Project Report

IOT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING AND NOTIFICATION

TEAM ID:PNT2022TMID14122

TEAM MEMBERS:

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1.INTRODUCTION

1.1 Project Overview

The Internet of Things (IoT) plays a vital role in day-to-day life. The major difference between IoT and the embedded system is that a dedicated protocol/software is embedded in the chip in the case of an embedded system, whereas, IoT devices are smart devices, which are able to seize decisions by sensing the environment around the device. The Internet of Things is increasingly finding a place at the heart of many business automation strategies. Companies are using sensors in the logistics chain to help them track where delivery is with extraordinary accuracy.

The motivation for this wearable comes from the increasing need for safety for little children in contemporary times as there could be scenarios of the child getting adrift in a major crowded sector. This paper focuses on the key aspect that a missing child can be assisted by the people around the child and can play a remarkable role in the child's safety until reunited with the parents. If any deviant readings are disclosed by the sensor, then an SMS and phone calls are set off to the parent's mobile. Also, it overhauls the parental app through the cloud.

The technique is equipped with GSM and GPS modules for sending and receiving calls, and SMS between the safety gadget and the parental phones. The system also consists of a Wi-Fi/cellular data module used to implement IoT and send all the monitored parameters to the cloud for android app monitoring on the parental phones. The panic alert system is used during panic situations alerts are sent to the parental phone, seeking help also the alert parameters are updated to the cloud. Most of the wearables available today are focused on providing the location, and activity of the child to the parents.

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 today's world children are less secure and have many issues concerning their security purpose. More family's spent their time for work and social accountability but since Children are gifts of GOD they need the care of family. The current status of our country is not habitable for monitoring children in school. With the absence of a child monitoring system, it is hard to monitor the whereabouts of children. Underage children may be impulsive in the way they act and in places to be. Most of the human behaviour is shaped in the childhood stage, in order to get morally acceptable behaviour child monitoring system is necessary. Children are prone to many accidents. The safety of children is very indispensable as children cannot protect themselves.

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.

2.2 References

[1] M. Madhuri, A. Q. Gill and H. U. Khan, "IoT-Enabled Smart Child Safety Digital System Architecture," 2020 IEEE 14th International Conference on Semantic Computing (ICSC), 2020, pp. 166-169, doi: 10.1109/ICSC.2020.00033.

[2] A. Srinivasan, S. Abirami, N. Divya, R. Akshya and B. S. Sreeja, "Intelligent Child Safety System using Machine Learning in IoT Devices," 2020 5th International Conference on Computing, Communication and Security (ICCCS), 2020, pp. 1-6, doi: 10.1109/ICCCS49678.2020.9277136.

[3] B. Ranjeeth, B. S. Reddy, Y. M. K. Reddy, S. Suchitra and B. Pavithra, "Smart Child Safety Wearable Device," 2020 International Conference on Electronics and Sustainable Communication Systems (ICESC), 2020, pp. 116-120, doi: 10.1109/ICESC48915.2020.9156001.

[4] M. Benisha et al., "Design of Wearable Device for Child Safety," 2021 Third International Conference on Intelligent Communication Technologies and Virtual Mobile Networks (ICICV), 2021, pp. 1076-1080, doi: 10.1109/ICICV50876.2021.9388592

2.3 Problem Statement Definition

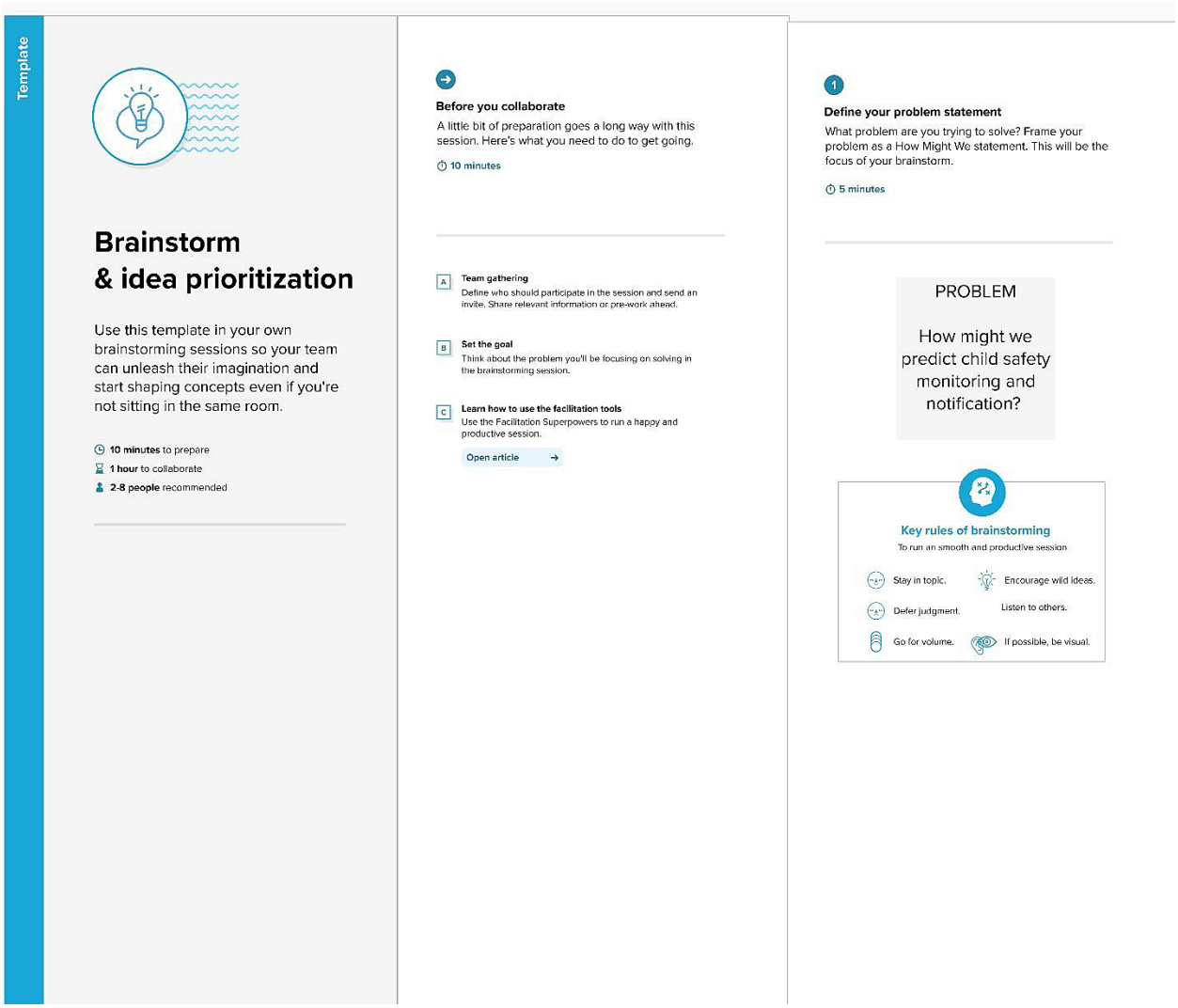
It has been a major threat to children from or in opposition to any perceived real danger/risk. Most of the kids have been abducted by strangers, which is a more frequent event nowadays. Child abduction continues to be a major issue and it has an utmost impact on the affected families. Child abduction 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. Child abductors often kidnap children from legally appointed guardians to get the ransom and for their personal benefit. The out-turn of abduction can be seriously pessimistic and enduring, more actions must be taken to protect children against abduction and its effects.

