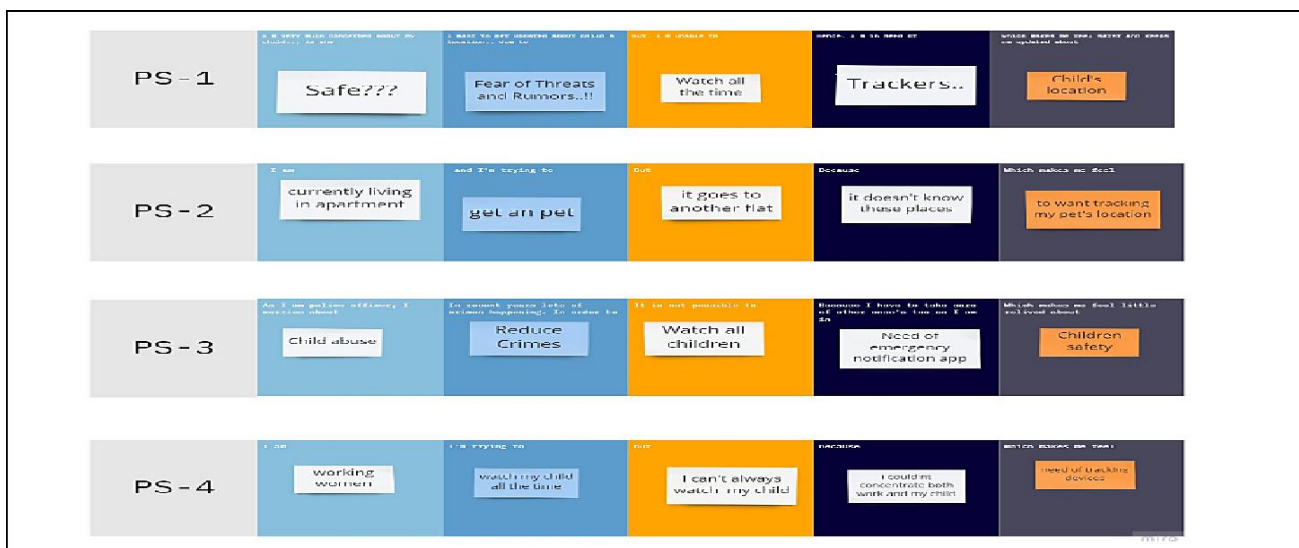
Merits:

A child tracking system using android terminal and hoc networks.

Demerits:

Thisdevice cannot be used in rural areas.

2.3 Problem Statement Definition



Empathy Map Canvas



Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Nowadays,parents concern more about serious cases such as missing children,abduction and abuse. They cannot sit with their children or 24*7 hours to securetheir children and monitor the children's activities.
2.	Idea / Solution description	Create a Child tracker which helpsthe parents with continuously monitoring the child's location. The notification will be sent according to the child's location totheir parents or caretakers. The entire location data will be stored in the database.
3.	Novelty / Uniqueness	The novelty of the work is that the system automatically alerts the parent/caretaker by sending notification,when immediate attention is required for the child during emergency
4.	Social Impact / Customer Satisfaction	make children parents more assure about their kid's security,we have a feature in our device called Geo-Fence. Geo-Fencing feature allows you to mark a particular area as safe-zone. Whenever your child crosses that specific area, you will get an instant notification on your phone.
5.	Business Model (Revenue Model)	<ul style="list-style-type: none"> ● Easy to use ● Low cost ● Weightless ● Compatible
6.	Scalability of the Solution	<ul style="list-style-type: none"> ● Gadget ensures the safety and tracking of the children ● Parents need not worry about their children.

Problem Solution

Purpose: To create a child safety gadgets

Define CS, fit into CC	1.CUSTOMER SEGMENT <ul style="list-style-type: none"> • Caretaker • Parent 	6.CUSTOMER CONSTRAINTS <ul style="list-style-type: none"> • Easy to use • compatible and weightless • low cost 	5.AVAILABLE SOLUTION <ul style="list-style-type: none"> • Knowledge about setting geofence • Device • Internet 	Explore AS, differentiate
Focus on J&P, tap into BE, understand RC	2.JOBS -TO- BE-DONE/ PROBLEMS <ul style="list-style-type: none"> • To manage data store • network connectivity? • To alert the parents in case of emergency 	9.PROBLEM ROOT CAUSE <ul style="list-style-type: none"> • Crimes • missing children • Irresponsible parents 	7.BEHAVIOUR <p>Tracking devices for kids provide you with real-time GPS details of your child's location. This is extremely useful tool when your child is walking to a friends house from any instant distance where your child's current whereabouts could be uncertain.</p>	Focus on J&P, tap into BE, understand RC
Identify strong TR & EM	3.TRIGGERS <ul style="list-style-type: none"> • social media • neighbour places • fear of losing child 4.EMOTIONS: BEFORE/ AFTER <ul style="list-style-type: none"> • Parents are panic that they lost the child • They fell happy after they find the child 	10.YOUR SOLUTION <ul style="list-style-type: none"> • Gadget ensure the safety and tracking of children. • The android app use GPS and mobile service to find the child location and secretly stored accurate location without knowing the children 	8.CHANNELS of BEHAVIOR 8.1 ONLINE <ul style="list-style-type: none"> • web application • GPS module communication 8.2 OFFLINE <ul style="list-style-type: none"> • Distance Calculations • gadget using time 	Extract online & offline CH of BE

4. REQUIREMENT ANALYSIS

Functional requirement

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	<ul style="list-style-type: none"> ✓ Registration through Gmail ✓ Registration through phone number
FR-2	User Confirmation	<ul style="list-style-type: none"> ✓ Confirmation via email ✓ Confirmation via OTP

FR-3	App installation	<ul style="list-style-type: none"> ✓ Installation through link ✓ Installation through play store
FR-4	Settings geofence	Setting by user to find child location
FR-5	Detecting child location	<ul style="list-style-type: none"> ✓ Detecting location via app ✓ Detecting location via SMS
FR-6	User Interface	<ul style="list-style-type: none"> ✓ User Login Form. ✓ Admin Login Form.
FR-7	Database	<ul style="list-style-type: none"> ✓ Stored in cloud for seamless connectivity. ✓ Parents and kids link with the distance and the location values obtained from the mobile devices are stored here. ✓ The values include parent id, kid id, distance, longitude, latitude etc.
FR-8	Server	<ul style="list-style-type: none"> ✓ It connects the database and the front end application. ✓ The backend server has been implemented to run as a service and is deployed in an IBM cloud instance. ✓ The backend server has been implemented to run as a service and is deployed in an IBM cloud instance.
FR-9	GPS tracking	The system is implemented with a GPS module, which acquires the location information of the user and stores it to the database.
FR-10	API	The value collected is sent to the database using an API.
FR-11	React JS	<ul style="list-style-type: none"> ✓ We are using react js as front end for our project. ✓ Node JS for the back end we are

		using node js.
FR-12	GPS modules	It receives data directly from satellites.
FR-13	Battery Life	<ul style="list-style-type: none"> ✓ If the child or parent forgets to charge the device for a whole day then also the device will work. That's why we aim to make this device last the whole day with one charge. ✓ It should be long-lasting.
FR-14	Location History	<ul style="list-style-type: none"> ✓ The location history will help to track the child's activity so that the aren't will be updated. Location history will be there for 30 days. ✓ For example if the child gets missing with the help of location history the aren't can track down their child's activity and also can find their child.

