



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

NALAIYA THIRAN PROJECT BASED LEARNING

On

**PROFESSIONAL READINESS FOR INNOVATION,EMPLOYABILITY
AND ENTREPRENEURSHIP**

Project Report Submitted by

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ABSTRACT

As we know in present era everything is based on digital technology. Human being is going to connect each other by using mobile network. This project proposes an SMS based solution to reduced parents insecurity and to track children's in real time. Different devices are connected with a single device. The concerned device is connected to mobile via SMS. Child tracker helps the parents in continuously monitoring the child's location. They can simply leave their children in school or parks and create a geofence around the particular location. By continuously checking the child's location notifications will be generated if the child crosses the geofence. Notifications will be sent according to the child's location to their parents or caretakers. The entire location data will be stored in the database. An Android app was designed and developed to collect the location data from cloud database to compute the relative distance location of a child when he or she leaves the maximum set distance, using node-red devices. Finally, a user study was conducted to analyze the user experience of the system developed.

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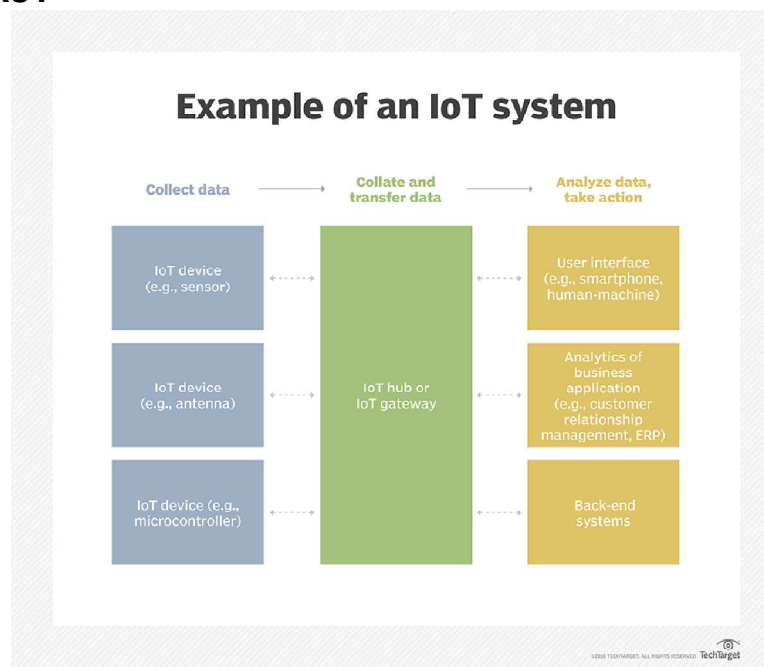
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1.INTRODUCTION

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

How IoT works?



An IoT ecosystem consists of web-enabled smart devices that use embedded systems, such as processors, sensors and communication hardware, to collect, send and act on data they acquire from their environments. **IoT devices** share the sensor data they collect by connecting to an IoT gateway or other edge

device where data is either sent to the cloud to be analyzed or analyzed locally. Sometimes, these devices communicate with other related devices and act on the information they get from one another. The devices do most of the work without human intervention, although people can interact with the devices -- for instance, to set them up, give them instructions or access the data.

1.1 PROJECT OVERVIEW

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

PROJECT FLOW

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

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

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

1.2 PURPOSE

Child tracker helps the parents in continuously monitoring the child's location. They can simply leave their children in school or parks and create a geofence around the particular location. By continuously checking the child's location notifications will be generated if the child crosses the geofence. Notifications will be sent according to the child's location to their parents or caretakers. The entire location data will be stored in database.

2. LITERATURE SURVEY

2.1 & 2.2 Existing problem and Reference

1.Smart IoT Device for Child Safety and Tracking.

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

Published in: 2019 IEEE.

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

Merits:

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

Demerits:

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

2.Child safety wearable device.

Authors: Akash Moodbidri, Hamid Shahnasser

Published in: 2017 IEEE.

The purpose of this device is to help parents to locate their children with ease. At the moment there are many wearable's in the market which helps to track the daily activity of children and also helps to find the child using Wi-Fi and Bluetooth services present on the device.

Merits:

This wearable over other wearable is that it can be used in any phone and it is not necessary that an expensive smartphone is required and doesn't want to be very tech savvy individual to operate.

Demerits:

As, this device's battery gives short life-time. High power efficient model will have to be used which can be capable of giving the battery life for a longer time.

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

Authors: Aditi Gupta, Vibhor Harit.