3. IDEATION & PROPOSED SOLUTION

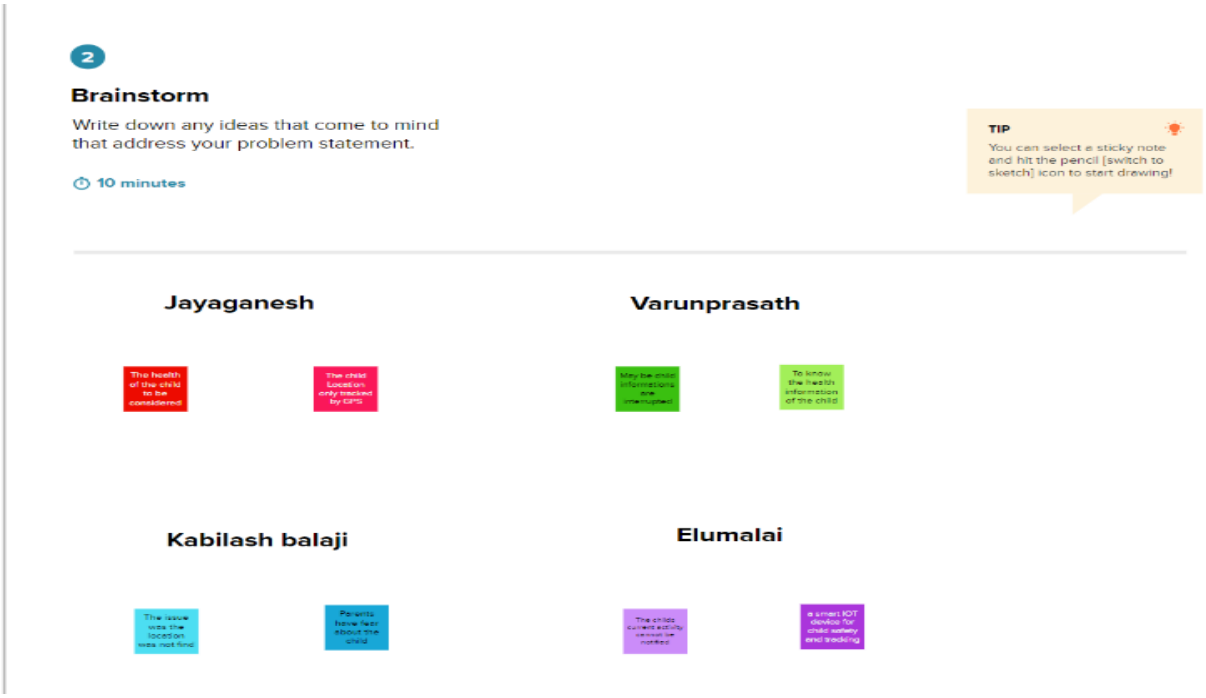
3.1 Empathy Map Canvas

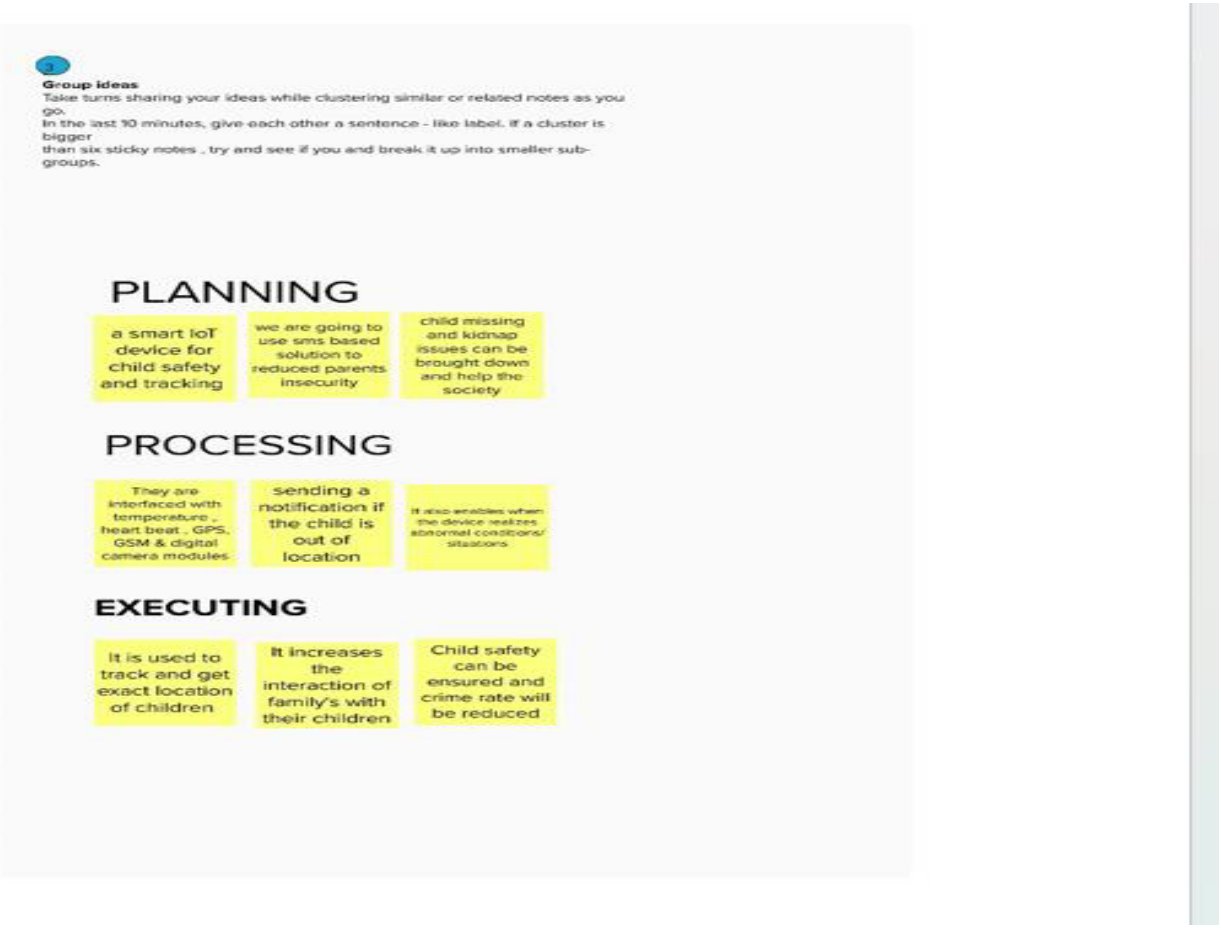
3.2 Ideation & Brainstorming

Step:1

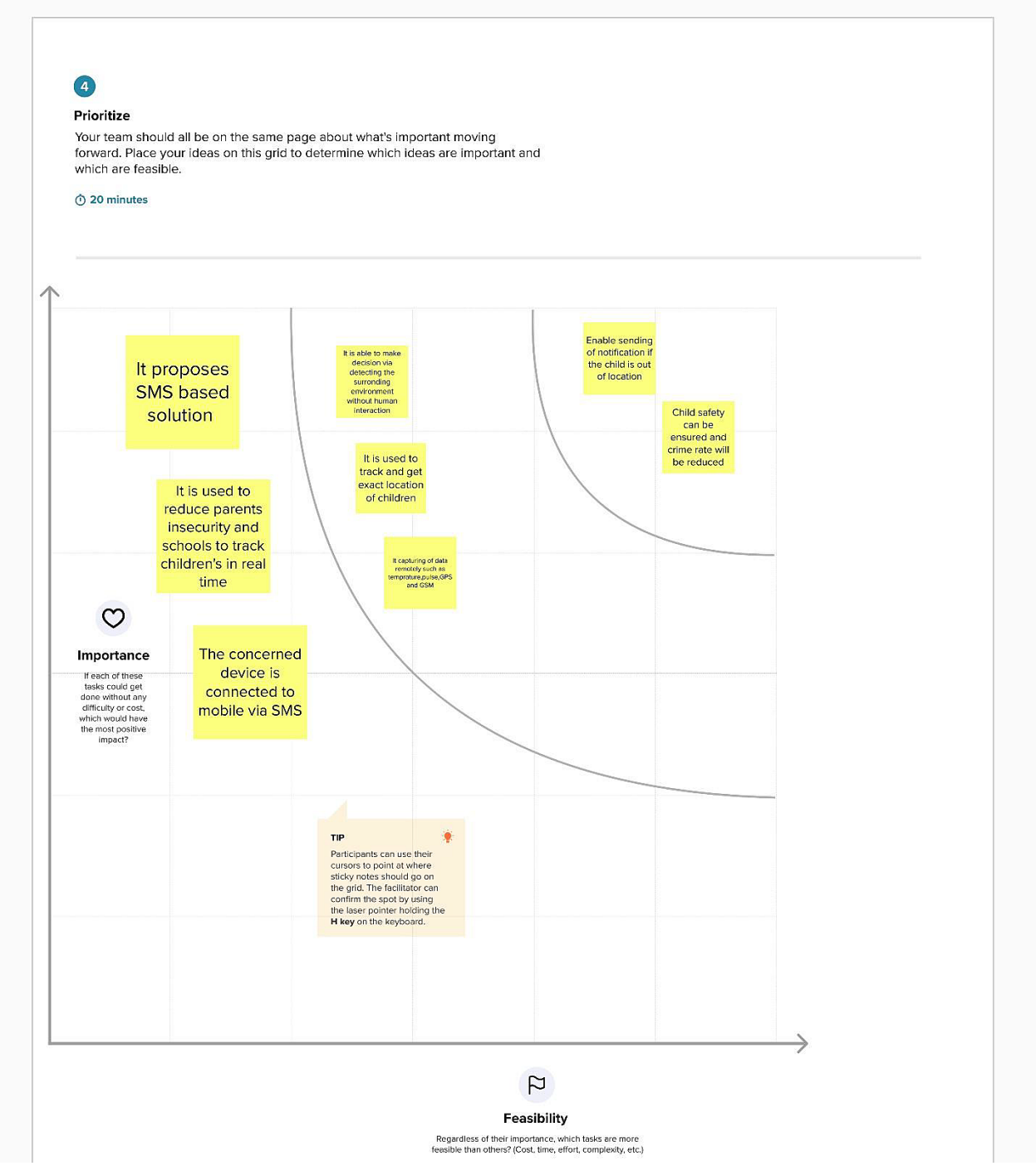


Step:2


2
Brainstorm
Write down any ideas that come to mind that address your problem statement.
10 minutes
TIP
You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!
Jayaganesh
The health of the child to be considered
The child Location only tracked by GPS
Varunprasath
May be child informations are interrupted
To know the health information of the child
Kabilash balaji
The issue was the location was not find
Parents have fear about the child
Elumalai
The child current activity cannot be noticed
a smart IOT device for child safety and tracking


3
Group ideas
Take turns sharing your ideas while clustering similar or related notes as you go.
In the last 10 minutes, give each other a sentence - like label. If a cluster is bigger
than six sticky notes , try and see if you and break it up into smaller sub-groups.
PLANNING
a smart IoT device for child safety and tracking
we are going to use sms based solution to reduced parents insecurity
child missing and kidnap issues can be brought down and help the society
PROCESSING
They are interfaced with temperature , heart beat , GPS, GSM & digital camera modules
sending a notification if the child is out of location
It also enables when the device realizes abnormal conditions/ situations
EXECUTING
It is used to track and get exact location of children
It increases the interaction of family's with their children
Child safety can be ensured and crime rate will be reduced