Non-Functional requirements

NFR NO	Non-functional Requirements	Description
NFR-1	Usability	<ul style="list-style-type: none"> ✓ Device have GSM can help to inform the parents or relatives about the current situations of the child by deliver the message immediately to save the child.
NFR-2	Security	<ul style="list-style-type: none"> ✓ Make children parents more assure about their kid's security, we have a feature in our device called Geo-Fence. ✓ Whenever your child

		crosses that specific area, you will get an instant notification on your phone.
NFR-3	Reliability	<ul style="list-style-type: none"> ✓ Portable ✓ Easy to use ✓ Flexibility
NFR-4	Performance	<ul style="list-style-type: none"> ✓ 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. ✓ The entire location data will be stored in the database.
NFR-5	Availability	<ul style="list-style-type: none"> ✓ Track your child even in a crowd ✓ Get travel details of kids at anytime ✓ Know the current location
NFR-6	Scalability	<ul style="list-style-type: none"> ✓ Gadget ensures the safety and tracking of the children. ✓ Parents need not worry about their children.
NFR-7	Valuability	The system should be able to deliver promptly to the financing authority. In the case of non-profit organizations, the

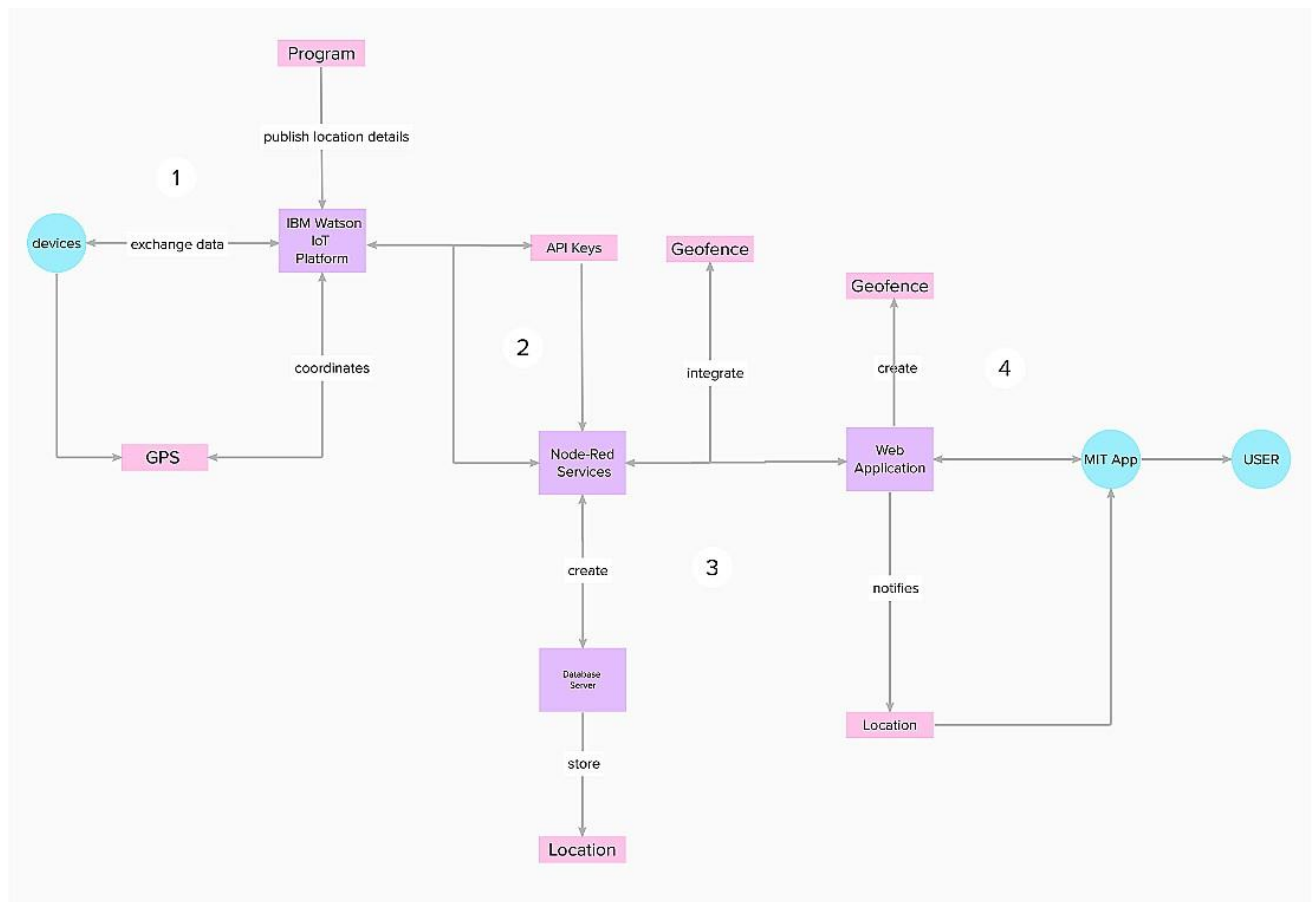
		solution should be 'advancing the mission'.
NFR-8	Usability	Device have GSM can help to inform the parents or relatives about the current situations of the child bydeliver the message immediately to save thechild.

5. PROJECT DESIGN

Data Flow Diagrams

FLows:

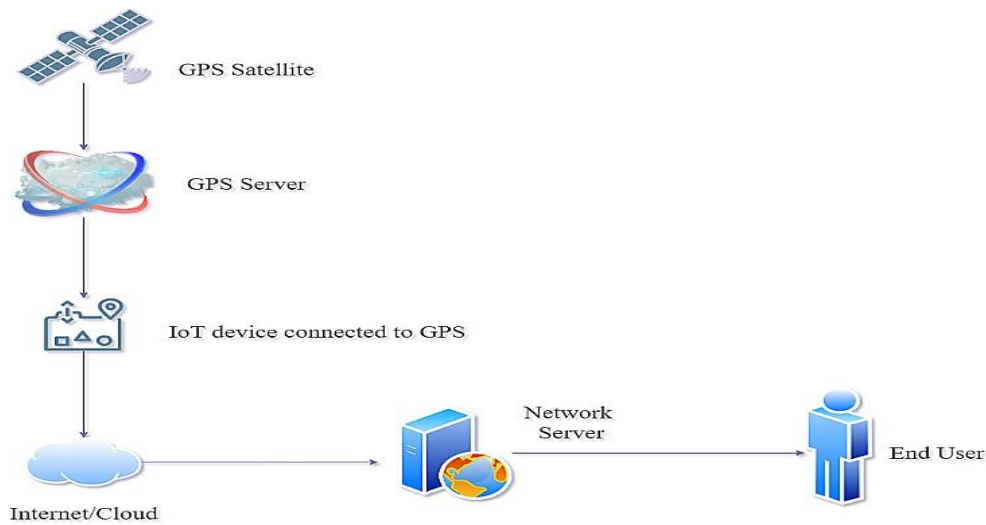
- 1.Connecting IoT devices to the Watson IoT platform and exchanging the sensor data.
- 2.The GPS coordinates of the child location will be sent to the IBM IoT platform
- 3.Creates a database in Cloudant DB to store location data.
- 4.Develop a web Application using Node-RED Service.
5. The web application will check if the child is inside or outside the geofence
- 6.Notifies and alerts the parents if the child goes out of the geofence.



Solution & Technical Architecture

SOLUTION ARCHITECTURE:

- > Using the Minimum Viable Architecture model can ultimately result in a highly polished endproduct as it relies on testing assumptions with small experiments and guiding development using the findings of said experiments.
- Providing a flexible framework that can help achieve target business objectives, MVA responds to evolving customer requirements and technologies and can go a long way in promoting agility.
- The safety of a child at a large public event is a major concern for event organizers and parents. We address this important concern and propose an architecture model of the IoT-enabled smart child safety tracking digital system.



