

# **IoT Based Safety Gadget for Child SafetyMonitoring & Notification**

**Bachelor of Engineering  
Computer Science and Engineering**

**Vel Tech Multi Tech Dr. Rangarajan Dr. Sakunthala Engineering  
College**

**TEAM ID: PNT2022TMID22325**

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## **Abstract**

The children are less secure nowadays and have many issues concerning their security purpose. Many Family members spent more time in work and social accountability where they need to take care of their children. The current status in our country is not habitable for monitoring children. With the absence of a child monitoring system, it is hard to monitor the children every seconds. Where Under age children may be impulsive in the way they act and in places to be. Children are prone to many incidents and accidents. The safety of children is very indispensable as children cannot protect themselves.

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 system will ensures utmost security and ensure live tracking for kids. It proposes a model for child safety through smartphones that can track their children's location and provide the precise coordinates of the child's location in real-time Anywhere by monitoring the activities, the security state of the children are examined.

## **1.Introduction**

### **1.1 Project Overview**

The Internet of Things (IoT) plays a vital role in day-to-day life. 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 a drift 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

### SURVEY 1:

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

**Title:** Smart IoT Device for Child Safety and Tracking.

**Published in:** 2019 IEEE.

The system is developed using Link-It ONE board programmed in embedded C and interfaced with temperature, heartbeat, touch sensors and also GPS, GSM & digital camera modules. The novelty of the work is that the system automatically alerts the parent/caretaker by sending SMS, when immediate attention is required for the child during emergency.

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

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

#### **SURVEY 2:**

**Authors:** Dheeraj Sunehera , Pottabhatini Laxmi Priya.

**Title:** Children Location Monitoring on Google Maps Using GPS and GSM. **Published in:** 2016 IEEE.

This paper provides an Android based solution for the parents to track their children in real time. Different devices are connected with a single device through channels of internet. The concerned device is connected to server via internet. The device can be used by parents to track their children in real time or for women safety. The proposed solution takes the location services provided by GSM module. It allows the parents to get their child's current-location via SMS.

**Merits:** A child tracking system using android terminal and hoc networks. **Demerits:** This device cannot be used in rural areas.

#### **SURVEY 3:**

**Authors:** David Hanes, Gonzalo, Patrick Grosetete, Robert, Barton, Jerome.

**Title:** Henry "IoT Fundamental and Networking Technologies, Protocols".

During an emergency, mobile apps alert the control room of nearby police stations or caretakers of children. The literature shows that location tracking devices are available in the market but it does not provide a complete solution to the problem. The solution to this problem is to design an IoT device, which senses the child's location and environment and during an emergency, it should send the alert to the parents automatically.

#### **SURVEY 4:**

**Authors:** Aditi Gupta, Vibhor Harit.

**Title:** Child Safety & Tracking Management System by using GPS. **Published in:** 2016 IEEE.

This paper proposed a model for child safety through smartphones that provide the option to track the location of their children as well as in case of emergency children are able to send a quick message and its current location via ShortMessageServices.

**Merits:** The advantages of smart phones they offer rich features like Google maps, GPS, SMS etc.

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

#### **SURVEY 5:**

**Authors:** Akash Moodbidri, Hamid Shahnasser. **Title:** Child safety wearable device. **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 help to track the daily activity of children and also help 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 on any phone and it is not necessary that an expensive smartphone is required and doesn't want to be a very tech-savvy individual to operate.

**Demerits:** This device's battery gives a short lifetime. High power efficient model will have to be used which can be capable of giving the battery life for a longer time.

### **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

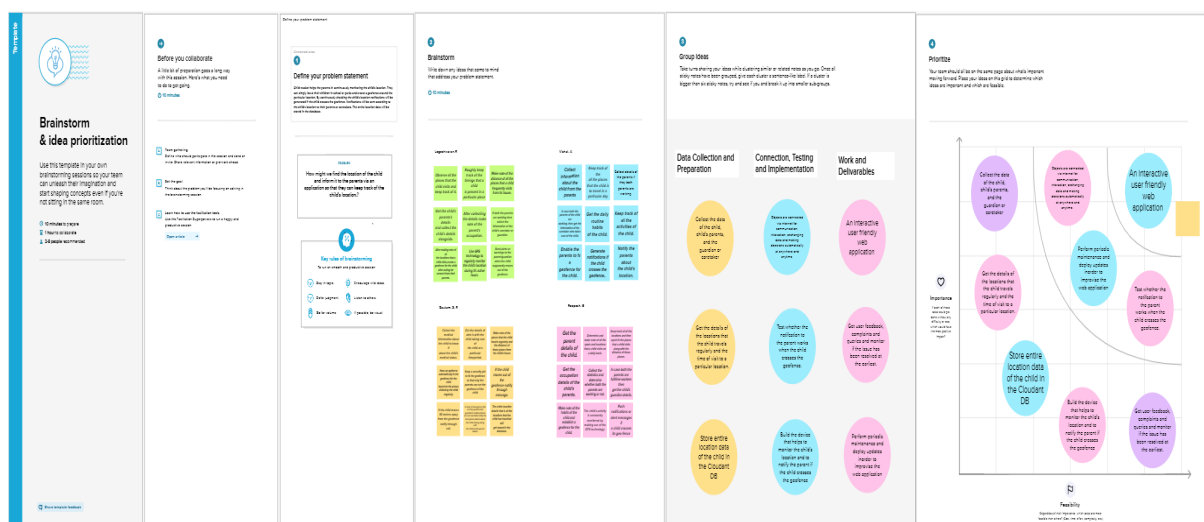
benefit. The out-turn of abduction can be seriously pessimistic and enduring, more actions must be taken to protect children against abduction and its effects.