Step:3

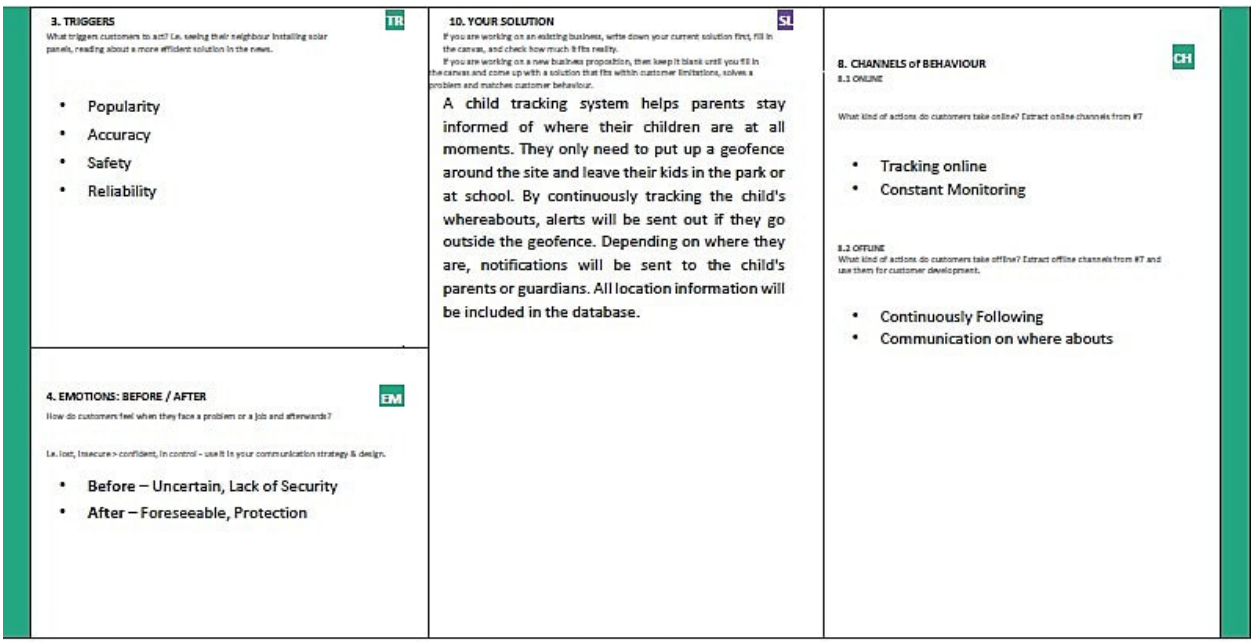

4
Prioritize
Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.
20 minutes
It proposes SMS based solution
It is able to make decision via detecting the surronding environment without human interaction
Enable sending of notification if the child is out of location
Child safety can be ensured and crime rate will be reduced
It is used to track and get exact location of children
It is used to reduce parents insecurity and schools to track children's in real time
It capturing of data remotely such as temprature,pulse,GPS and GSM
The concerned device is connected to mobile via SMS
Importance
If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?
TIP
Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the H key on the keyboard.
Feasibility
Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)

3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Schools and parents are concerned about their children's transportation to and from school and other locations. As a result, ensuring the safety and monitoring of schoolchildren is incredibly difficult.
2.	Idea / Solution description	A child monitoring system assists parents in constantly monitoring their child's location. They can simply leave their children at school or in parks and set up a geofence around the location. Notifications will be generated if the child crosses the geofence by continuously monitoring the child's location. Notifications will be sent to the child's parents or caregivers based on their location. The database will incorporate all of the location data.
3.	Novelty / Uniqueness	Since the IBM Watson IoT Platform is a managed cloud-hosted solution offering device connectivity, control, visualisation, and overall device visibility and management, using it in conjunction with node red and TinkerCAD simulation gives our solution an added edge. It offers a user interface (UI) where users may add and manage devices, manage access to IoT services, and utilise Node-RED to connect data flows between nodes in order to build functionality.
4.	Social Impact / Customer Satisfaction	1. Reasonably priced 2. Simple to perceive 3. Ensure security 4. Timeliness
5.	Business Model (Revenue Model)	KEY RESOURCES 1. IBM Watson IoT Platform 2. NODE – RED • Tinker-CAD Simulation CUSTOMER SEGMENTATION 1. Parents 2. Care Takers 3. Teachers

			CUSTOMER RELATIONSHIPS 1. User friendly 2. Specialised care 3. Efficient communication	MARKETING 1. Awareness Programme 2. Workshops 3. Social Media
6.	Scalability of the Solution	By adopting a networked information cloud through IoT, the major goal is to offer children with better and more effective security so that professionals and parents may use this information. The finished product will have more features and be well-equipped. The ability of the necessary system design to address the specified problem area may be enhanced by the composition of more varied purpose equipment's.		

3.4 Problem Solution fit



4. REQUIREMENT ANALYSIS

4.1 Functional requirement

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Email Registration through Mobile number Registration in person
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Notifications	Email and SMS message
FR-4	User Interface	Mobile app for parents Web interface for registrations, record tracking, information and payment