Solution Architecture

- > This IoT-enabled digital system architecture integrates the Cloud, Mobile and GPS technology to precisely locate the geographical location of a child on an event map.
- > The proposed architecture model describes the people, information, process, and technology architecture elements, and their relationships for the complex IoT-enabled smart child safety tracking digital system

TECHNICAL ARCHITECTURE:

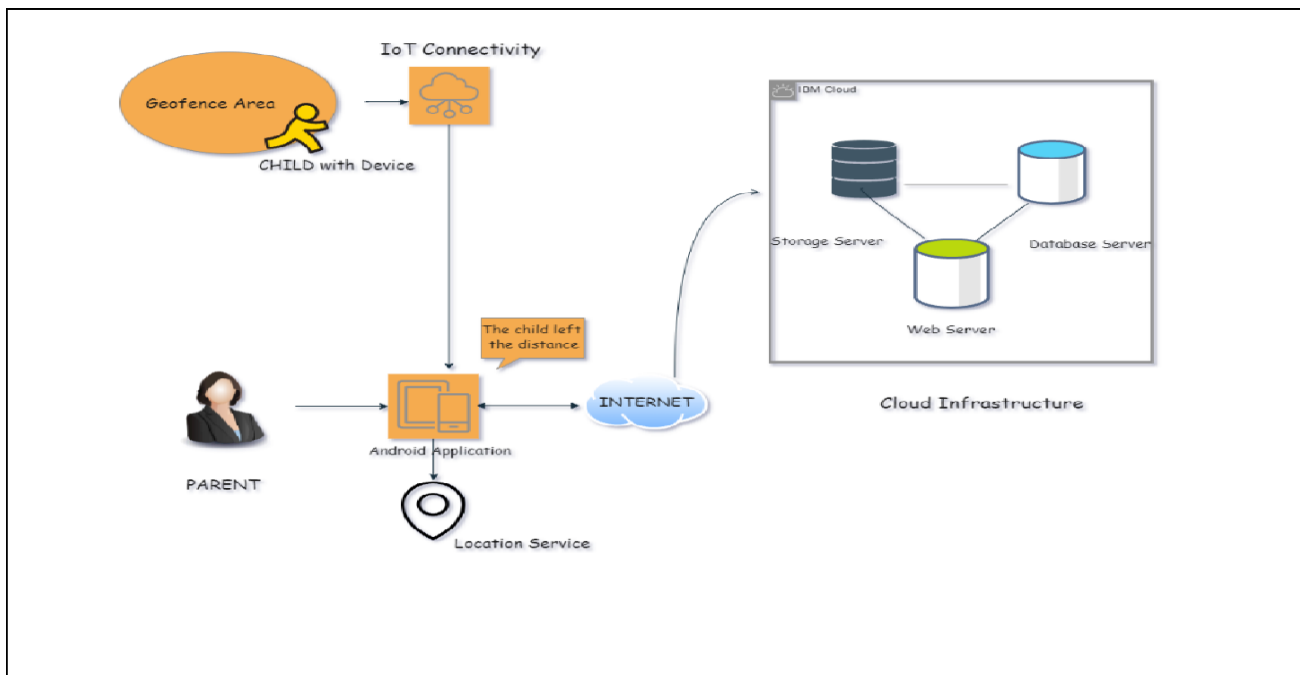


Table-1 :**Components & Technologies:**

S.No	Component	Description	Technology
1.	User Interface	Web UI	node JS
2.	Application -1	To publish location details in IBM Watson Platform	Python
3.	Application -2	Process in the IoT application	IBM Watson IoT Platform
4.	Application -3	It assists the IoT Platform	IBM Watson Assistant
5.	Database	Data Configuration & Types	IBM Bluemix & HTTP
6.	Cloud Database	Database Service on Cloud	IBM Cloudant
7.	File Storage	File storage requirements	IBM Block Data Storage
8.	External API-1	Connect the device to the IoT platform	IBM Device API
9.	External API-2	Connect the node-RED services	Location API
10.	Machine Learning Model	It uses past behaviour to identify patterns and builds models that help predict future behaviour and events	Using program condition loop
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Wireless local Server Cloud Server Configuration : IBM Cloud Server	Cloud Foundry

Table-2:**Application Characteristics:**

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Sensors, software applications & Cloud application	Open connectivity foundation
2.	Security Implementations	The technology segment focused on safeguarding	Encryptions, monitor traffic congestion, using

		connected devices and networks in the IoT	admin, device authentication
3.	Scalable Architecture	If the communication stack from the end devices to the cloud is made asynchronous, so that load times are cut down	Agile methodology, IBM architecture
4.	Availability	use of distributed servers , the system must be available 24/7	client server, server service, GPS System
5.	Performance	number of requests per sec, stimulate devices from different locations and real time system	network technologies like wifi, 4G, etc. it works with popular chip sets

User Stories

User Type	Functional Requirement	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-4
		USN-2	As a user, I will receive a confirmation email once I have registered for the application	I can receive confirmation email & get confirmed	High	Sprint-4
		USN-3	As a user, I can register for the application through browser	I can register & access the dashboard with Google Sign in	Low	Sprint-4
		USN-4	As a user, I can register for the application through Gmail	---	Medium	Sprint-4
	Login	USN-5	As a user, I can log into the application by entering	---	High	Sprint-4

			email & password			
	Dashboard	USN-6	As a user, I can see the desired information on the screen of the phone	I can access my screen	High	Sprint-2
Customer (Web user)	Users	USN-1	As a user, I can integrate all users in this account	I can configure the account, active and inactive	Medium	Sprint-2
	Web applicator	USN-2	As a web applicator, I can form backend server	I can progress the code in the server	Medium	Sprint 3
Customer Care Executive	Security	USN-1	As a customer care, I can secure the data in cloud database	I can secure the data location	High	Sprint-3

Administrator		USN-1	As a user, I can manage the application	I can configure the settings their account.	Medium	Sprint-3
Devices	Simulation	USN-1	As a user, I can connect the required parameter in device.	I can deliver the product	High	Sprint-1
		USN-2	As a user, I can activate the device	I can applicable to the child devices	Medium	Sprint-1
Message Sender	API requests	USN-1	As a message sender, API requests whenever some function is invoked from a device.	I can send or receive the from an application.	High	Sprint-2
	Fast SMS	USN-2	As a sender, I can send bulk messages using the sms	I can receive the messages in device	Low	Sprint-3
Programmer	Software	USN-1	As a programmer, I can ceate the user friendly program for ease access by parents	To configure the devices	High	Sprint-2
		USN-2	As a software, I compute coding in	To simultaneously run the device	High	Sprint-2

			devices			
Authenticator	User	USN-1	As a user, I can use identification technique in IoT device	I can emminent the security	High	Sprint-3
	Open Authorization	USN-2	As a user, I uses an open standard communication protocol	It provides tokens to the end users	Medium	Sprint-3
	Identifier	USN-3	User successfully register into the system	It stores the user's unique identification	Medium	Sprint-2
Admin	Admin Authorities	USN-1	In this other end-users are restricted	to add devices into the system	Low	Sprint-4
	User	USN-1	As a user, I can create organizations	The user to login to IoT Platform	High	Sprint-2
		USN-2	As a user, I allows admin to create & edit user accounts	For assigning access rights to user or device group	Medium	Sprint-2
		USN-2	As a software, I compute coding in devices	To simultaneously run the device	High	Sprint-2

