



SAVEETHA **AUTONOMOUS**
ENGINEERING COLLEGE

Approved by AICTE | Affiliated to Anna University

TNEA CODE
1216

A Project Report

On

IoT Based Safety Gadget for Child Safety Monitoring & Notification

SUBMITTED BY

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Project Report Format

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ABSTRACT:

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.

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.

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.

1.2 Purpose

Approximately 80% of all reports of child abuse are made nowadays, with 74% of the victims being girls and the remaining 20% being males. In this world, a child goes missing every forty seconds. Children are the foundation of a country; if their future was threatened, it would have an effect on the development of the whole country.

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 parent.

2.LITERATURE SURVEY

2.1 Existing Problem

. Real-Time Child Abuse and Reporting System

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. Kamat, Mr DK, Ms Pooja S. Ganorkar, and Mrs RA Jain. "Child activity Monitoring using Sensors."International Journal of Engineering and Techniques 1.3 (2015): 129-133.

2. Saranya, J., and J. Selvakumar. "Implementation of children tracking system on android Mobile terminals." Communications and Signal Processing (ICCSP), 2013 International Conference on. IEEE, 291

3. P. Wei, R. Guo, J. Zhang and Y. T. Zhang, "A new wristband wearable sensor Using adaptive reduction filter to reduce motion artifact", Information Technology And Applications in Biomedicine 2008. ITAB 2008. International Conference on, pp. 278-281, May 2008

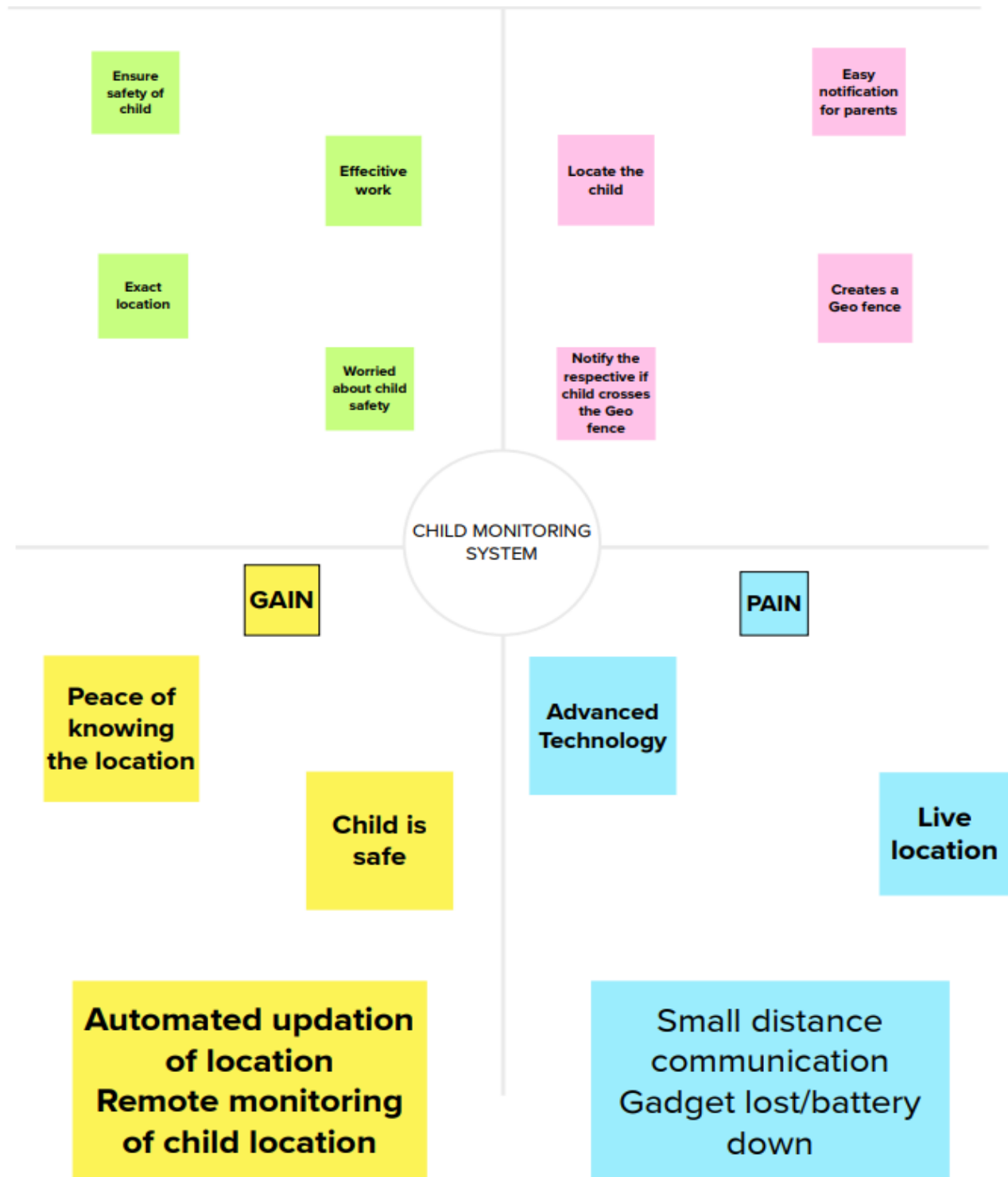
2.3 Problem Statement Definition

- This paper presents a system to monitor pick-up/drop-off of school children to enhance the safety of children during daily transportation from and to school.
- Children are the backbone of one's nation, if the future of children was affected, it would Impact the entire growth of that nation. For every 40 seconds, a child goes missing in this world.
- Due to the abuselements, the emotional and mental stability of the children gets affected which in turn Ruins their career and future.
- Parents Are responsible for taking care of their own children. But, due to economic Condition and aims to focus on their Child's future and career, parents are forced to crave For money. Hence, it becomes difficult to cling on to their Children all the time.
- The system has a developed web-based database-driven application that facilities its management and provides useful information about the children to authorized personnel.
- The aim of this work is to develop a wearable device for the safety and protection of women and girls. This objective is achieved by the analysis of physiological signals in conjunction with body position. The physiological signals that are analyzed are galvanic skin resistance and body temperature.