## 3.IDEATION PHASE & PROPOSED SOLUTION

### 3.1 EMPATHY MAP CANVAS



### 3.2 BRINSTROMING AND IDEA PRIORITIZATION





### 3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	With the increasing rate of child kidnapping and trafficking and lack of tracking technology for child, there is limited Application for child monitoring. Hence an IOT based safety gadget for child safety is probably the need most today
2.	Idea / Solution description	A good solution to this issue would be to design a smart wearable IOT sensor based device for monitoring the environment of a child along with a Mechanism for tracking the child. The gadget will make use of GPS and a python script to publish the location details to the IBM IoT Platform. The wearable also functions to send immediate alerts to the user through in case If the child crosses the Geofence.
3.	Novelty / Uniqueness	All the existing systems make use of GPS and a mobile app to track and receive alerts regarding the child's location and those don't show the exact location and they are unreliable, while this system make use of the IBM Watson IOT Platform and IBM Cloud Services which is reliable and efficient to maintain the database of the child's location. The parent can set geofence and receive alerts through the web application which is user friendly and secure created by using the Node Red Service.
4.	Social Impact / Customer Satisfaction	The main concern of any parent would be the safety and security of their kids. The design of this model does not mandate a lot of technical knowledge from the user to operate and it is simple. The purpose of this device is to facilitate the guardian or parents in locating their child with ease and ensuring its wellbeing.
5.	Business Model (Revenue Model)	The target audience of this device is majorly the parents. Considering the Tracking ability of the device, Hardware quality, used technology and sensors, the starting range of price would go from Rs. 6000 and above. This type of wearable

		safety system is of utmost importance today and would be a must buy gadget in the market today.
6.	Scalability of the Solution	With the present needs for monitoring the child, the system is designed. It has a location database to maintain the entire location history of the child and the parent can set the geofence to determine the safer boundary of the child. . If there is a need for integrating additional sensors to improve accuracy, it can be done to make the system efficient in the long run.

### 3.4 Problem Solution fit

Define CS, fit into CC	<b>1. CUSTOMER SEGMENT(S)</b> <small>Who is your customer? i.e. working parents of 0-5 y.o. kids</small> 1) Parents who are engaged in their work. 2) Caretaker who are aged. 3) Customer who can't be with their child.	<b>6. CUSTOMER CONSTRAINTS</b> <small>What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connect or, available devices.</small> 1) Don't know the exact solution to solve the Problem. 2) It is too costly to afford.	<b>5. AVAILABLE SOLUTIONS</b> <small>Which solutions are available to the customers when they face the problem? Or need to get the job done? What have they tried in the past? What pros &amp; cons do these solutions have? . e. pen and paper is an alternative to digital notetaking</small> child tracking and monitoring gadget can be a best solution.	Explore AS, differentiate
	<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <small>What jobs-to-be-done (or problems) do you address for your customers? There could be more than one, explore different sides.</small> 1) To protect the child from harm. 2) To track current location. 3) To raise alarm incase of emergency . 4) To record messages, if the child crossed the geo-fence.	<b>9. PROBLEM ROOT CAUSE</b> <small>What is the real reason that this problem exists? What is the back story behind this need to do this job? i.e. customers have to cc it because of the change in regulations.</small> Due to lack of child safety and increasing fear of the parents about the child locations and their actions.	<b>7. BEHAVIOUR</b> <small>What does your customer do to address the problem and get the job done? How frequently related? For the right: so on panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)</small> 1) Wearable tracker that helps to monitor their children . 2) Alert GPS can also be a solution.	
Identify strong TR & EM	<b>3. TRIGGERS</b> <small>What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news</small> Because of the increasing abducts in the society and the child who is not grown enough to take care of themselves.	<b>10. YOUR SOLUTION</b> <small>If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.</small> To design a gadget for protection and alert the parents in emergency.	<b>8. CHANNELS of BEHAVIOUR</b> <b>8.1 ONLINE</b> <small>What kind of actions do customers take online? Extract online channels from #7</small> <b>8.2 OFFLINE</b> <small>What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.</small> Online: Apps can be developed to track the children live location. Offline: sensor can be used .	Identify strong TR & EM
	<b>4. EMOTIONS: BEFORE / AFTER</b> <small>How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure &gt; confident, in control - use it in your communication strategy &amp; design.</small> Before: worried , disconsolate. After: intrepid , peaceful.			