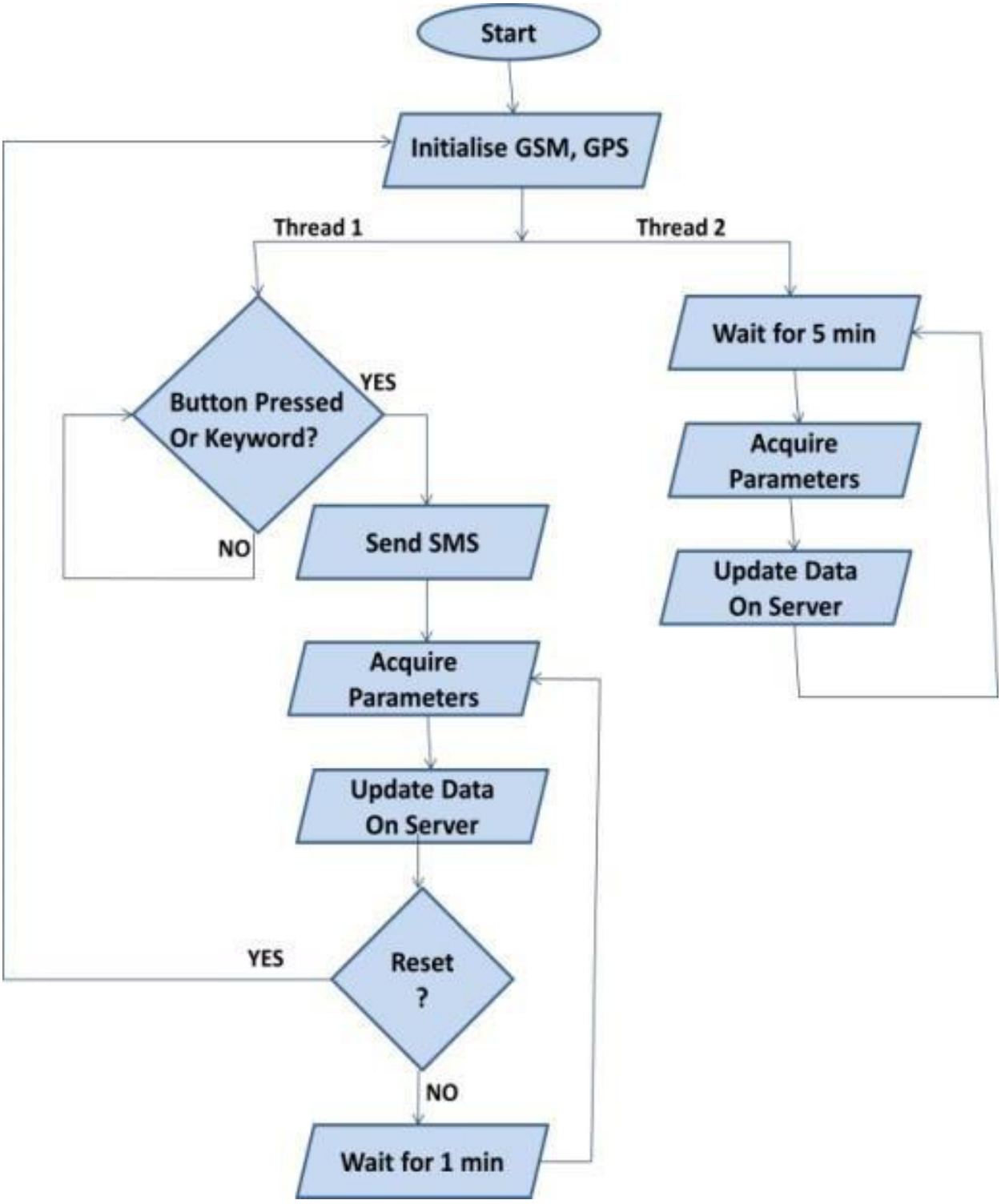
4.2 Non-Functional requirements

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	To find out whether the child crosses the geo-fence or not, upon which the parent/guardian of the child gets an alert.
NFR-2	**Security**	Database security must meet HIPAA requirements. Extra security protocols and measures are also in Place.
NFR-3	**Reliability**	Webpage gets automatically logged out unless password has been saved in the Google account. In case of server crash data gets backed up beforehand.
NFR-4	**Performance**	Site gets updated every 1 hour. Speed per transaction depends on the internet strength.
NFR-5	**Availability**	Available world -wide, and requires an internet source.
NFR-6	**Scalability**	Short term scalability where memory is stored and erased, can be scaled to keep records in the future.

5. PROJECT DESIGN

5.1 Data Flow Diagrams



5.2 Solution & Technical Architecture

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 discreet team members, and it 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:

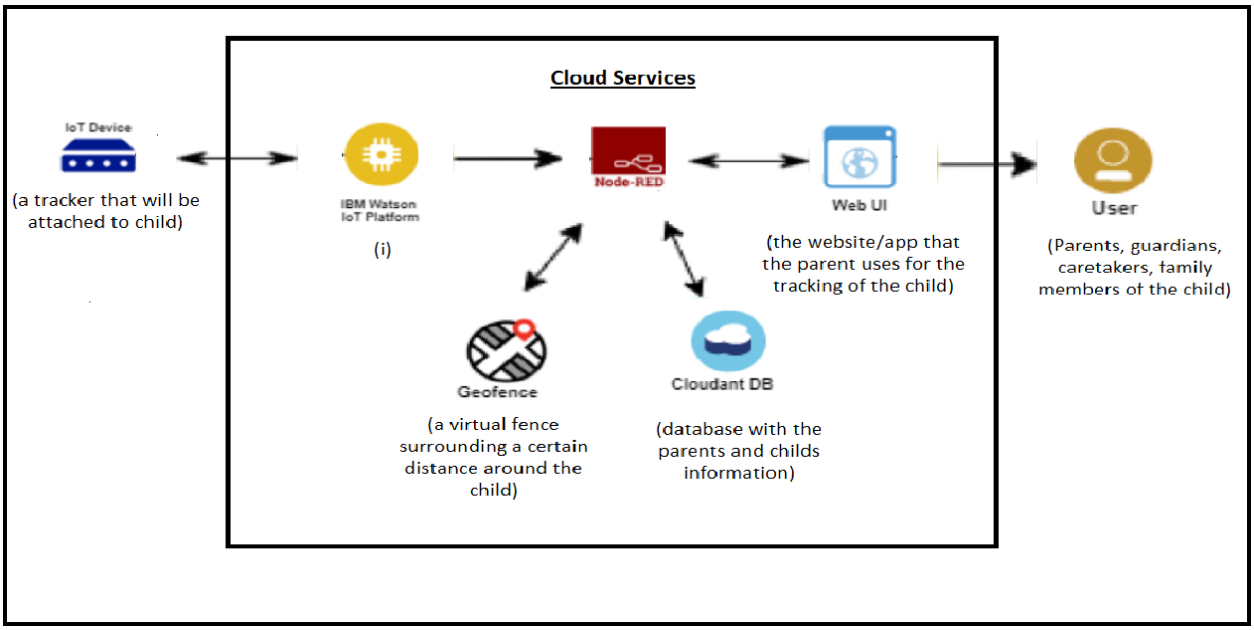
An emergency notification system is a labour saving mechanism to get in touch with a group of people within a corporation and assign salient information during a crisis.

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.

Solution Architecture Diagram:



5.2.3 User Stories

User Type	Functional Requirement (Epic)	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-1
	Confirmation	USN-2	As a user, I will receive a confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail	I can register & access the dashboard with a Gmail account Login	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering my email & password	I can receive a Verification Mail and Verify it.	High	Sprint-1
	Dashboard	USN-6	As a User, I can Navigate to the Dashboard after successfully Login to the Application.	I can view the locations which are accumulated in the database and other options available on the Platform via the dashboard	High	Sprint-2
Customer (Web user)	Notification	USN-7	As a user when there is an anomalous situation with the child, a notification will be received through the fencing application.	An alert message is sent to the parent's mobile and received if the user is engaged in the fencing application.	High	Sprint-1
Customer Care Executive	Support	USN-8	As a User, I can connect with experts to clear Queries, they assist to overcome challenges by scanning for any glitches and monitoring the operation and by checking if all the users are authorized.	I can login with my given credentials to chat/call them and get clarity about any intricacies.	Medium	Sprint - 3
Administrator	Login	USN-9	As an Administrator, I can set the Geofence Location Limit and make sure the database encompassing the locations is secure, factual and updated constantly.	I can log in with my provided credentials and can exploit the prospects Open on the Dashboard.	High	Sprint - 3

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & 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	Jayaganesh, Kabilashbalaji, Varunprasath, Elumalai
Sprint-1	User confirmation	USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Jayaganesh, Kabilashbalaji, Varunprasath, Elumalai
Sprint-2	user login	USN-3	Setting up user ID and password	1	high	Jayaganesh, Kabilashbalaji, Varunprasath, Elumalai
Sprint-1	App permission	USN-4	Grant the permission to access the app to check out the location of the children.	2	Medium	Jayaganesh, Kabilashbalaji, Varunprasath, Elumalai
Sprint-1	Interfacing	USN-5	Connecting the device with the registered Application.	1	High	Jayaganesh, Kabilashbalaji, Varunprasath, Elumalai