- Real-time monitoring of data is achieved by wirelessly sending Sensor data to an open source Cloud Platform. This device is programmed to continuously monitor the subject's parameters and take action when any dangerous situation presents itself. It does so by detecting the change in the monitored signals, following which appropriate action is taken by means of sending notifications/alerts to designated individuals.
- In our system, we provide an environment where this problem can be resolved in an efficient manner. It makes parents to easily monitor their children in real time just like staying beside them as Well as focusing on their own career without any manual Intervention

3.IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas



3.2 Ideation & Brainstroming

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions. 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. Reference: <https://www.mural.co/templates/empathy-map-canvas>

Step-1: Team Gathering, Collaboration and Select the Problem Statement

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.

10 minutes to prepare
1 hour to collaborate
2-8 people recommended

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

Team gathering
Only who should participate in the session and send an invite. Share relevant information in the work space.

Set the goal
Think about the problem you'll be brainstorming solving in the brainstorming session.

Learn how to use the facilitation tools
Use the Facilitation Superpowers to run a happy and productive session.

Start session

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

10 minutes

How might we (your problem statement)?

Key rules of brainstorming

To run an awesome and productive session

- Stay focused
- Encourage wild ideas
- Defer judgment
- Listen to others
- Go for volume
- Build on the ideas of others

Need some inspiration?
Use a random source of inspiration to help you think.

Start session

Step-2: Brainstorm, Idea Listing and Grouping

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

TP

You can start a sticky note without the pen's leader to draw lines by sub-grouping

Problem X

Logistics X

Multidisciplinary X

Process X

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

10 minutes

4

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

10 minutes

TP

Add additional ideas to sticky notes to make it more specific, improve, and categorize important ideas as better than your best

5

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

10 minutes

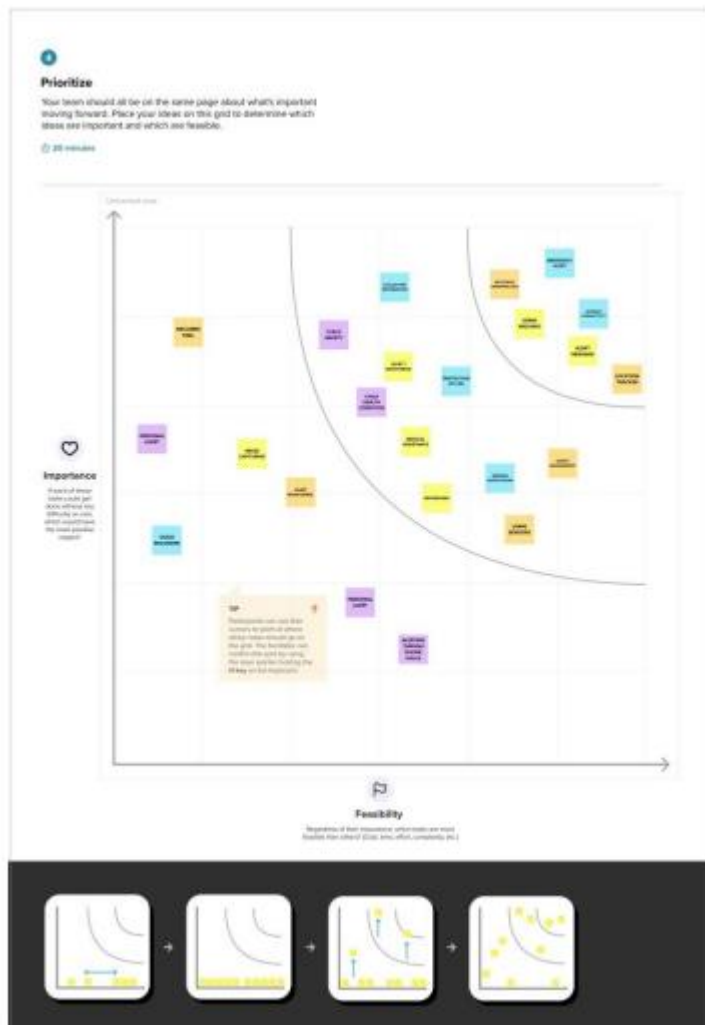
6

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

10 minutes

Step-3: Idea Prioritization



3.3 Proposed Solution

Proposed Solution Template : Project team shall fill the following information in proposed solution template.

| S.No. | Parameter | Description |
|-------|--|---|
| 1. | Problem Statement (Problem to be solved) | <p>Now a days the employment is increased both men and women are working equally, so they are not taking care of their children. So, they can't monitor their child's activity continuously.</p> <p>When they went to out side there may be chance for lost their children to track the location of the child which makes the parents nervous.</p> |
| 2. | Idea / Solution description | <p>Our idea is to develop an app which shows the location of the child through the GPS module.</p> <p>Create a Geo-fence around the location of the child to continuously check whether the child is within the range of the Geo-fence. If the child crosses the range of the Geo-fence a notification will be automatically generated and will be sent to the parents/caretaker.</p> <p>A notification is send to parents about the location of the child.</p> |
| 3. | Novelty / Uniqueness | On condition different types of notification for different types of situation. |
| | | The device will automatically send a notification to the parents if it is required from the cloud. |

| | | |
|----|---------------------------------------|--|
| 4. | Social Impact / Customer Satisfaction | This device create awareness and importance of the child safety. This will create a safe and peaceful environment for both the parents and the children by making the parents relaxed by knowing the child's location and providing the freedom for children. |
| 5. | Business Model (Revenue Model) | The premium subscription of tracking and notification service (without ads) will be given to parents if they buy this product. If they like this usage of the device they can pay and get subscription for different duration and packs. By using this device the parents can feel relaxed about their children and can concentrate on their work |
| 6. | Scalability of the Solution | The continuous tracking of the child's live location and storing the names of the past location the child has visited in a database for the use of any emergency purposes |

3.4 Problem Solution fit

Problem statement

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. system. Every parent is aware of how

challenging it is to constantly watch over and locate their children. It would be great if a device was available that could track a child's whereabouts constantly and notify them via text message. Making an IoT-based safety device that can send an SMS to the child's parents or caretakers to let them know something is wrong will alleviate their anxieties. The database stores the information that the device is tracking. A notification will be issued if the child leaves the geofence thanks to the design of the gadget.