6. PROJECT PLANNING & SCHEDULING

Sprint Planning & Estimation

Product backlog, Sprint Schedule, Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint- 1	Simulation	USN-1	As a user, I can install online simulator	1	medium	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 1		USN-2	As a user, I can connect the required parameters in device	1	high	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 1		USN-3	As a user, I can activate the device	2	medium	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 1		USN-4	As a user, I will write the code in this stimulation	3	high	Gowsiga,Tejasri ,Gopika,Harsha

Sprint- 1		USN-5	As a user, I can run the program to check whether the error is present or not.	5	high	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 2	Cloud	USN-1	As a user, I create a cloud server	2	medium	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 2		USN-2	As a user, I can enter the device specification in the created cloud	2	medium	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 2		USN-3	As a user, I can integrate device into this cloud.	3	high	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 2		USN-4	As a user, I can connect device through wifi to the cloud.	5	high	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 3	Programming Tool	USN-1	As a programmer, I can provide a browser-based editor.	2	low	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 3		USN-2	As an editor, I can easy to wire together flows using the wide range of nodes in the palette.	3	medium	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 3		USN-3	I can be deployed to its runtime in a single click.	5	high	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 3	Platform	USN-1	As a programmer, I can use Node.js platform.	3	medium	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S

			palette.			
Sprint- 3		USN-3	As a programmer, I can communicate through HTTP to the tool.	2	medium	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 4	API	USN-1	As a user, I can generate API tokens through cloud.	3	medium	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 4		USN-2	As a user, I use API keys to integrate the programming tool.	3	medium	Gowsiga.V Chereddy Tejasri,Gopika. R,Harshanaa.S
Sprint- 4		USN-3	As a user, I can register SMS services.	2	high	Gowsiga,Tejasri ,Gopika,Harsha
Sprint- 4	SMS	USN-1	As a user, I can send messages through API to the client number.	2	high	Gowsiga.V Chereddy Tejasri,Gopika.R, Harshanaa.S
Sprint- 4		USN-2	As a user, I can receive messages through inform of SMS.	2	high	Gowsiga.V Chereddy Tejasri,Gopika.R, Harshanaa.S

Sprint Delivery Schedule

Project Tracker, Velocity & Burndown Chart

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	02 Nov 2022	09 Nov 2022	12	04 Nov 2022
Sprint-2	12	6 Days	03 Nov 2022	09 Nov 2022	12	10 Nov 2022
Sprint-3	18	6 Days	04 Nov 2022	09 Nov 2022	18	16 Nov 2022
Sprint-4	12	6 Days	06 Nov 2022	09 Nov 2022	12	21 Nov 2022

Velocity:

AV for sprint-1 = $12/6 = 2$ points

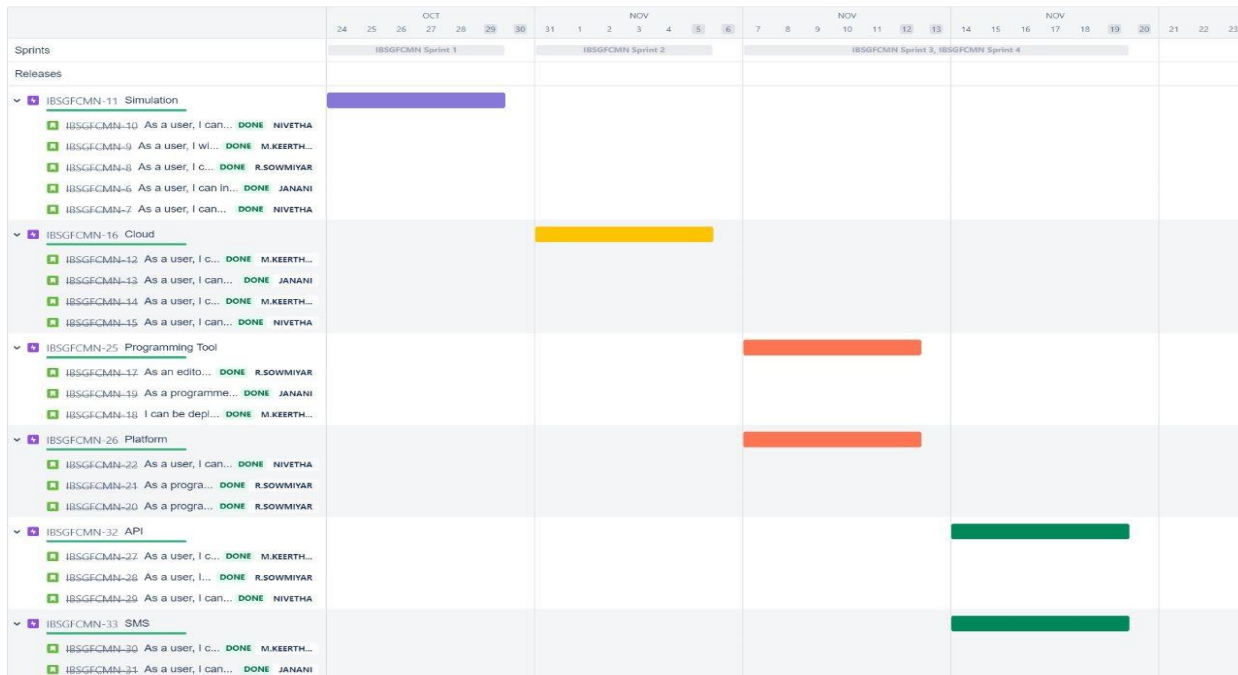
AV for sprint-2 = $12/6 = 2$ points

AV for sprint-3 = $18/6 = 3$ points

AV for sprint-4 = $12/6 = 2$ points

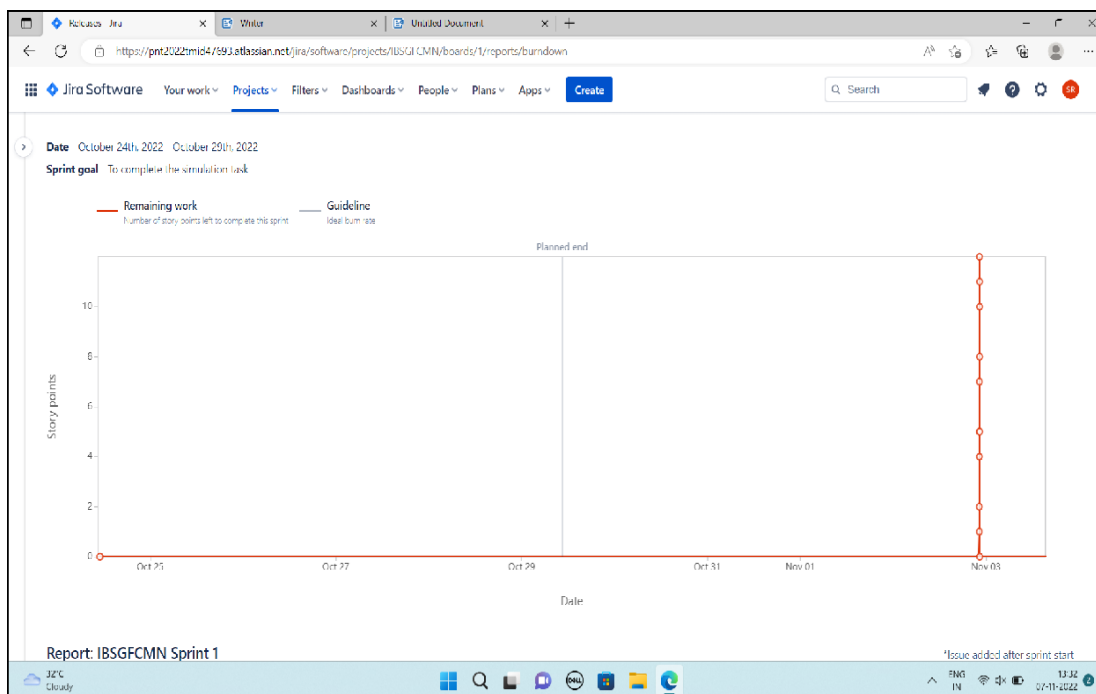
Reports from JIRA

JIRA RoadMap:

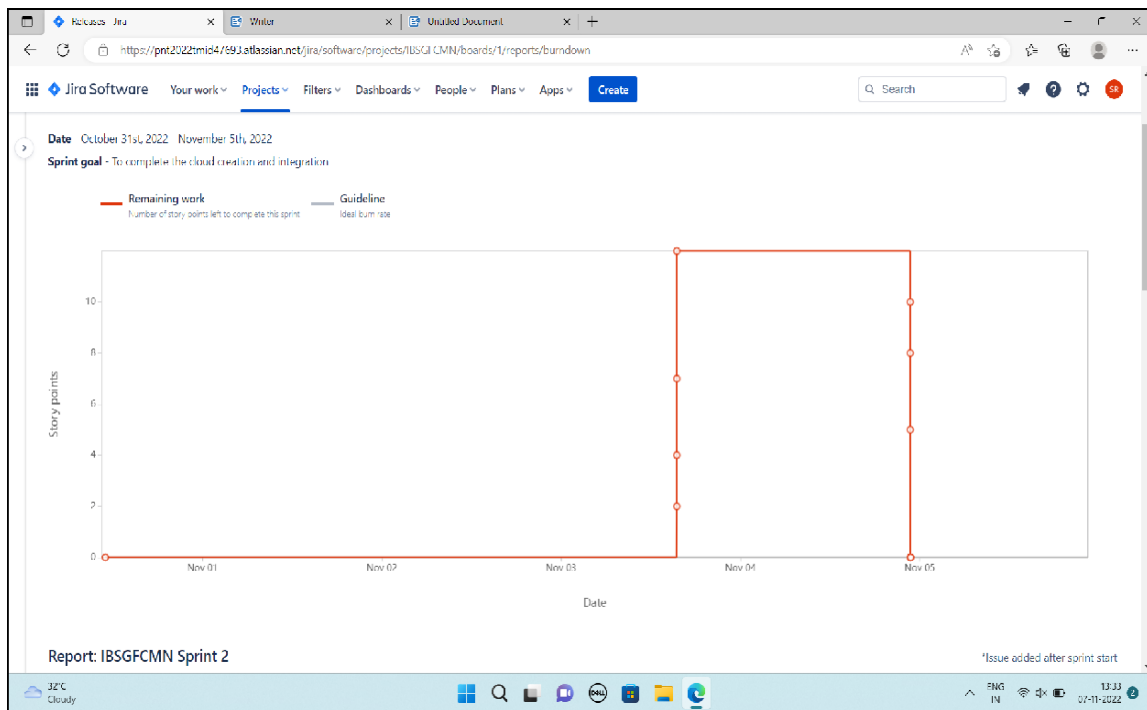


Burndown Chart:

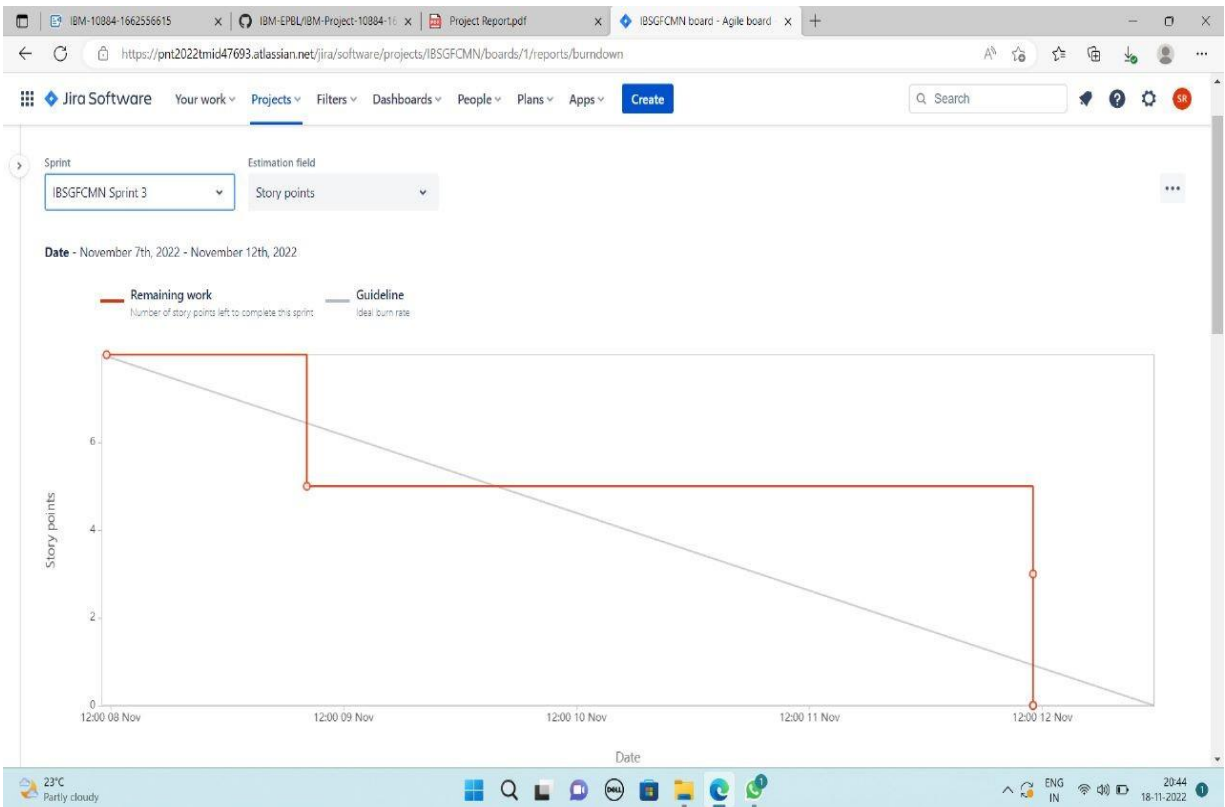
Sprint-1



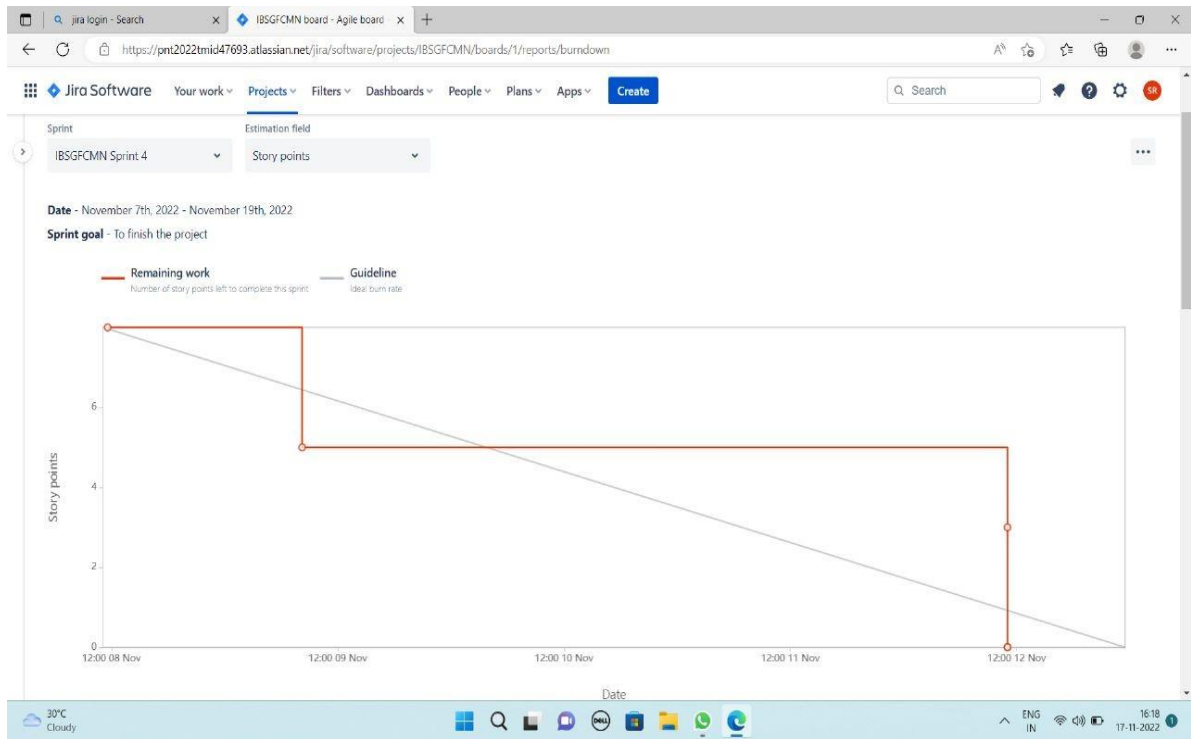
Sprint-2



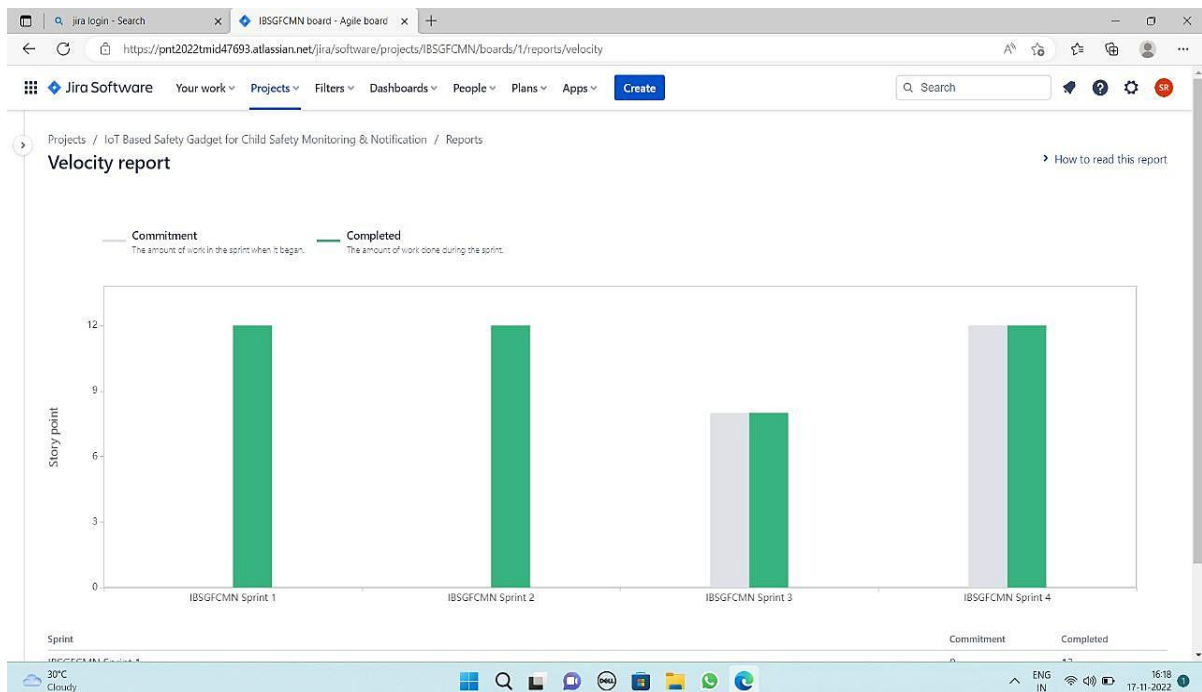
Sprint-3



Sprint-4



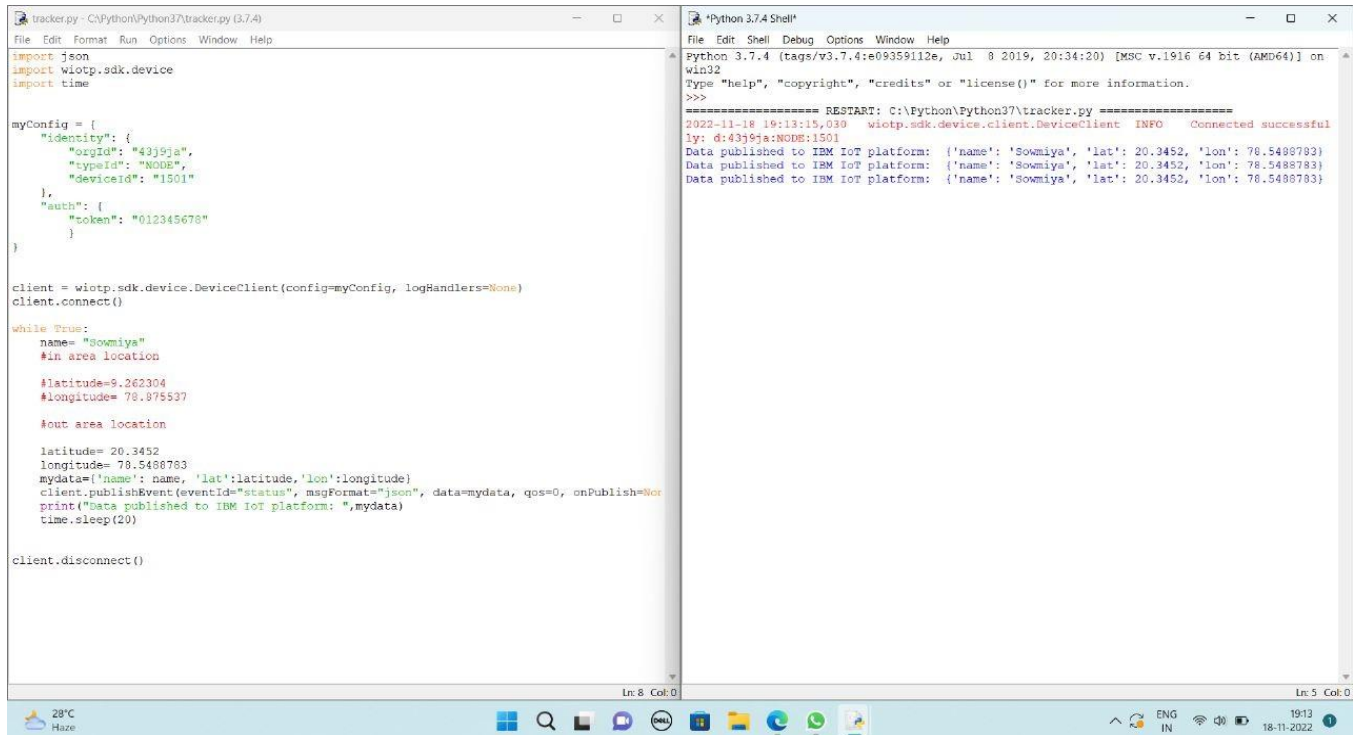
Velocity Report



7. CODING & SOLUTIONING

Feature 1 - PYTHON CODE

Instead of hardware, we are using python code. In this code we manually send location details to the IBM Watson IoT platform.