## 4. REQUIREMENT ANALYSIS

### 4.1 Functional requirement

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement	Sub Requirement
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FR-1	User Registration	<ul style="list-style-type: none"> <li>• Registration through message</li> <li>• Registration through website</li> <li>• Registration through App</li> <li>• Registration through Call</li> <li>• Registration through Social Media</li> </ul>
FR-2	User Confirmation	<ul style="list-style-type: none"> <li>• Confirmation via Email</li> <li>• Confirmation via OTP</li> <li>• Confirmation via Call</li> </ul>
FR-3	App Installation	<ul style="list-style-type: none"> <li>• Installation through Link</li> <li>• Installation through Play Store/App Store</li> </ul>
FR-4	Detecting Child Location	<ul style="list-style-type: none"> <li>• Detecting location via app</li> <li>• Detecting location via SMS</li> <li>• Detecting location through Website</li> </ul>
FR-5	Database	<ul style="list-style-type: none"> <li>• Location history is stored in the cloud</li> <li>• Values include distance, latitude, longitude</li> </ul>
FR-6	User Interface	<ul style="list-style-type: none"> <li>• User login form</li> <li>• Admin login form</li> </ul>
FR-7	User Notification	<ul style="list-style-type: none"> <li>• Notification through Message</li> <li>• Notification through Gmail</li> </ul>

## 4.2 Non-Functional requirements

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

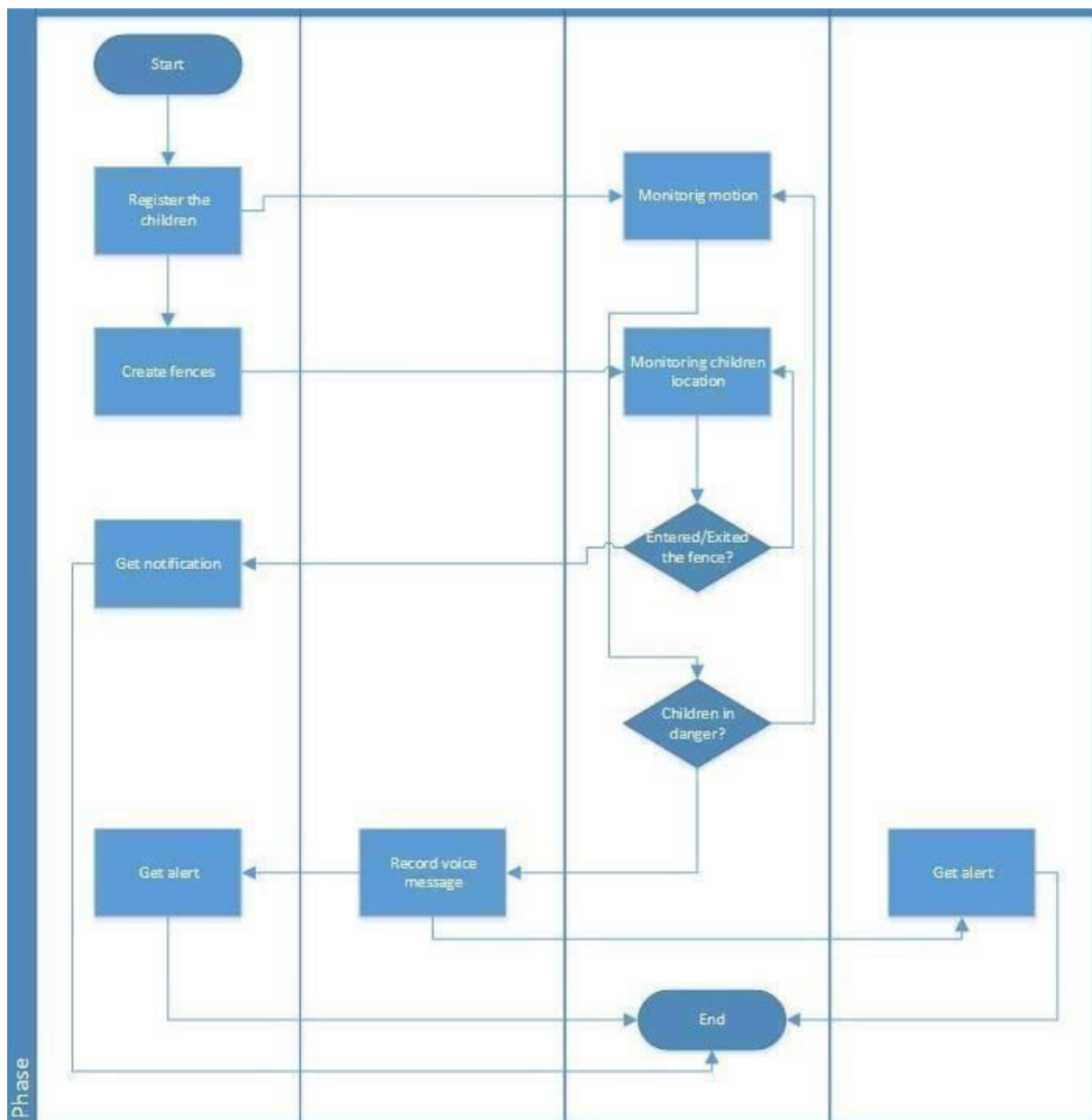
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	<ul style="list-style-type: none"> <li>• A midjet setup via the application is made in the mobile that helps to send SMS to parents.</li> <li>• The gadget has a GSM that aids in informing the parents/guardian about the</li> </ul>

		<p>current location of their kids which in turn helps the parents/guardians take immediate action when any crisis occurs.</p> <ul style="list-style-type: none"> <li>• The gadget is compact and effortless to operate and its applications are foolproof.</li> </ul>
NFR-2	Security	<ul style="list-style-type: none"> <li>• The device is designed in such a way that it builds a safe environment for children to go outside.</li> <li>• It gives a sense of assurance to parents about their children's security as the gadget uses GPS and GSM to track their live location.</li> </ul>
NFR-3	Reliability	<ul style="list-style-type: none"> <li>• Inflated reliability towards the mechanism and curtail reliability towards parents/guardians.</li> <li>• It is transportable, Easy to access, and also tensile.</li> <li>• We can use the cloud to accumulate the surveillance data of the children.</li> <li>• The wifi modules are of assistance in sending the monitoring particulars, the user will be notified with an update if any errors are found, for the efficient functioning of the device.</li> </ul>
NFR-4	Performance	<ul style="list-style-type: none"> <li>• The web Page's load time should be no more than one second for the user's elevated performance concerning simple aidance and security.</li> <li>• The originality of the</li> </ul>