Nowadays, crime rate associated with children keeps increasing due to which draws peoples' attention regarding child safety. This research is conducted to propose a child security smart band utilizing IoT technology. Online questionnaire and semi-structured interview are methodologies used to collect data. The online questionnaire gains feedbacks by sending questions electronically, where answers need to be submitted online. In the semi structured interview, researcher meets and asks respondents some predetermined questions while other being asked are not planned in advanced. Through information obtained, a smart band have been proposed to monitor the safety of children. By this, parents know what is happening remotely and can take actions if something goes wrong.

The safety device protects individuals from potential harms and dangers. A research done by [1]proposed the child safety wearable device using raspberry pi 3. The raspberry pi 3 gathers data from pi camera, pulse sensor and sound sensors. Then, send collected data to parents' smartphones by SMS using GSM shield. Images captured from pi camera and detect children location and send message to parents.

Advantages:

These benefits include stress relief, learning to understand cues from your infant, and increased self-esteem when it comes to being a parent.

Disadvantages:

If you get a monitor that links to your phone and uses wifi, it can get hacked. The hackers can change the image you see on your phone or talk to your child—saying some really scary effed up stuff.

4. REQUIREMENT ANALYSIS

4.1 Functional requirement

| FR No. | Non-Functional Requirement | Description |
|--------|-------------------------------|---|
| 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. |
| FR No. | Functional Requirement (Epic) | Sub Requirement (Story / Sub-Task) |
| FR-1 | Software interface | This includes embedded application that will used in supporting the various functions of the system Eg: GPS, Web Server and Database |
| FR-2 | User interface | It should be the connector between the various systems or between other part or unit of the system |
| FR-3 | Authentication | The system sends an approval request after the user enters personal information |
| FR-4 | External Interface | 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-5 | 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 |

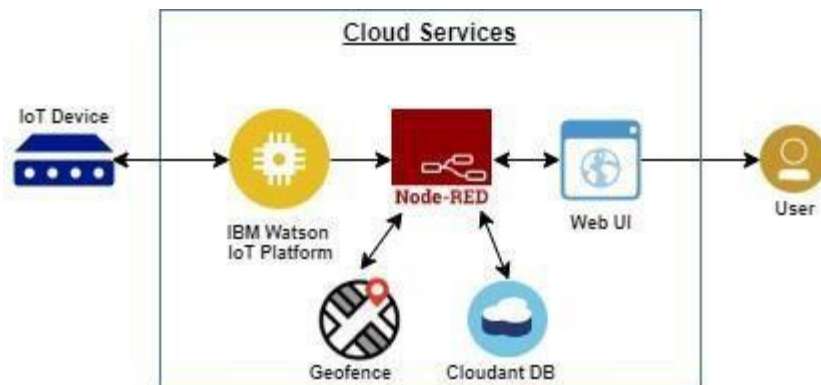
4.2 Non-functional requirements

| FR No. | Non-Functional Requirement | Description |
|--------|-------------------------------|---|
| 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. |
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| FR-5 | 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 |

5.PROJECT DESIGN

5.1 Data Flow Diagrams

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is store.



User stories – use the below table

| User Type | Functional Requirement (Epic) | User Story Number | User Story / Task | Acceptance criteria | Priority | Release |
|-----------|-------------------------------|-------------------|---|---|----------|----------|
| Father | Registration | USN-1 | As a user, i can login my email | Now i can get the confirmation from login credentials | High | Sprint-2 |
| Mother | | USN-2 | As a user, I will connect to the application | With the login id ,I access to the device | High | Sprint-1 |
| Guardian | | USN-3 | As a user my location gets automatically detected and updated from database | Now I can monitor the child's location using the device | Medium | Sprint-2 |
| Others | | USN-4 | As a user, if the device crosses the geofencing area | Now I can receive the alert message from the device | Low | Sprint-3 |

5.2 Solution & Technical Architecture

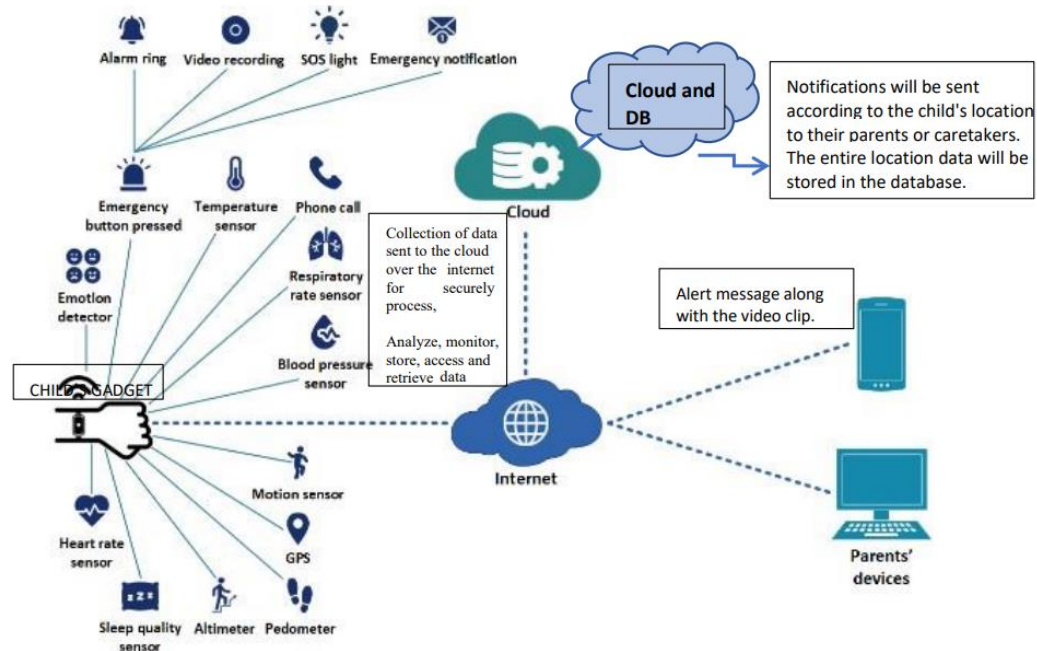
Solution Architecture:

The process used here is a complex process that is Solution architecture and it has many subdivisions that bridges the gap between business problems and technology solutions. Its objective is to :

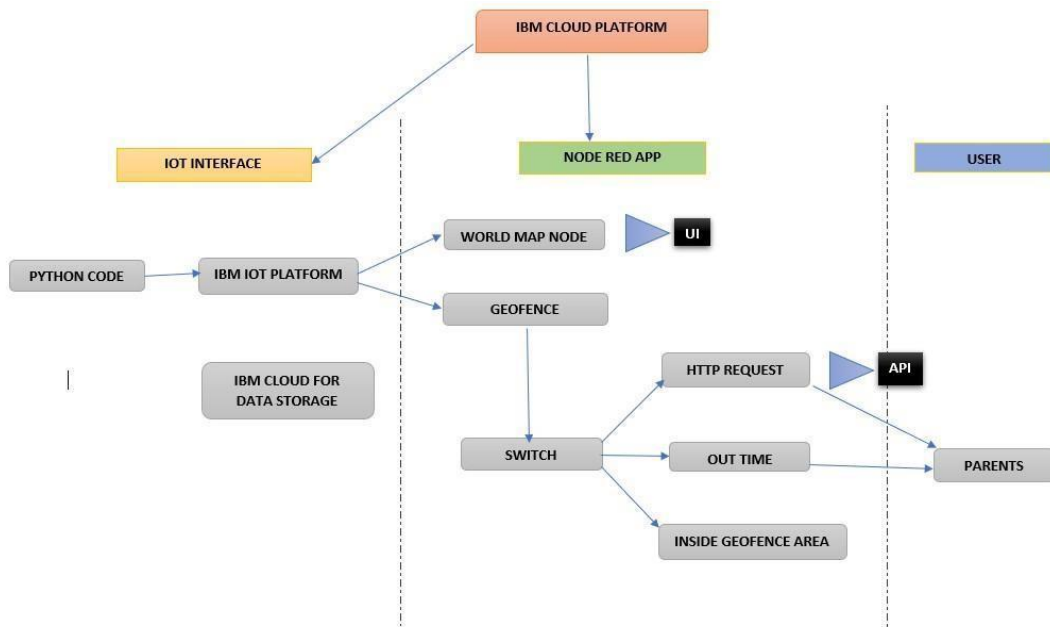
1. Define features, development phases, and solution requirements.

2. Provide specifications according to which the solution is defined, managed, and delivered.
3. Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
4. Find the best tech solution to solve existing business problems.
5. Shows its unique solutions compared to others.

SOLUTION ARCHITECTURE DIAGRAM



Technical Architecture:



Components & Technologies:

| S.No | Component | Description | Technology |
|------|---------------------|---|--|
| 1. | User Interface | Coordinates mapped to location | World Map in NODE RED facility IBM Watson service (map) |
| 2. | Application Logic-1 | Updating geographical coordinates of the child's location to IBM IoT platform periodically (in this project we use static inputs) | Python |
| 3. | Application Logic-2 | Checks if location in within safe zone radius | Geofence Node in NODE RED facility IBM Watson STT service (map) |
| 4. | Cloud Database | Database Service on Cloud | IBM Cloudant |

Application Characteristics:

| S.No | Characteristics | Description | Technology |
|------|-----------------------|---|---------------------------------------|
| 1. | Scalable Architecture | We need to update the implemented application periodically | Internet Of Things |
| 2. | Availability | To make it available 24/7 for uninterrupted services we have implemented in distributed servers (cloud) | IBM CLOUD |
| 3. | Performance | Network conditions should be stable even at worst conditions | High speed network plays a major role |

5.3 User Stories

User Stories Use the below template to list all the user stories for the product.

| User Type | Functional Requirement (Epic) | User Story Number | User Story / Task | Acceptance criteria | Priority | Release |
|------------------------------------|-------------------------------|-------------------|---|--|----------|---------|
| Customer (Mobile user & Web users) | 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 | |
| | | USN-2 | As a user, I will receive confirmation email once I have registered myself | I can receive confirmation email & click confirm | High | |

| | | | | | | |
|-------------------------|-------|-------|--|--|--------|--|
| | | USN-3 | As a user, I can register for the application through Apple account and twitter | As a user, I can register for the application through Apple account and twitter I can register & access the dashboard with Apple account Login and twitter account login | | |
| | Login | USN-4 | As a user, I can register for the application by entering the user ID & password | | High | |
| Customer Care Executive | Login | | | I can login only with my provided credentials | Medium | |

6.PROJECT PLANNING &SCHEDULING

6.1 Sprint Planning & Estimation

1. Prerequisites

- IBM Cloud Services□
- Software□

2. Project Objectives

- Abstract□
- Brainstorming□

3.Create And Configure IBM Cloud Services

- Create IBM Watson Iot Platform And Device□
- Create Node- Red Service□
- Create A Database In Cloudant DB□

4.Develop The Python Script

- Develop A Python Script□

5.Develop AWeb Application Using Node-RED Service.