The image shows a screenshot of a Windows desktop with two windows open. The left window is a text editor titled 'tracker.py - C:\Python\Python37\tracker.py (3.7.4)'. It contains a Python script that imports json, wiotp.sdk.device, and time. It defines a configuration dictionary 'myConfig' with fields for identity (orgId, typeId, deviceId) and auth (token). It then creates a 'DeviceClient' object, connects to the IBM Watson IoT platform, and enters a loop where it publishes location data (name, latitude, longitude) to the platform every 20 seconds. The right window is a 'Python 3.7.4 Shell' showing the execution output. It displays the connection status, the restart command, and the successful connection message. It also shows the data being published to the IBM IoT platform, including the name 'Sowmiya' and coordinates (20.3452, 78.5488783).

```
tracker.py - C:\Python\Python37\tracker.py (3.7.4)
File Edit Format Run Options Window Help

import json
import wiotp.sdk.device
import time

myConfig = {
    "identity": {
        "orgId": "43j9ja",
        "typeId": "NODE",
        "deviceId": "1501"
    },
    "auth": {
        "token": "012345678"
    }
}

client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()

while True:
    name= "Sowmiya"
    #in area location
    #latitude=9.262304
    #longitude= 78.975537

    #out area location

    latitude= 20.3452
    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 platform: ",mydata)
    time.sleep(20)

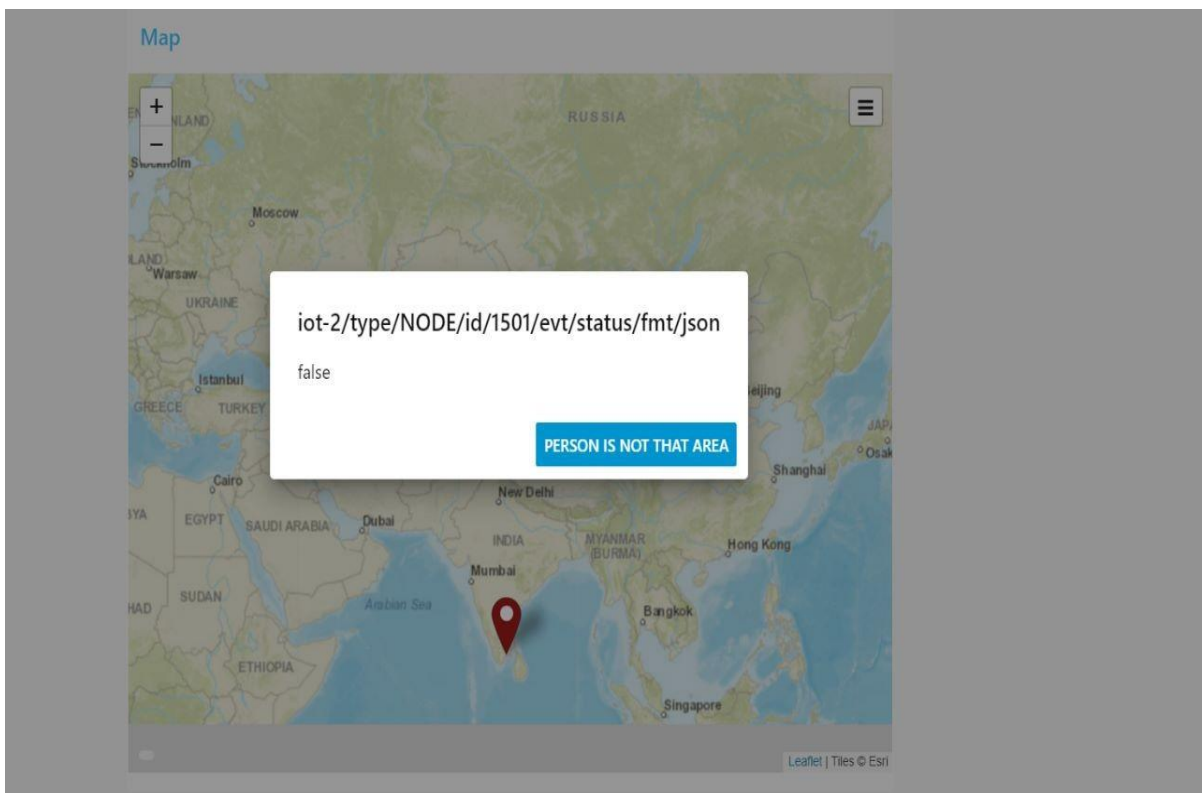
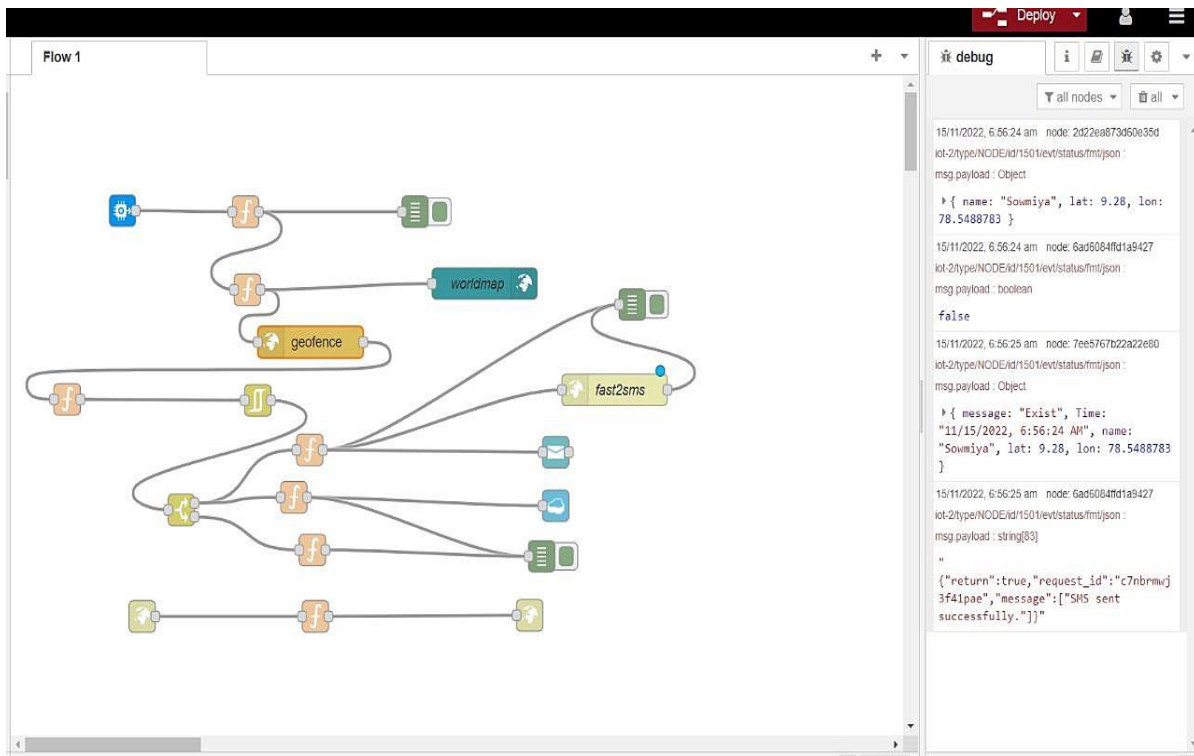
client.disconnect()

Python 3.7.4 Shell
File Edit Shell Debug Options Window Help

Python 3.7.4 (tags/v3.7.4:09359112e, Jul 8 2019, 20:34:20) [MSC v.1916 64 bit (AMD64)] on
win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Python\Python37\tracker.py =====
2022-11-18 19:13:15.039 wiotp.sdk.device.client.DeviceClient INFO Connected successful
ly: 6:43j9ja:NODE:1501
Data published to IBM IoT platform: {'name': 'Sowmiya', 'lat': 20.3452, 'lon': 78.5488783}
Data published to IBM IoT platform: {'name': 'Sowmiya', 'lat': 20.3452, 'lon': 78.5488783}
Data published to IBM IoT platform: {'name': 'Sowmiya', 'lat': 20.3452, 'lon': 78.5488783}
```

Feature 2 -NODE-RED Service

- Once we get the location details in the IBM Wastson IoT Platform , We are extracting that data into the NODE-RED Service.
- We are going to pass the data to geofence node it is going to check whether that particular person in that area or not.
- Along with the entire data, we are store the location details in Cloudant database.
- If the child crosses the location, we are showing web UI pop-up alert



Feature 3 - Fast2sms

Whenever that person is not in that area , we are going to send fast SMS to that particular child's guardian.