		<p>system is that it spontaneously alerts the parents/caretaker by sending an SMS when instant attention is indispensable for the child during a crisis.</p> <ul style="list-style-type: none"> <li>• The complete data of the children's location will be stocked in the repository and the execution of the device diminishes in a less network area.</li> </ul>
NFR-5	Availability	<ul style="list-style-type: none"> <li>• The device is used to keep tabs on your child even in a horde.</li> <li>• It also provides the current location along with travel details.</li> <li>• This system is advanced using a board programmed in embedded C and python.</li> <li>• It is a site that is available online.</li> </ul>
NFR-6	Scalability	<ul style="list-style-type: none"> <li>• This methodology can be further enhanced by the installation of the mini camera inside a smart gadget for exemplary security and protection so that a glimpse can be caught on the live footage on the parental phone during panic circumstances.</li> <li>• If an intricacy arises parents can see some of the attributes like the location, temperature, and heartbeat of the child along with living perspective around the children without deterrence.</li> </ul>

## 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 is tested individually by the python unit testing IoT.

## **INTEGRATION AND TESTING:**

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

## **DEPLOYMENT:**

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

## **MAINTENANCE:**

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

## **CATASTROPHIC FEATURES IN THE DEVICE:**

### **ALARM RING:**

The safety system redirects a warning to your phone at any



occasion, it determines any pursuit. Arming methodology decides which category of alerts you get.

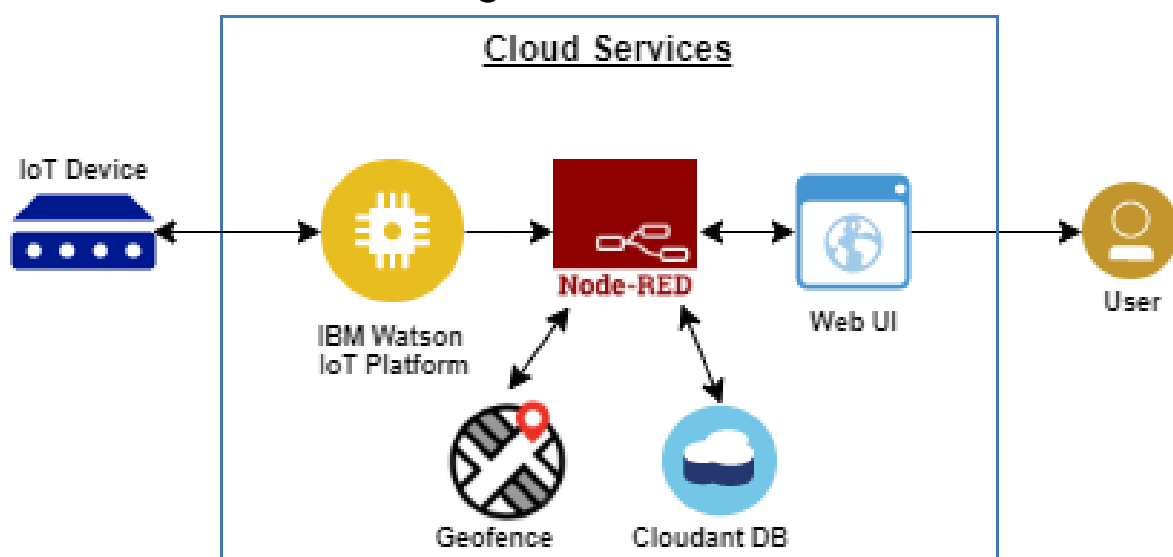
### **EMERGENCY NOTIFICATION:**

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

### **GPS:**

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

### **Solution Architecture Diagram:**



## **5.3 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	Logeshwaran . R
Sprint-1	Confirmation	USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Gautam. S. R
Sprint-2		USN-3	As a user, I can register for the application through Facebook	2	Low	Roopesh. B
Sprint-1		USN-4	As a user, I can register for the application through Gmail	2	Medium	Gautam. S. R
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Logeshwaran . R
Sprint-2	Dashboard	USN-6	As a User, I can Navigate to the Dashboard after successfully Login to the Application.	10	High	Vishal. A
Sprint-1	Notification	USN-7	As a user when there is an anomalous situation with the child, a notification will be received through the fencing application.	4	High	Roopesh. B
Sprint-3	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.	10	Medium	Vishal. A
Sprint-3	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.	10	High	Logeshwaran . R