- Develop The Web Application Using Node-RED□

6.Ideation Phase

- Literature Survey On The Selected Project□ & Information Gathering
- Prepare Empathy Map□
- Ideation□

7.Project Design Phase -1

- Proposed Solution□
- Prepare Solution Fit□
- Solution Architecture□

8.Project Design Phase -2

- Customer journey□
- Functional Requirement□
- Data Flow Diagram□
- Technology Architecture□

9.Project planning Phase

- Prepare Milestones□ & Activity List
- Sprint Delivery Plan□

10. Project Development Phase

- Project Development-Delivery Of Sprint-1□
- Project Development-Delivery Of Sprint-2□
- Project Development-Delivery Of Sprint-3□
- Project Development-Delivery Of Sprint-4□

6.2 Sprint Delivery Scheduling

| Sprint | Functional Requirement (Epic) | User Story Number | User Story / Task | Story Points | Priority |
|----------|-------------------------------|-------------------|---|--------------|----------|
| Sprint-1 | Registration | USN-1 | As a user, I can register for the application by entering my email, and password, and confirming my password. | 4 | High |
| Sprint-1 | Confirmation Email | USN-2 | As a user, I will receive a confirmation email once I have registered for the application | 4 | High |
| Sprint-1 | Authentication | USN-3 | As a user, I can register for the application through Gmail and mobile app. | 4 | Medium |
| Sprint-1 | Login | USN-4 | As a user, I can log into the application by entering email & password | 4 | High |
| Sprint-1 | Dashboard | USN-5 | As a user, I need to be able to view the functions that I can perform | 4 | High |
| Sprint-2 | Notification | USN-1 | As a user, I should be able to notify my parent and guardian in emergency situations | 10 | High |
| Sprint-2 | Store data | USN-2 | As a user, I need to continuously store my location data into the database. | 10 | Medium |
| Sprint-3 | Communication | USN-3,1 | I should be able to communicate with my parents | 6 | Low |

| Sprint | Functional Requirement (Epic) | User Story Number | User Story / Task | Story Points | Priority |
|----------|-------------------------------------|-------------------|--|--------------|----------|
| Sprint-3 | IoT Device – Watson communication | USN-1,4 | The data from IoT device should reach IBM Cloud | 7 | Medium |
| Sprint-3 | Node RED- Cloudant DB communication | USN-5,2 | The data stored in IBM Cloud should be properly integrated with Cloudant DB | 7 | High |
| Sprint-4 | User – WebUI interface | USN-1,4 | The Web UI should get inputs from the user | 6 | High |
| Sprint-4 | Geofencing | USN-2,3,5 | The geofencing of the child should be done based on the geographical coordinates | 7 | High |

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

7.1 Feature ANALYZE THE PREREQUISITES:

Needed prerequisites for child safety monitoring and notification using Internet Of Things (IoT) were

- ❖ IBM Watson IoT Platform
- ❖ Node-RED Service
- ❖ Cloudant DB **Python code:** import time

```
import json import
```

```
wiotp.sdk.device
```

```
import time
```

```
myConfig={
```

```
    "identity": {
```

```
        "orgId": "hj5fmy",
```

```
        "typeid": "NodeMCU",
```

```
        "deviceId": "12345678"
```

```
    },
```

```
    "auth": {
```

```
        "token": "12345678"
```

```
    }
```

```
}
```

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

```
client.connect()

while True:

    name= "Smartbridge"

#in area location

#latitude-=17.4225176

# Longitude= 78.5458842

#out area location

#latitude = 17.4219272

#longitude =70.5488783

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(5)

client.disconnect()
```

OUTPUT:

- Import Packages
- Create 'myConfig' location
- Implement the wiotp.sdk.device.DeviceClient
- Run a while Loop
- Finally set the latitude and longitude range
- Desired result Obtained

Modified Version of Code according to main project:

```
import json import
wiotp.sdk.device
import time
myConfig={
    "identity": {
        "orgId": "hj5fmy",
        "typeid": "NodeMCU",
        "deviceId": "12345678"
    },
    "auth": {
        "token": "12345678"
    }
}

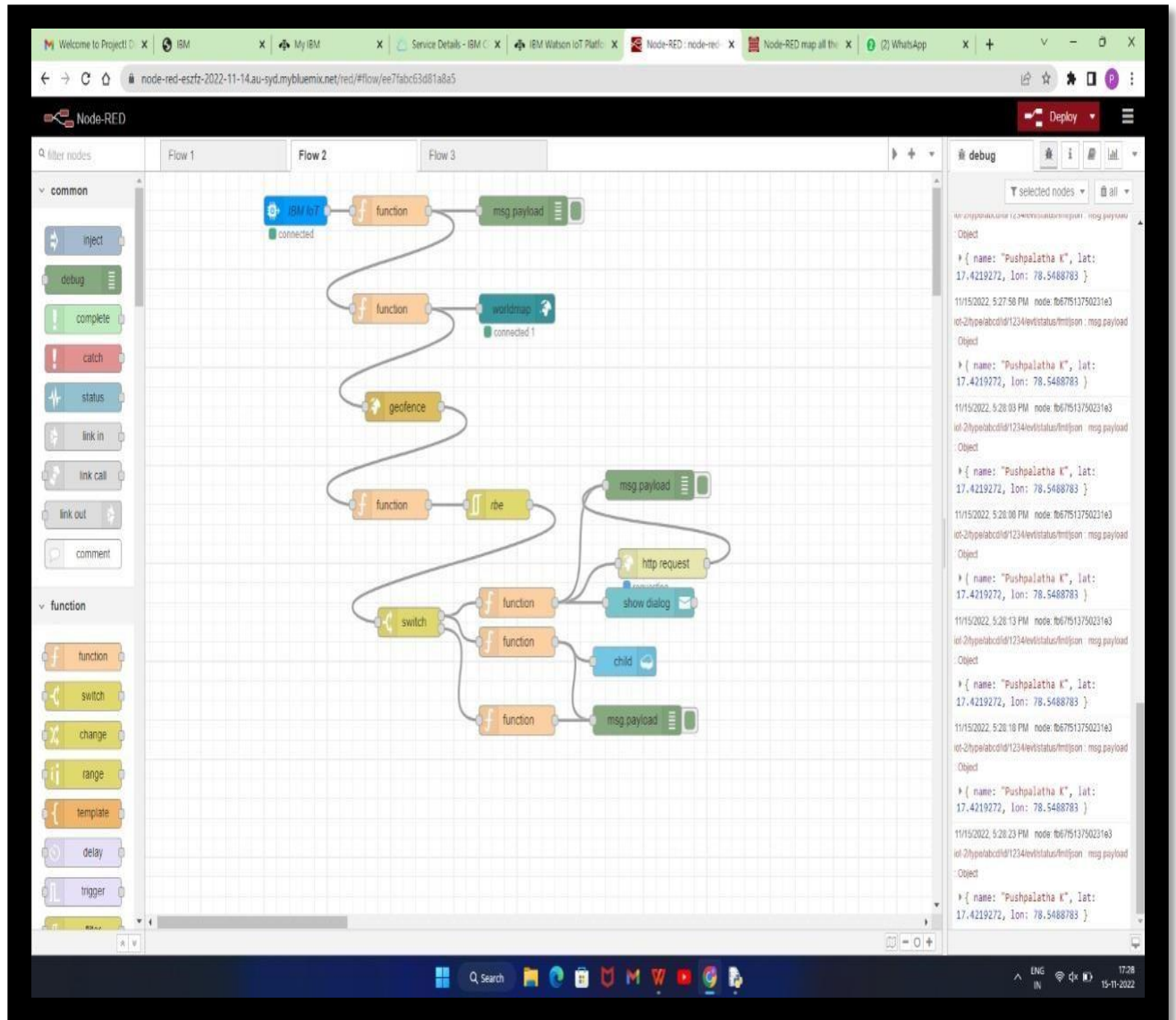
client = wiotp.sdk.device.DeviceClient (config=myConfig,
logHandlers=None)
```