Alert : Gowsiga is not in that area.

Alert : Gowsiga is not in that area.

Feature 4 - Mobile App

In addition we are using mobile app to view the location details along with child name.

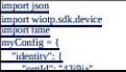





8. TESTING

Test Scenarios

1. Verify python code is run without error.
2. Verify the login the Cloud Services.
3. Verify create a device in the IBM Watson IoT platform and get the device credentials.
4. Verify the events is shown in the card.
5. Verify the events is stored in the database.
6. Verify to create a node -red services.
7. To create a web UI to interact with user.
8. To send SMS to the particular child's guardian.
9. Verify user is able to log into app with Valid credentials.
10. Verify it show the location in app.

Test cases

Sprint	Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	TC for Automation(Y/N)	BUG ID	Executed By
Sprint-1	PythonCode_TC_OO1	Code	Python3.7.4	Verify python code is run without error	Software	1.Download the python version3.7.4 2.Type the program and save it 3.Verify it is run continuously		2022-11-16 15:17:30.513 wiotp.sdk.device.client.DeviceClient INFO Connected successfully: 4-4379a-NODE1501 Data published to IBM IoT platform: {\"name\": \"Sowmiya\", \"lat\": 9.28, \"lon\": 78.5488783}	Working as expected	Pass	YES	NIL	Janani
Sprint-2	IBMCLOUD_TC_OO2	Functional	IBM Cloud Services	Verify the login the Cloud Services	IBM Cloud Services	1.Login in cloud.ibm.com 2.Obtain promocode in ICT	email id: 	Successfully created the IBM account	Working as expected	Pass	YES	NIL	Keerthana
Sprint-2	IBM Watson IoT Platform_TC_OO3	Functional	IBM Cloud Services	Verify create a device in the IBM Watson IoT platform and get the device credentials.	IBM Cloud Services	1.In IBM Cloud Service go to catalog 2.To create an Internet of things platform 3.Launch the IBM Watson IoT Platform 4.Login the Platform by clicking organization ID 5.Create a device & configure the	Create a device & integrate with code	{\"name\": \"Sowmiya\", \"lat\": 9.28, \"lon\": 78.5488783}	Working as expected	Pass	YES	NIL	Nivertha
Sprint-2	Board_TC_OO4	Non-Functional	IBM Cloud Services	Verify the events is shown in the card	IBM Cloud Services	1.Go to IBM Watson IoT Platform 2.Create the board 3.Create name board 4.Create latitude board	BOARD: LOCATION	Test: Sowmiya Gauge: Latitude Gauge: Longitude	Working as expected	Pass	YES	NIL	Sowmiya
Sprint-2	CloudantDB_TC_OO4	Dataset	IBM Cloud Services	Verify the events is stored in the database	IBM Cloud Services	1.Go to IBM Cloud Services 2.In resources list, click on cloudant 3.In database, create a document to	Document: tracker	Successfully created the Database	Working as expected	Pass	NO	NIL	Nivertha
Sprint-3	NodeRedService_TC_OO5	Functional	IBM Cloud Services	Verify to create a node -red services	IBM Cloud Services	1.In IBM Cloud Service go to catalog 2.To create a NODE-RED app 3. Deploy the app 4.Visit the app URL 5.In node-red, we need to connect	Using groffence node, we create in form of circle to check whether the child in that area or not		Working as expected	Pass	NO	NIL	Keerthana
Sprint-3	WebUI_TC_OO6	Functional	Node-Red Service	To create a web UI to interact with user	Node-Red Service	1.Go to dashboard 2.Open a link UI dashboard 5.Display the location 4.pop up SMS if person not in area	Show the pop up SMS in UI		Working as expected	Pass	NO	NIL	Janani
Sprint-4	FastSMS Service_TC_OO7	Functional	Fast2SMS Service	To send SMS to the particular child's guardian	Software	1.Login Fast2SMS Service 2.GO to Dev API 3.Sending SMS using HTTP Package	Show the pop up SMS	Alert: Sowmiya is not in that area	Working as expected	Pass	NO	NIL	Sowmiya
Sprint-4	MobileApp_TC_OO8	Functional	MIT APP Inventor	Verify user is able to log into app with Valid credentials	Software	1.Login MIT APP Inventor 2.Design Frontend & Backend	Username:sowmiya Password:****	User should navigate to next screen	Working as expected	Pass	YES	NIL	Nivertha
Sprint-4	MobileApp_TC_OO9	Functional	MIT APP Inventor	Verify it show the location in app	Software	1.Login MIT APP Inventor 2.Design Frontend & Backend 3.Connect to node -red	Name: Sowmiya Latitude: ***** Longitude: *****	The App shows the location value	Working as expected	Pass	NO	NIL	Sowmiya

User Acceptance Testing

1.Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the [IoT Based Safety Gadget For Child Safety Monitoring & Notification] 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	5	3	2	0	10
Duplicate	0	0	0	1	1
External	2	0	0	1	3
Fixed	6	2	0	0	8
Not Reproduced	0	1	1	0	2
Skipped	0	0	0	0	0
Won't Fix	0	0	0	0	0
Totals	13	6	3	2	24

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	2	0	0	2
Security	1	0	0	1
Outsource Shipping	1	0	0	1
Exception Reporting	1	0	0	1
Final Report Output	2	0	0	2
Version Control	2	0	0	2

9. RESULTS

Performance Metrics

NFT - Risk Assessment						
S.No	Project Name	Scope/feature	Functional Changes	Hardware Changes	Software Changes	Risk Score
1	IoT Based Safety Gadget for Child Safety Monitoring & Notification	Existing	No Changes	No Changes	No Changes	GREEN
Justification: As we have completed the project successfully						

NFT - Detailed Test Plan		
S.No	Project Overview	NFT Test approach
1	Track the location & send an alert to the particular's person	Load Test

End Of Test Report				
S.No	Project Overview	NFT Test approach	Test Outcome	Approvals/SignOff
1.	We need to Track the location of particular child suppose, If the child crosses the geofence. It is send SMS to that parents/guardian then we need to track the location.	Load Test	Response time meets the actual Result.	Project's Mentors

NFT Test approach	
Load Test	
Scenario Name	Load Test - Location Tracker SAMPLE PROJECT
Scenario Type	Load Test - Duration 30 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. CONCLUSION

This Project demonstrates smart IoT devices for child safety tracking and monitoring, to help the parents to locate and monitor their children.

We have integrate IBM Watson Iot Platform in order to get this location details (i.e. latitude & longitude) from python program and we also integrate Fast SMS service inorder to send an alert to guardian/ parent.

The system also consists of mobile app and send all the monitored parameters to cloud on parental phone.