## 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:

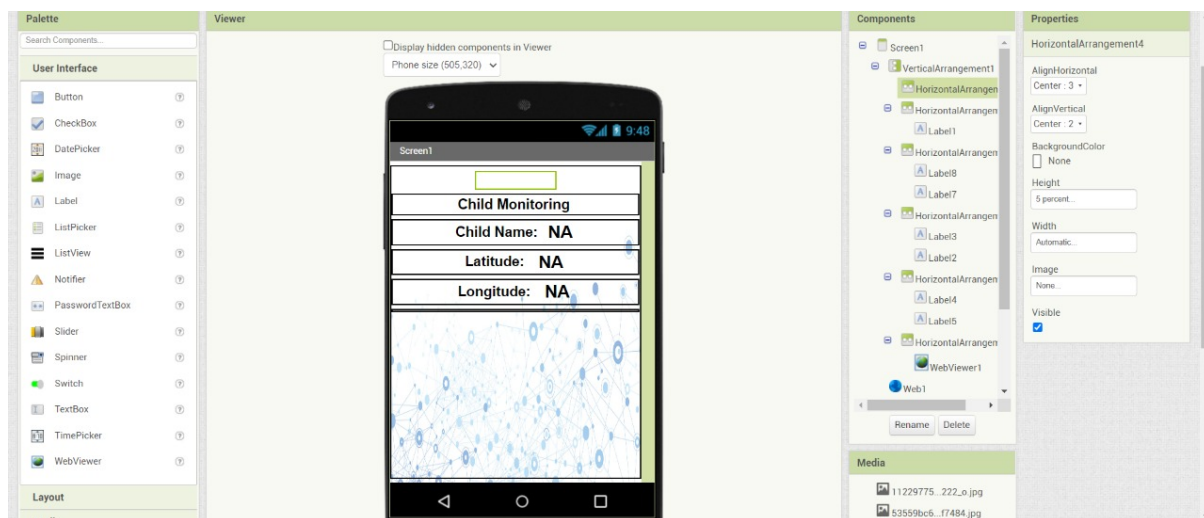
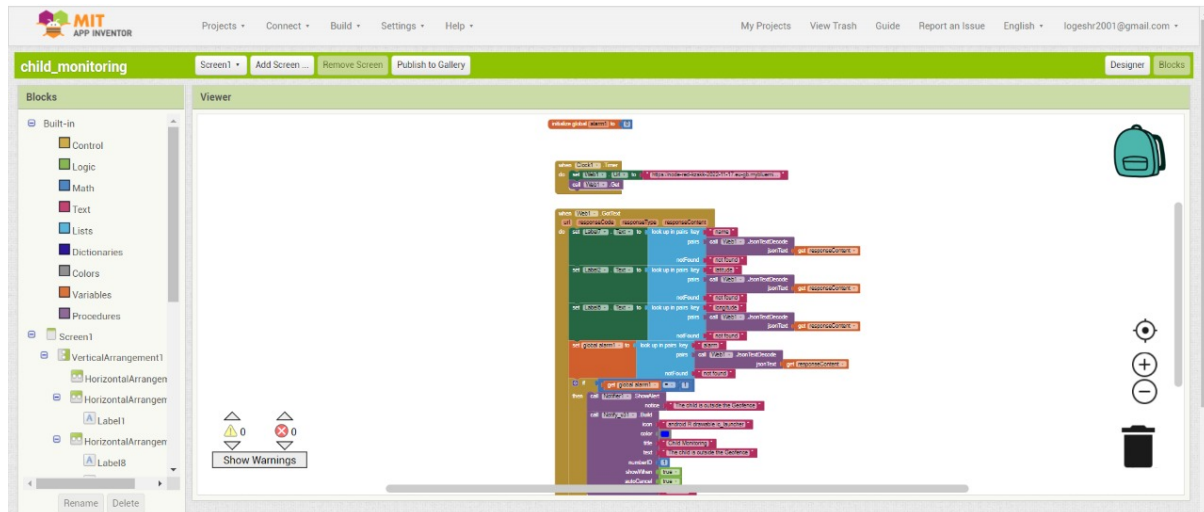
$$AV = \frac{\textit{sprint duration}}{\textit{velocity}} = \frac{20}{10} = 2$$