Sprint	Functional Requirement (Epic)	User Story / Task	User Story Number	Story Points	Priority	Team Members
	Setting Geofence	Setting up geofence location and its coordinates	USN-6	2	Medium	Jayaganesh, Kabilashbalaji, Varunprasath, Elumalai
Sprint 4	user notification	To develop a module to notify the user in case of possible emergency	USN -7	2	High	Jayaganesh, Kabilashbalaji, Varunprasath, Elumalai
Sprint 2	Tracking location	Live location can be tracked using sensor	USN-8	1	High	Jayaganesh, Kabilashbalaji, Varunprasath, Elumalai

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

Velocity:

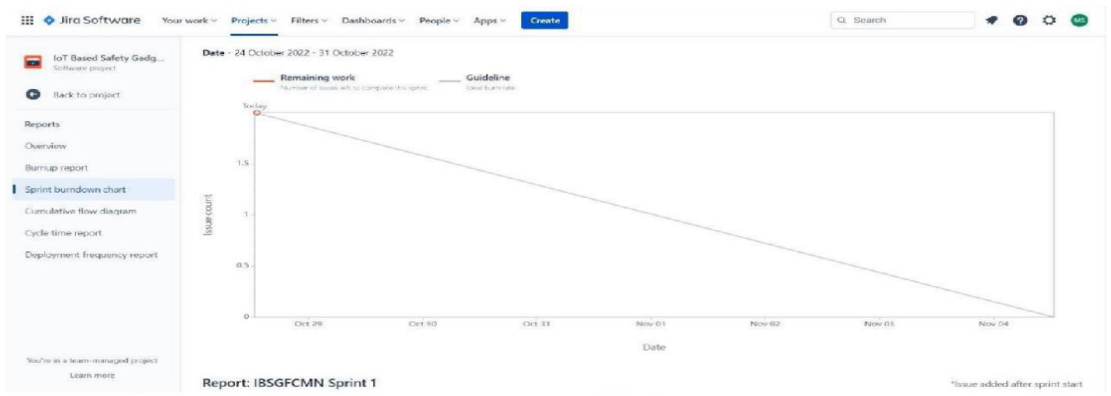
$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

6.2 Sprint Delivery Schedule:

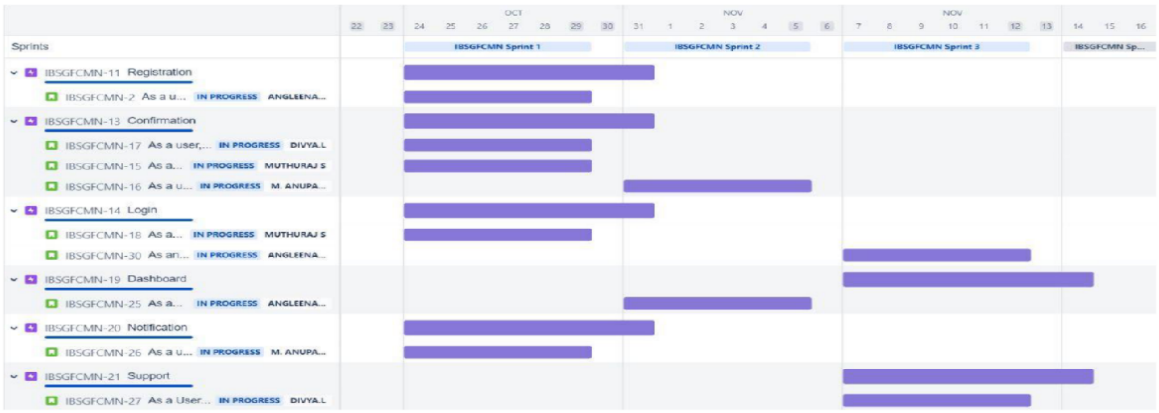
Sprint	Duration	Sprint Start Date	Sprint EndDate (Planned)	Sprint ReleaseDate (Actual)
Sprint-1	6 Days	24 Oct 2022	29 Oct 2022	29 Oct 2022
Sprint-2	6 Days	31 Oct 2022	05 Nov 2022	05 Nov 2022
Sprint-3	6 Days	07 Nov 2022	12 Nov 2022	12 Nov 2022
Sprint-4	6 Days	14 Nov 2022	19 Nov 2022	19 Nov 2022

6.3 Reports from JIRA:

Burndown Chart:



Road Map: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Sprints
IBSGFCMN Sprint 1
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IBSGFCMN Sprint 3
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IBSGFCMN-11 Registration
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IBSGFCMN-13 Confirmation
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IBSGFCMN-15 As a... IN PROGRESS MUTHURAJ S
IBSGFCMN-16 As a u... IN PROGRESS M. ANUPA...
IBSGFCMN-14 Login
IBSGFCMN-18 As a... IN PROGRESS MUTHURAJ S
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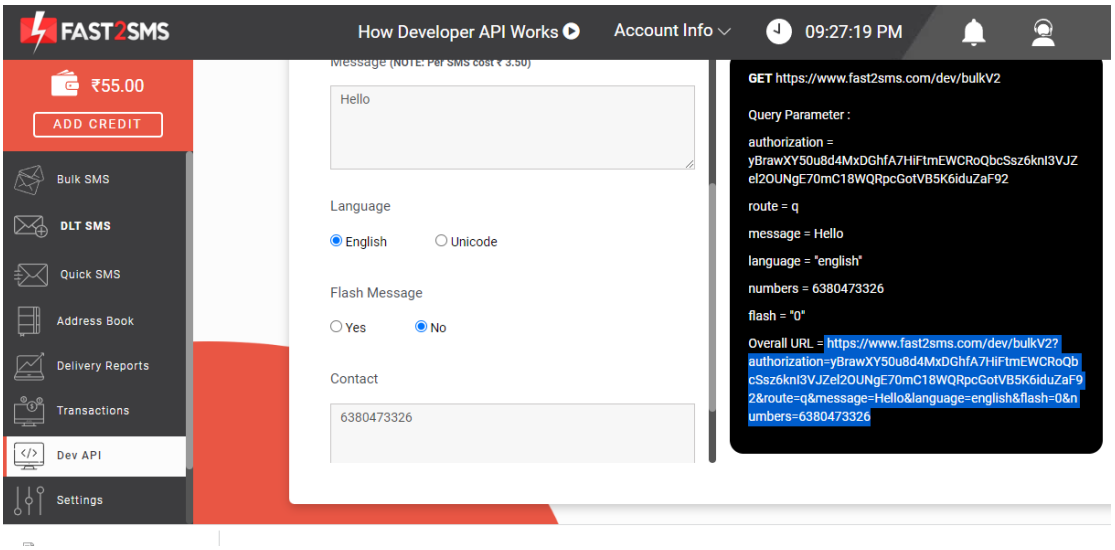
IBSGFCMN-21 Support
IBSGFCMN-27 As a User... IN PROGRESS DIVYA.L