[illegible]

7.3 Database Schema(if Application)

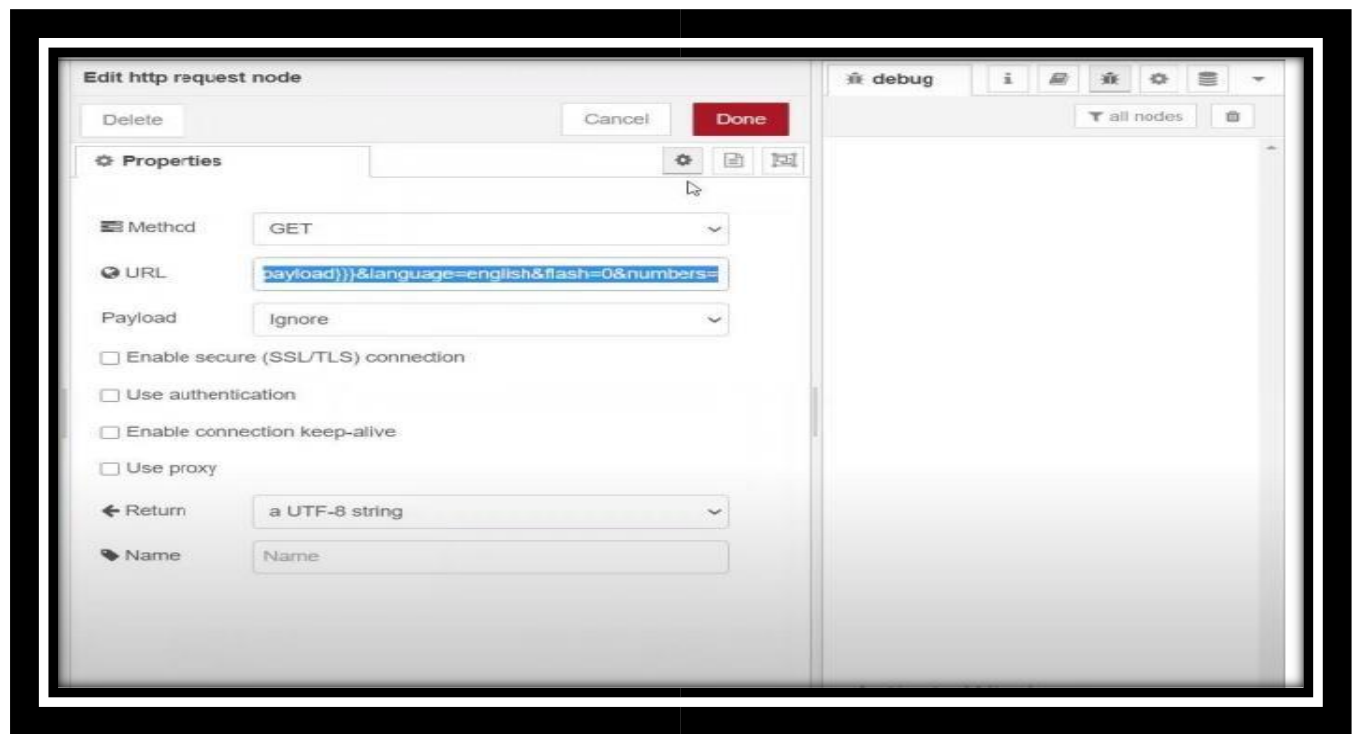
Steps Followed:

- Opened a Node-RED project

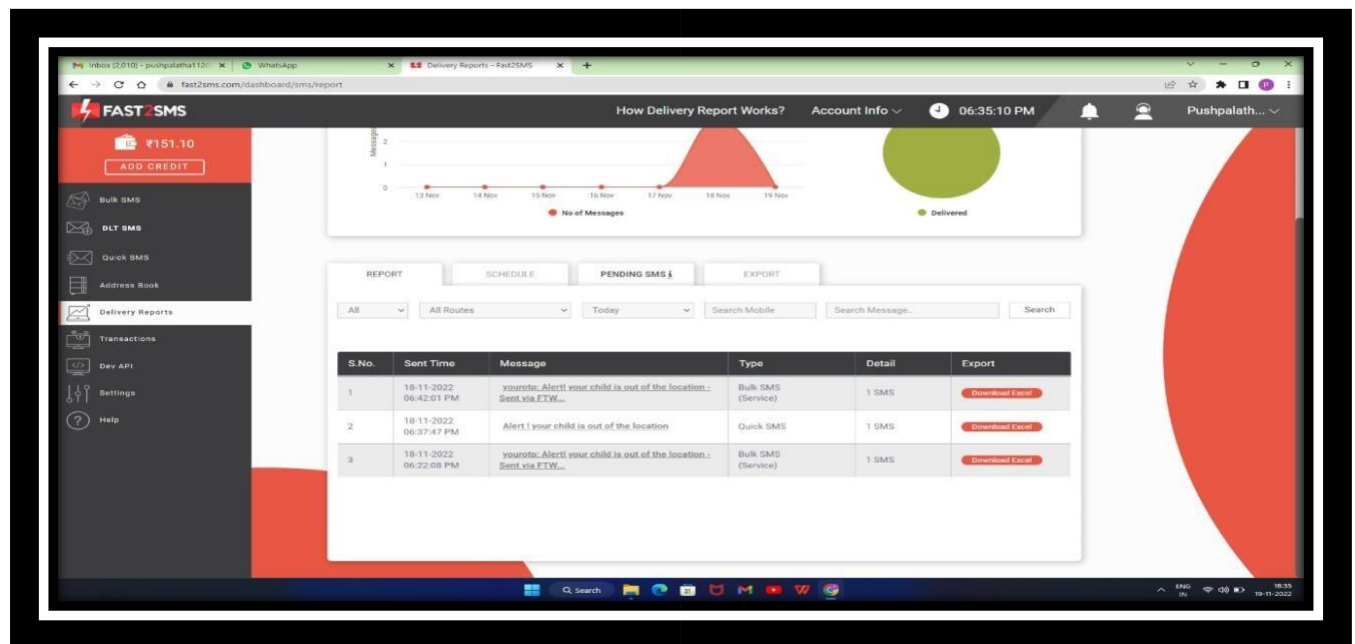


- [illegible]