## 6.2 Sprint Delivery Schedule:

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

# 7. CODING & SOLUTIONING

## 7.1 Feature 1



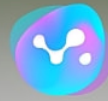
4G 0.00KB/s

VoLTE 4G LTE 62

8:03 PM

Sat November 19, 2022

JIO



Search

Notification

Block



MIT AI2 Companion • Now

### Child Monitoring

The child is outside the Geofence

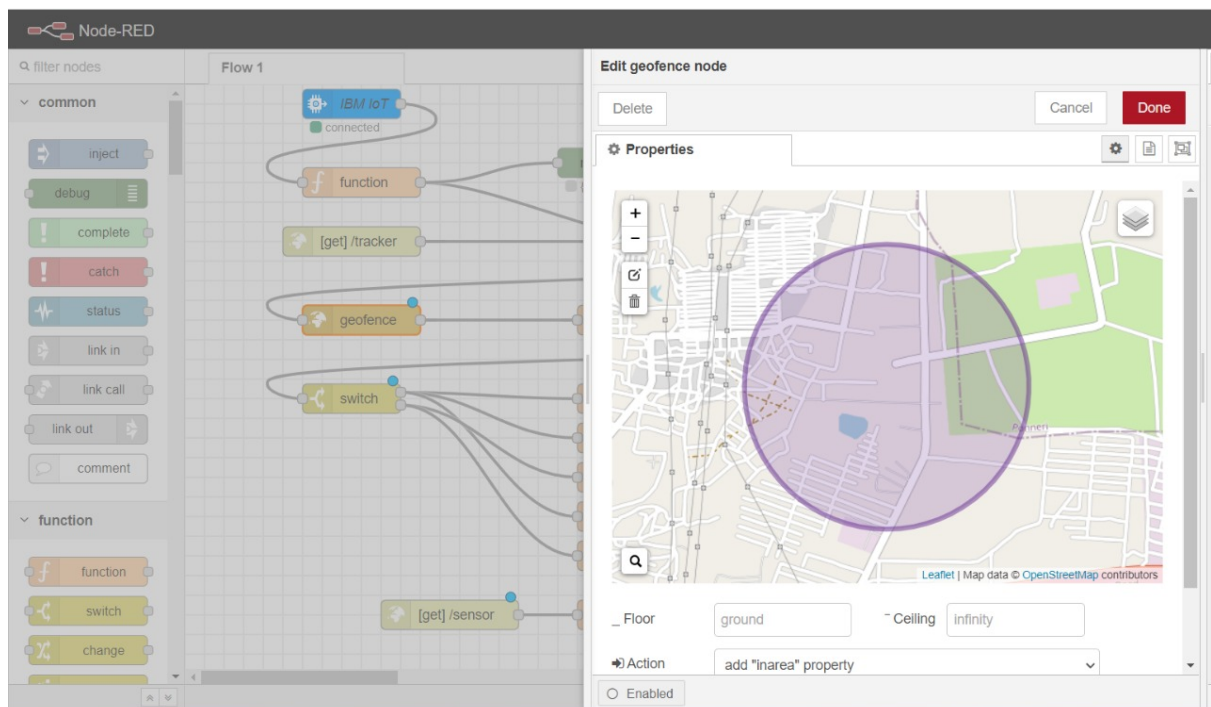
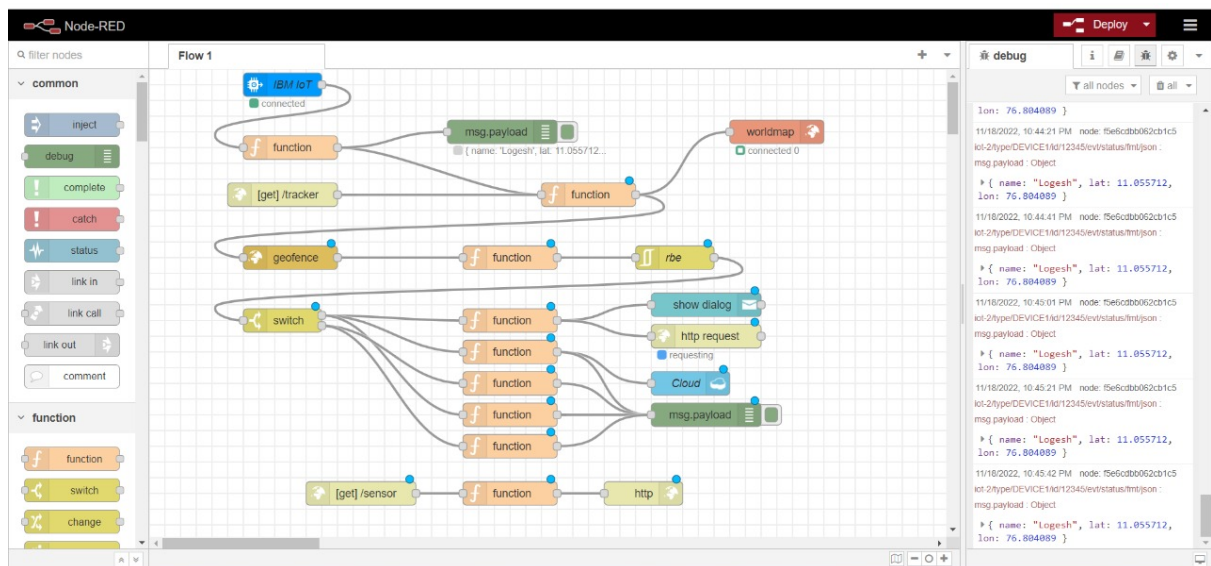


Today: 1.11 GB This month: 21.04 GB >



## 7.2 Feature 2

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



Node-RED

filter nodes

common

inject

debug

complete

catch

status

link in

link call

link out

comment

function

switch

change

Flow 1

IBM IoT

connected

function

msg.payload

[get] /tracker

geofence

switch

function

function

function

function

function

[get] /sensor

function

Edit cloudant out node

Delete

Cancel

Done

Properties

Service

node-red-rmgdc-2022--cloudant-166860064

Database

sample

Operation

insert

Only store msg.payload object?