7. CODING & SOLUTIONING

7.1 Feature 1



17-11 2:29 AM

The Person is Not in the particular geofence range

The Person is Not in the particular geofence range

18-11 12:16 PM

The Person is Not in the particular geofence range

The Person is Not in the particular geofence range

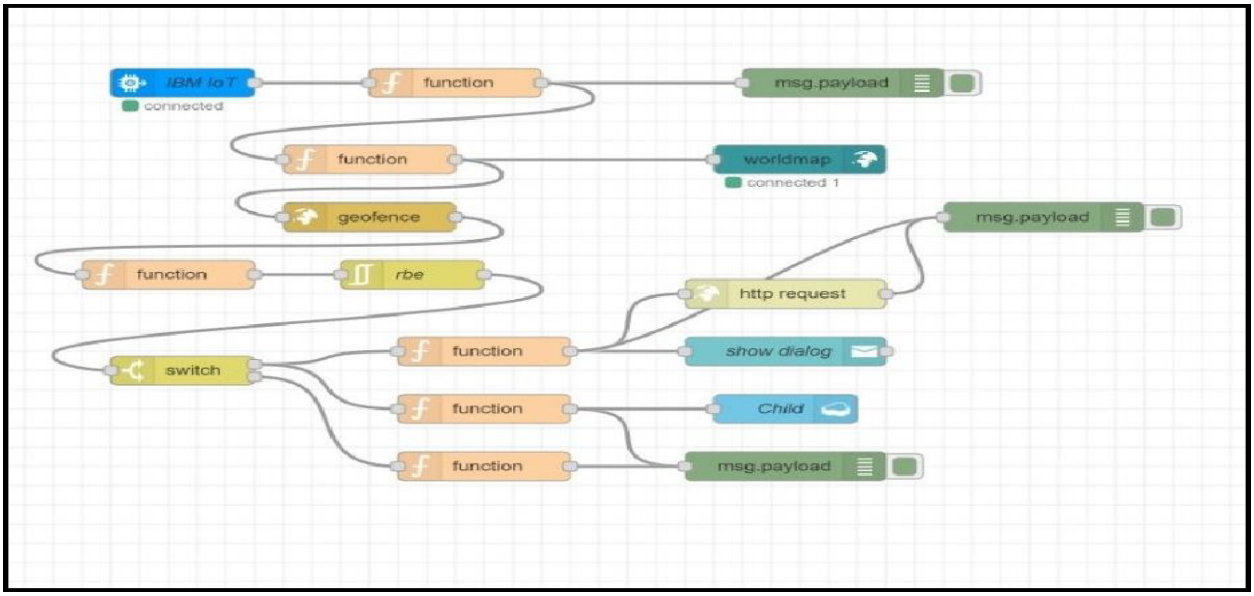
12:08 AM

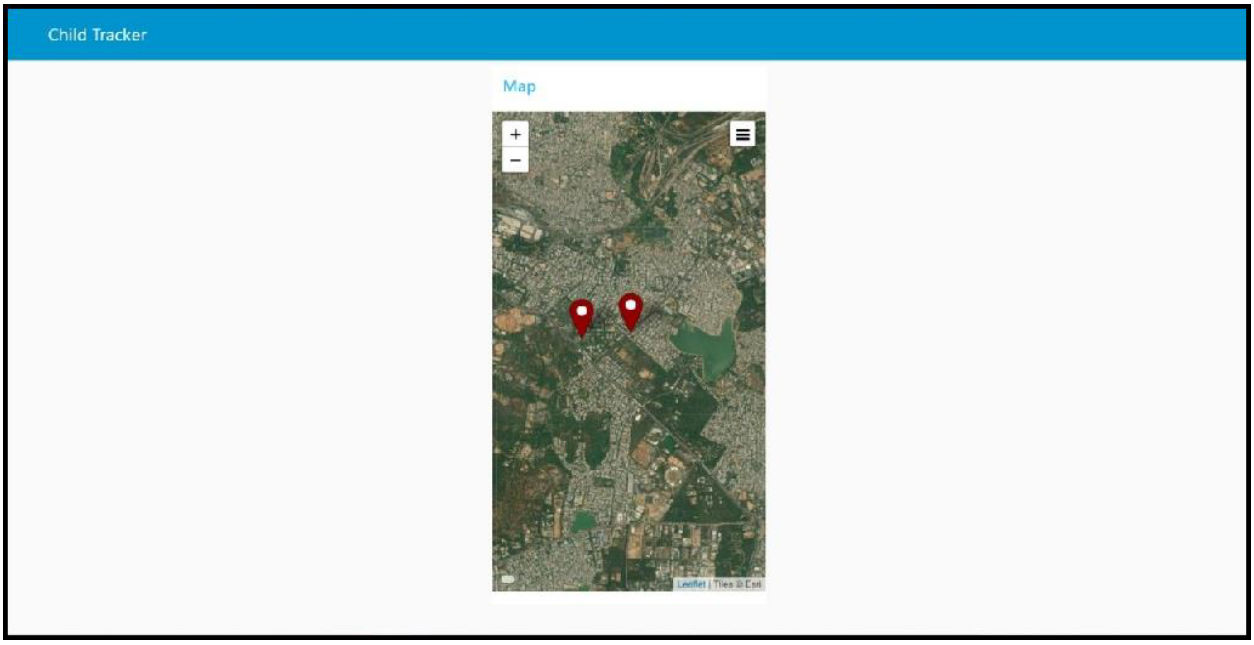
The Person is Not in the particular geofence range