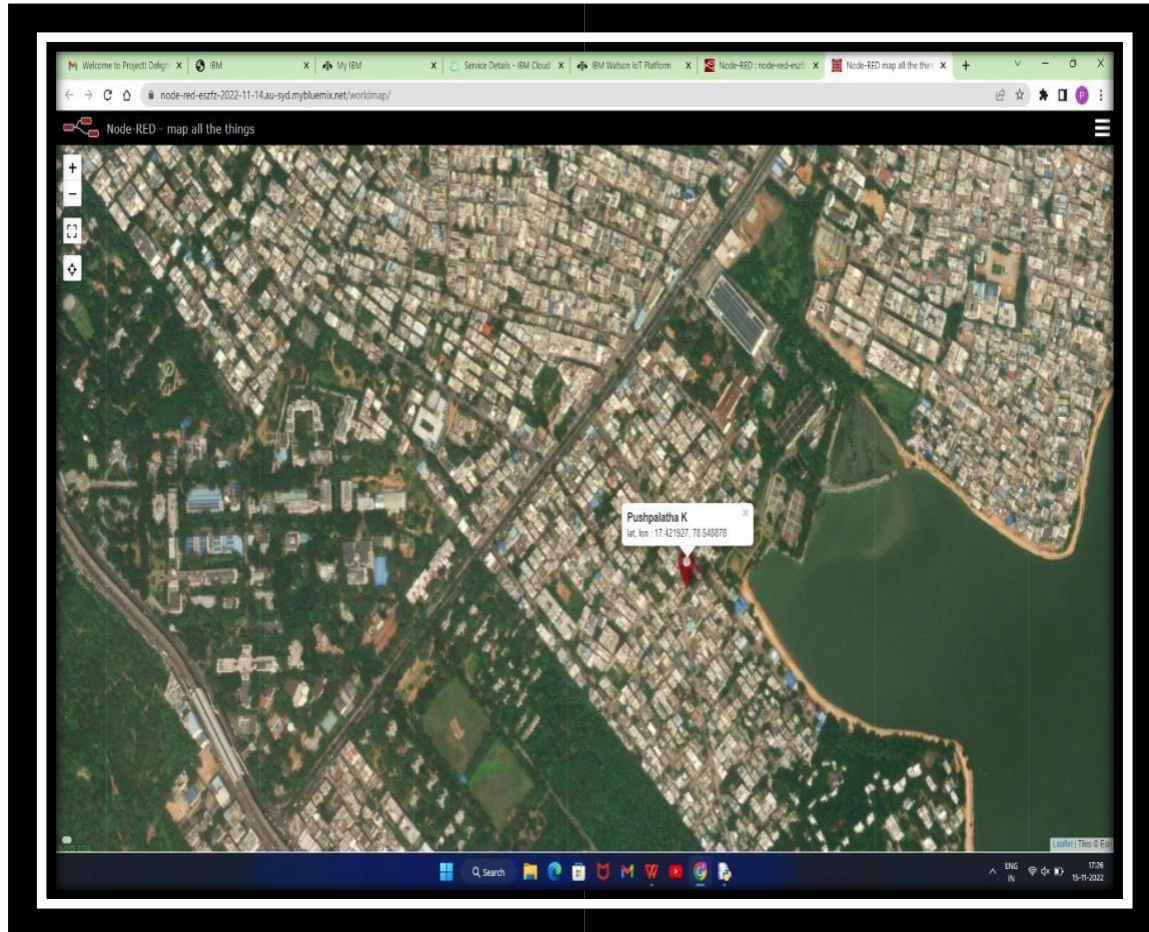
- Editing the HTTP Request URL



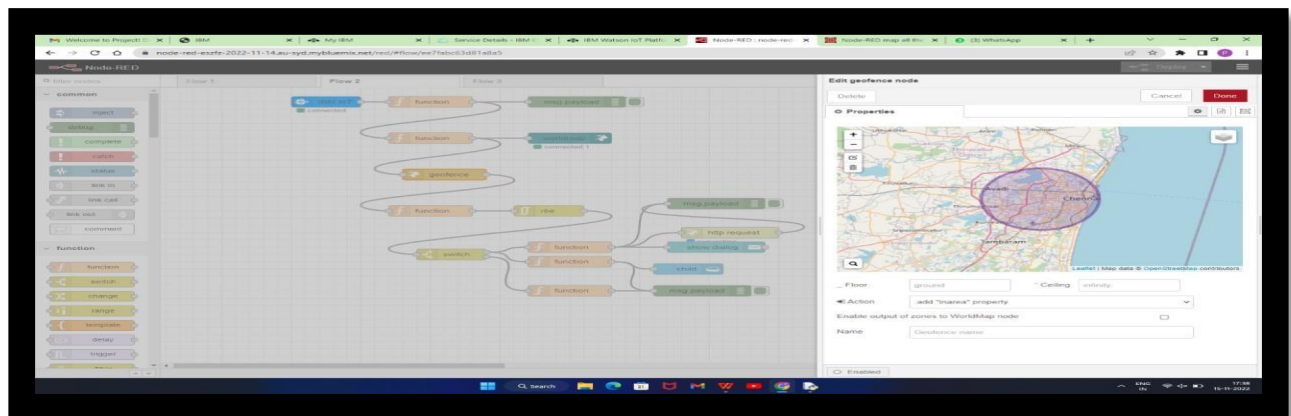
- Fast to sms output



- **Located the child**



- **Created the geofence node**



8. TESTING

8.1 Test Case

[illegible]

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 - IOT Based Safety Gadget for Child Safety Monitoring and 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 | 7 | 2 | 3 | 2 | 14 |
| Duplicate | 1 | 0 | 0 | 2 | 3 |
| External | 2 | 4 | 0 | 5 | 11 |
| Fixed | 10 | 2 | 3 | 7 | 22 |
| Not Reproduced | 0 | 0 | 1 | 1 | 2 |
| Skipped | 0 | 0 | 0 | 1 | 1 |

3. Test Case Analysis

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

| Section | Total Cases | Not Tested | Fail | Pas s |
|---------------------|-------------|------------|------|-------|
| Print Engine | 6 | 0 | 0 | 6 |
| Client Application | 25 | 0 | 0 | 25 |
| Security | 3 | 0 | 0 | 3 |
| Exception Reporting | 8 | 0 | 0 | 8 |
| Final Report Output | 5 | 0 | 0 | 5 |
| Version Control | 2 | 0 | 0 | 2 |

9.RESULTS

9.1 Performance Metrics

Use performance monitoring to know the velocity of data records processed by your deployment.

You enable performance monitoring when you select the deployment to be tracked and monitored. Performance metrics are calculated based on the following information:

- scoring payload data
- For proper monitoring purpose, log in every scoring request in Watson OpenScale as well.
- Payload data logging is automated for IBM Watson Machine Learning engines.
- For other machine learning engines, the payload data can be provided either by using the Python client or the REST API.
- Performance monitoring does not create any additional scoring requests on the monitored deployment.

10.ADVANTAGES & DISADVANTAGES

Advantages

In our system, we provide an environment where this problem can be resolved in an efficient manner. It makes parents to easily monitor their children in real time just like staying beside them as well as focusing on their own career without any manual intervention.

Disadvantages:

Hackers may gain access to the system and steal personal information. Since we add so many devices to the internet, there is a risk that our information as it can be misused.

They rely heavily on the internet and are unable to function effectively without it.

With the complexity of systems, there are many ways for them to fail.

We lose control of our lives—our lives will be fully controlled and reliant on technology.

Overuse of the Internet and technology makes people unintelligent because they rely on smart devices instead of doing physical work, causing them to become lazy.

Unskilled workers are at a high risk of losing their jobs, which could lead to unemployment. Smart surveillance cameras, robots, smart ironing systems, smart washing machines, and other facilities are replacing security guards, maids, ironmen, and dry-cleaning services etc.

It is very difficult to plan, build, manage, and enable a broad technology to IoT framework.

Deploying IoT devices is very costly and time-consuming.

11.CONCLUSION

This research demonstrates Smart IoT device for child safety and tracking helping the parents to locate and monitor their children. If any abnormal values are read by the sensor then an SMS is sent to the parents mobile and an MMS indicating an image captured by the serial camera is also sent. The future scope of the work is to implement the IoT device which ensures the complete solution for child safety problems.

12.FUTURE SCOPE

This research demonstrates Smart IoT device for child safety and tracking, to help the parents to locate and monitor their children.

If any abnormal readings are detected by the sensor, then an SMS and phone call is triggered to the parents mobile. Also ,updated to the parental app through the cloud.

The system is equipped with GSM and GPS modules for sending and receiving call, SMS between safety gadget and parental phone.

The system also consists of Wi-Fi module used to implement IoT and send all the monitored parameters to the cloud for android app monitoring on parental phone.

Panic alert system is used during panic situations alerts are sent to the parental phone, seeking for help also the alert parameters are updated to the cloud.

Boundary monitoring system is implemented on safety gadget with the help of BEACON technology, as soon as the safety gadget moves far away from the BLE listener gadget an alert is provided to itself.

Future Scope of Work This system can be further enhanced by installation of mini camera inside smart gadget for better security so that live footage can be seen on parental phone during panic situations.

The system can be modified by installation of small solar panels for charging the battery of smart gadget to gain maximum battery backup.

13.APPENDIX

13.1Source Code

Modified Version of Code according to main project:

```
import json import
wiotp.sdk.device
import time
myConfig={
    "identity":{
        "orgId": "hj5fmy",
        "typeid": "NodeMCU",
        "deviceId": "12345678"
    },
    "auth": {
        "token": "12345678"
    }
}

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

client.connect()

while True:

    name= "Smartbridge"

#in area location
```



```
# latitude=17.4225176

Longitude= 78.54588742

#out area location

#latitude = 17.4219272

#longitude =70.5488783

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(5)

client.disconnect()
```

OUTPUT

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 and 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 | 7 | 2 | 3 | 2 | 14 |
| Duplicate | 1 | 0 | 0 | 2 | 3 |
| External | 2 | 4 | 0 | 5 | 11 |
| Fixed | 10 | 2 | 3 | 7 | 22 |
| Not Reproduced | 0 | 0 | 1 | 1 | 2 |
| Skipped | 0 | 0 | 0 | 1 | 1 |

13.2Github & Design

<https://github.com/IBM-EPBL/IBM-Project-15590-1659601273>

Project Demo Link:

<https://youtu.be/R4zKCpcHpF0>