Name

Cloud

Enabled

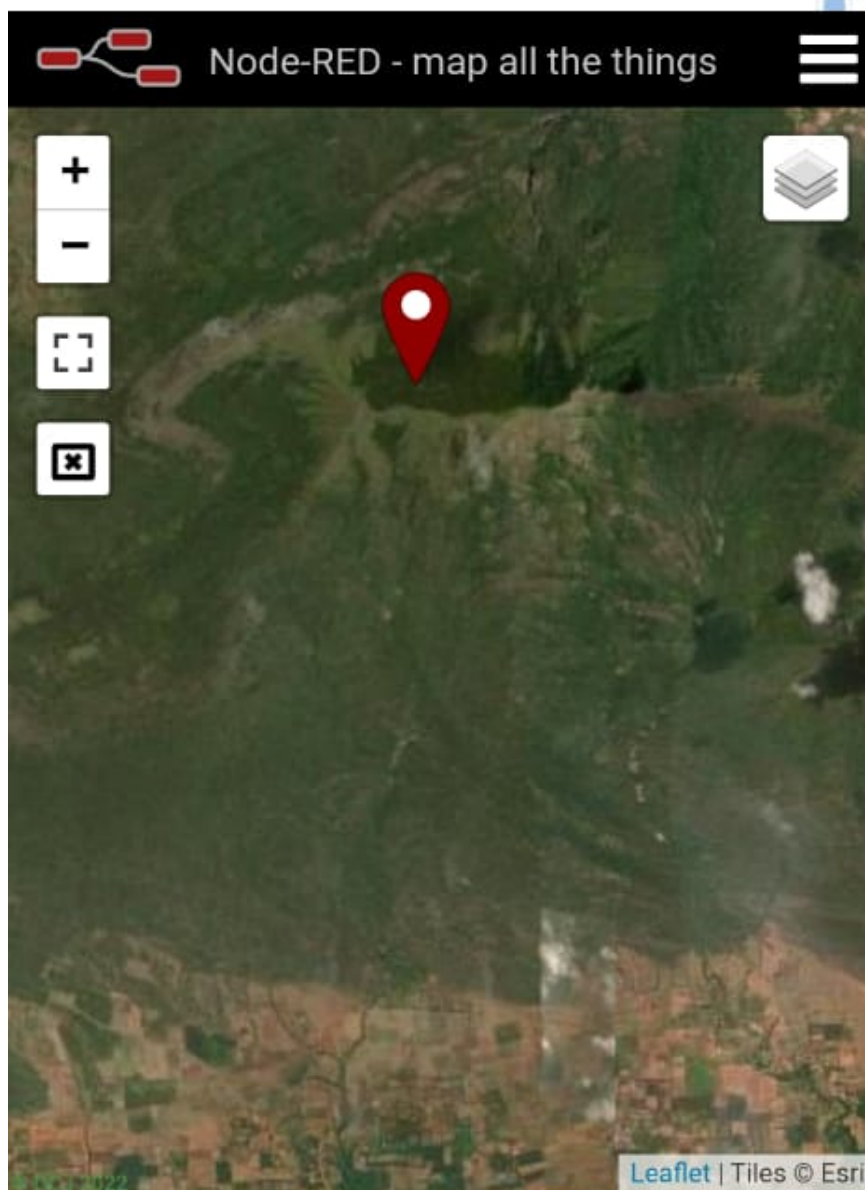


## Child Monitoring

Child Name: **Logesh**

Latitude: **11.05571**

Longitude: **76.80409**





## 7.3 Database Schema

Database name

Create Database

{ } JSON

Your Databases

Name	Size	# of Docs	Partitioned	Actions
noderedkzskk20221117	31.0 KB	4	No	<div>↔</div> <div>🔒</div> <div>🗑️</div>
noderedsriqp20221116	2.3 KB	2	No	<div>↔</div> <div>🔒</div> <div>🗑️</div>
sample	7.6 KB	87	No	<div>↔</div> <div>🔒</div> <div>🗑️</div>

Log Out

Showing 1–3 of 3 databases. Databases per page 20

1

IBM

IBM-EPBL/IBI/...

Resource list

Node-RED : n...

Cloudant Dash...

Console | Twill...

Console | Twill...

(17) WhatsApp: x...

+ ...

- ...

+

https://5068d367-6362-4904-81f1-8aeaa48f2cbe-bluemix.cloudant.com/dash-board.html#database/sample/\_all\_docs

YouTube

Maps

News

Gmail

<

sample

:

Document ID

Options

{ } JSON

All Documents

Query

Permissions

Changes

Design Documents

Table

Metadata

{ } JSON

Create Document

	id	key	value
<input type="checkbox"/>	5a6b4c6f983e1548b1d9a7640244cf8c	5a6b4c6f983e1548b1d9a7640244cf8c	{"rev": "1-2bede7d71debe9ee040506e0653d...
<input type="checkbox"/>	5ddb9a6a449e3d866d4263012e1e2da2	5ddb9a6a449e3d866d4263012e1e2da2	{"rev": "1-f23bdb7030bd1ab93e966358075b...
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<input type="checkbox"/>	7388d2506b87e9202abf640bb98b0294	7388d2506b87e9202abf640bb98b0294	{"rev": "1-cdc46610091cd708ca78da5b77f50...
<input type="checkbox"/>	812fb2471e8f2ec0f3e67ccbbe0b64a3	812fb2471e8f2ec0f3e67ccbbe0b64a3	{"rev": "1-92ced990436f186cb84dda25435...
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<input type="checkbox"/>	8917c452df009d6257c35b59bb3231e8	8917c452df009d6257c35b59bb3231e8	{"rev": "1-341ca8b9713bc0c20528a675c003...
<input type="checkbox"/>	a3100f15787de63c24667f680b8c4bd5	a3100f15787de63c24667f680b8c4bd5	{"rev": "1-87884b3aafB885c558dfa82868853...
<input type="checkbox"/>	c4df8f932b61897a2c8efafe73f24fd	c4df8f932b61897a2c8efafe73f24fd	{"rev": "1-0ef4eb9da2063772cdf43c05806...
<input type="checkbox"/>	eb23314e7abd3df4ba9b740aff8c18c3	eb23314e7abd3df4ba9b740aff8c18c3	{"rev": "1-05e017f1732c44397cf0616f10b28...