The Person is Not in the particular geofence range

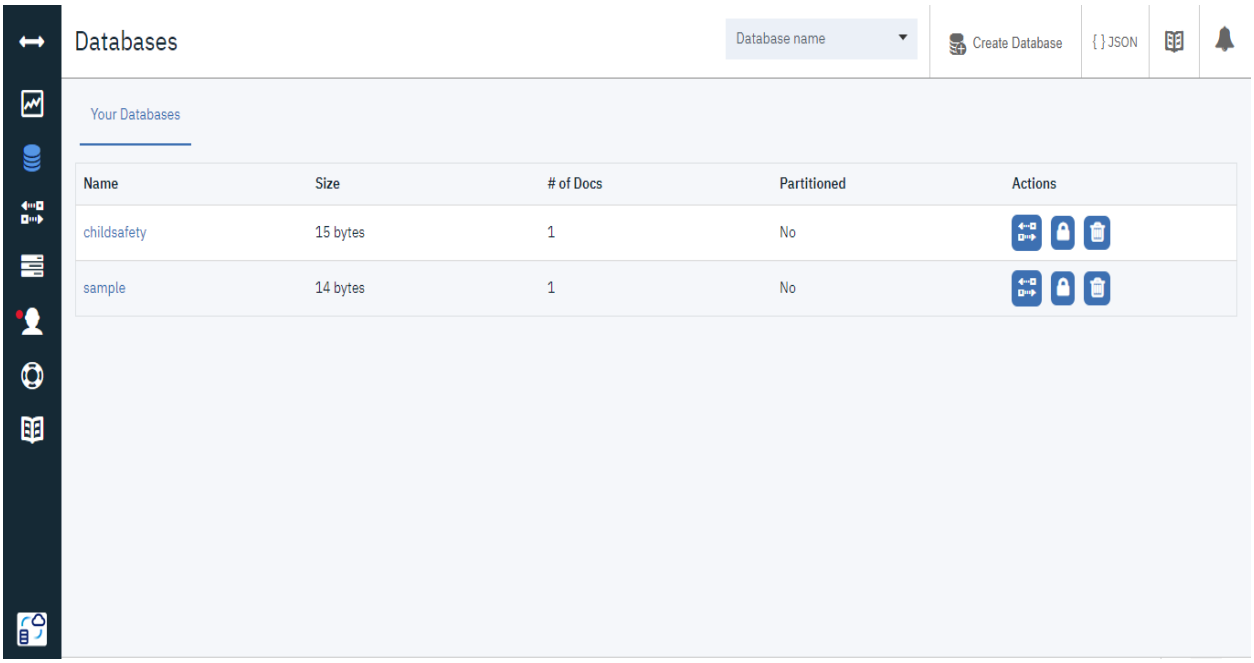
7.2 Feature 2

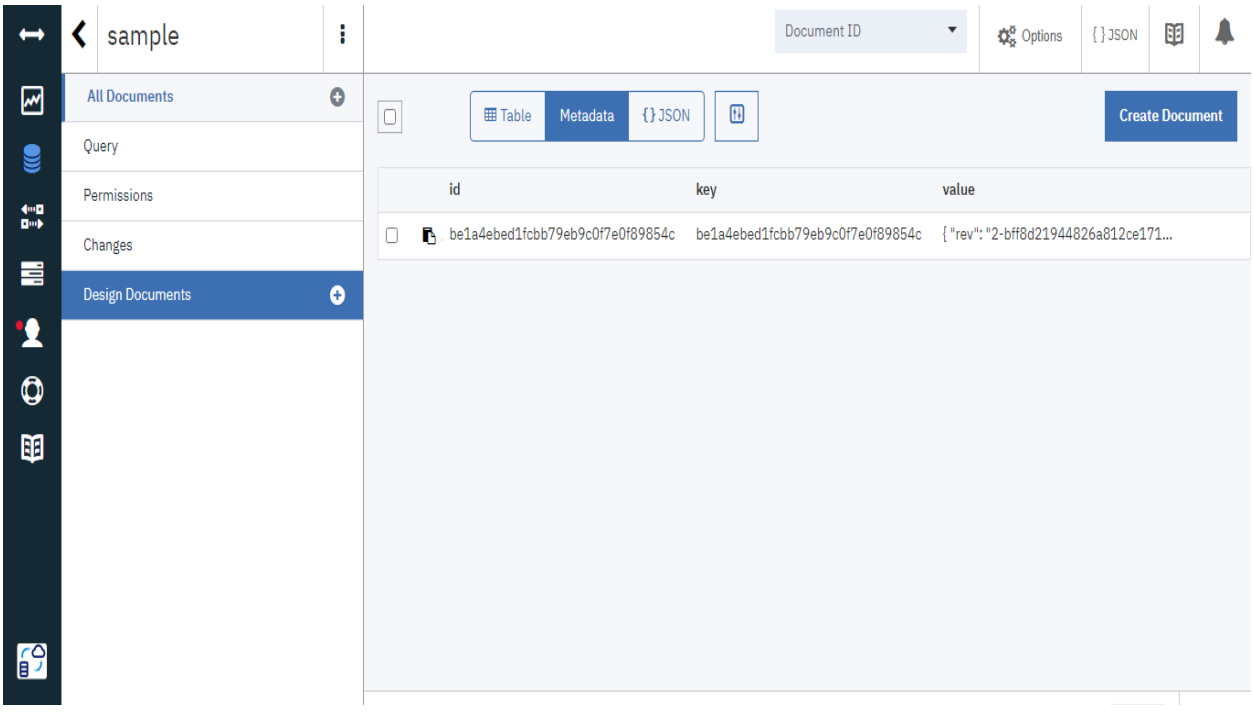
Node Red platform is where the necessary connections are made and it is deployed to acquire the desired output.





7.3 Database Schema





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	TC for Automation (Y/N)	BUG ID
IBM CLOUD _TC_001	Functional	IBM Cloud Service	Verify the login cloud services	Software	1. Login in usingcloud.ibm.com 2. Obtain promocode in ICT 3. Then apply code the andLogin 4. The page will be directed to the IBM cloudaccount	email: julianthomaspeniel16@gmail.com Password: *Mdse16102001	Successfully created the IBM account	Working as expected	Pass	YES	NIL
IBM Watson IoT Platform_TC_OO2	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 APIKey	Create a device & integrate with code	{'name': 'Smartbridge', 'lat': 17.4219272, 'lon': 78.5488783}	Working as expected	Pass	YES	NIL

PythonCode_TC_OO3	Code	Python 3.9	Verify wheather the python code is without error by running it	Software	1. Download the python version3.9
					2. Type the program and save it with the extention .py
					3. Verify it by compiling the code
						importjson
						importwiotp.sdk.device
						import time
						importrandom
						myConfig ={
						"identity":{
						"orgId": "jgry6x ",
							022-11-18 12:25:57,235 wiotp.sdk.device.client. DeviceClient INFO Connected successfully: id: jgry6x MyDeviceType:12345	Working as expected	Pass	YES	NIL

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 IBMwatson	We use a geofence 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
CloudantDB_TC_OO5	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
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" extention. 4. Display the child and geofencelocation.	Shows the locaion of parent and child	And as expected it displays the Position of the child and parent	Working as expected	Pass	NO	NIL
FastSMS Service_TC_OO7	Functional	Fast2SMS Service	To send SMS to the particular child's guardian	Software	1. Login to Fast2SMS 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 popup SMS	Alert: The person is not in the particular geofence area	Working as expected	Pass	NO	NIL

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 ReportOutput	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 concerning you to track down your children when they're within Geofence range, also functions when your kids go further afield. Its competence as a tracker is outstanding if you live in densely populated areas like cities or big towns.	Load Test	Nil	Respone 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 consequences.

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 phone calls 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": "jgry6x",

"typeId": "MyDeviceType", "deviceId": "12345"

},

"auth": {

"token":" *eB+Vs5Pb3m6f79Vnn"

}

}

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:https://github.com/IBM-EPBL/IBM-Project-35630-1668782984

Project Demo Link:https://www.youtube.com/embed/eNlkrCR5G2E

Project Report