Showing document 1 - 10. Documents per page: 20 < >

# 8. TESTING

## 8.1 Test Cases

				Date	16 November 2022						
				Item ID	PNF2022TMD2225						
				Project Name	Project - IoT Based Safety Gadget for Child Safety Monitoring & Notification						
				Maximum Marks	4 marks						
Test case ID	Feature Type	Component	Test Scenario	Pre-Requlite	Steps To Execute	Expected Result	Actual Result	Status	TC for Automation (Y/N)	BUG ID	Executed By
IBM_CLOUD_TC_001	Functional	IBM Cloud Service	Verify the login cloud services	Software	1. Login in using cloud.ibm.com 2. Obtain promocode in ICT 3. Then apply code the and Login 4. The page will be directed to the IBM cloud account	Successfully created the IBM account	Working as expected	Pass	YES	NIL	1.Logeshworn R 2.Vishal A 3.Gautam S R 4.Roopesh B
IBM_Watson IoT Platform_TC_002	Functional	IBM Cloud Service	Verify create a device in the IBM Watson IoT platform and get the device credentials.	IBM Cloud Service	1.In IBM Cloud Service go to catalog 2.Create and launch the IBM Watson IoT Platform 3.Login to the Platform by clicking organisation ID 4.Create a device & configure the device type and ID 5.Generate the API Key 6.Download the python version3.9 7.Type the program and save it with the extension .py 8.Verify it by compiling the code	{name: 'Logesh', lat: 17.4219272, lon: 78.5488783}	Working as expected	Pass	YES	NIL	1.Logeshworn R 2.Vishal A 3.Gautam S R 4.Roopesh B
PythonCode_TC_003	Code	Python 3.9	Verify wheather the python code is without error by running it	Software		025-11-18 12:25:57.235 wiotp.sdk.device.client. Connected successfully id:4a4b4c TestDeviceType:12345	Working as expected	Pass	YES	NIL	1.Logeshworn R 2.Vishal A 3.Gautam S R 4.Roopesh B
Node_Red_TC_004	Non-Functional	IBM Cloud Service	Verify to create a node-red services	IBM cloud services	1. In IBM cloud go to catalog 2. To create a Node-Red app 3. Click onto Deploy App 4. Visit the app URL 5. We need to connect the Node-Red with the IBM Watson	Successfully created the node-red	Working as expected	Pass	NO	NIL	1.Logeshworn R 2.Vishal A 3.Gautam S R 4.Roopesh B
CloudantDB_TC_005	Dataset	IBM Cloud Service	Verify the events is stored in the database	IBM Cloud Service	1. Go to IBM Cloud Services 2. In resources list, click onto cloudant 3. Click onto the launch dashboard to redirect to the cloud DB 4. Click onto create DB	Successfully created the Database	Working as expected	Pass	NO	NIL	1.Logeshworn R 2.Vishal A 3.Gautam S R 4.Roopesh B
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 display it 3. Copy the URL and paste it in the new tab with "ui" extension . 4. Display the child and geofence location.	And as expected it displays the Position of the child and parent	Working as expected	Pass	NO	NIL	1.Logeshworn R 2.Vishal A 3.Gautam S R 4.Roopesh B
SMS Service_TC_007	Functional	MIT App Invenioer	To send SMS to the particular child's guardian	Software	1.Login to FacSMS Service 2.Go to Dev API and select quick API 3.SMS will be sent using Flash SMS option to the registered number	Alert: The person is not in the particular geofence area	Working as expected	Pass	NO	NIL	1.Logeshworn R 2.Vishal A 3.Gautam S R 4.Roopesh B

### 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.

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

### 3. Test Case Analysis:

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

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

## 9. RESULTS

### 9.1 Performance Metrics

NFT - Risk Assessment						
S.No	Project Name	Scope/feature	Functional Changes	Hardware Changes	Risk Score	Justification
1	IoT Based Safety Gadget for Child Safety Monitoring & Notification	New	No Changes	No Changes	GREEN	As we have completed the project successfully
NFT - Detailed Test Plan						
S No	Project Overview	NFT Test Approach				
1	This project proposes a model for child safety through smartphones that can track their children's location and give the precise coordinates of the child's location in real-time anywhere.	Load Test				
End Of Test Report						
S.No	Project Overview	NFT Test approach	NFR - Met	Test Outcome	Approvals/SignOff	
1	The application aside from conceding you to track down your 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	Response time meet the actual Result	Approved	

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

## 10. ADVANTAGES

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

## **DISADVANTAGES**

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

## **11. CONCLUSION**

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

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

Parents take measures both at home and outdoors to safeguard their kids from hurting themselves. But sometimes, it's impossible to pre-empt what can cause a treacherous encounter. However, it's possible

to prevent such hazards with some forethought and simple measures using these safety gadgets.

## **12. FUTURE SCOPE**

### **Ceaseless Surveillance :**

If any deviant readings are disclosed by the sensor, then an SMS and 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
import ibmiotf.application
import ibmiotf.device
```

```
myConfig = {  
    "identity": {  
        "orgId": "046bct",  
        "typeId": "DEVICE1",  
        "deviceId": "12345"  
    },  
    "auth": {  
        "token": "123456789"  
    }  
}
```

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

```
while True:  
    name= "Logesh"  
  
    latitude= 11.055712  
    longitude= 76.804089  
    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()
```

**GitHub:** <https://github.com/IBM-EPBL/IBM-Project-21826-1659792215>

**Project Demo Link**

**:<https://drive.google.com/file/d/1AZ9XIXaHNrwJXVgUP3DAIGhrYpP7O>**

[\\_E4/view?usp=share\\_link](#)