Published in: 2016 IEEE.

This paper proposed a model for child safety through smart phones that provides the option to track the location of their children as well as in case of emergency children can send a quick message and its current location via Short Message services.

Merits:

The advantages of smart phones which offers rich features like Google maps, GPS, SMS, etc.

Demerits:

This system is unable to sense human behavior of child.

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

Authors: Dheeraj Sunehera, Pottabhatini Laxmi Priya.

Published in: 2016 IEEE.

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

Merits:

A child tracking system using android terminal and hoc networks

.Demerits:

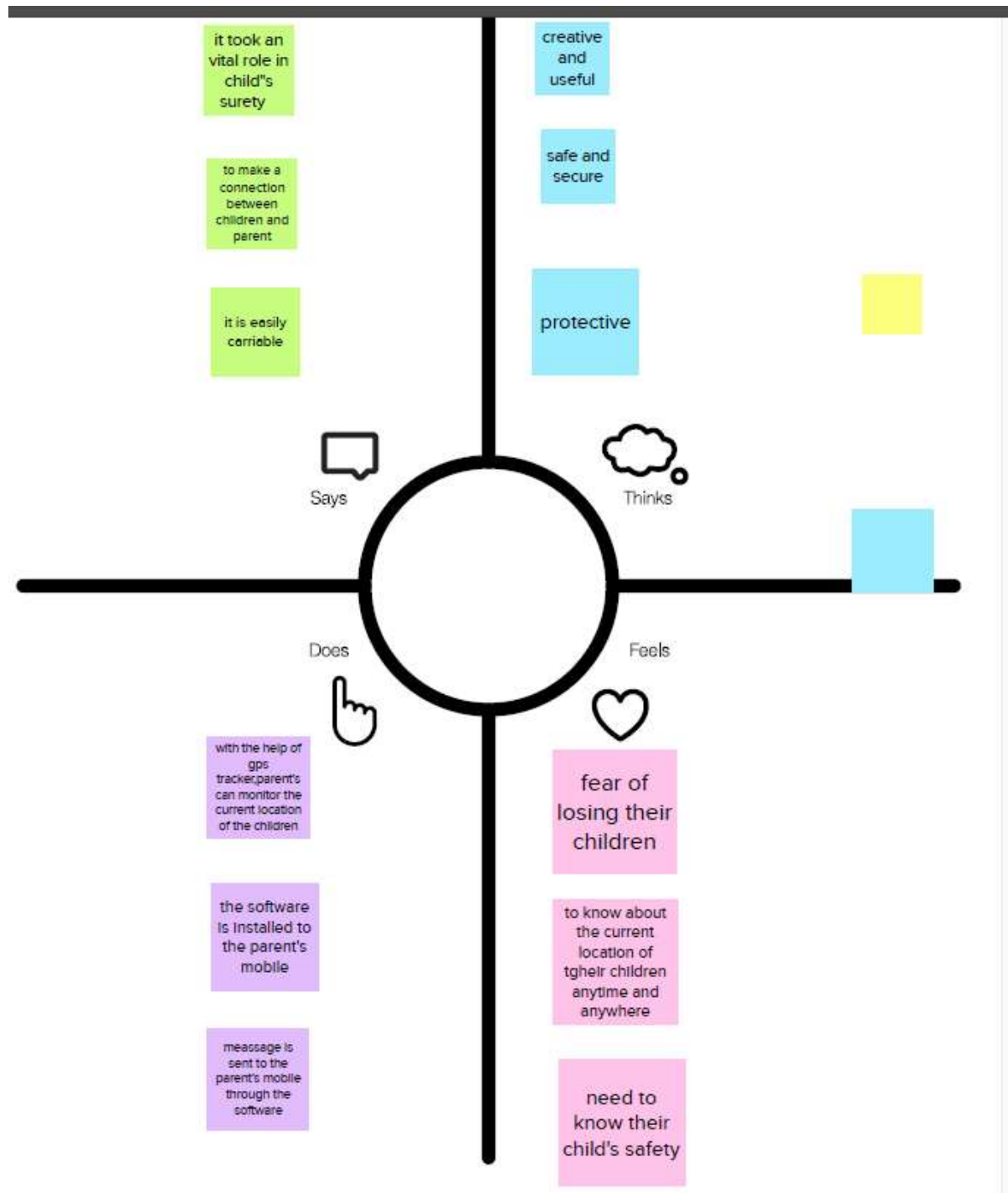
This device cannot be used in rural areas.

2.3 Problem Statement Definition

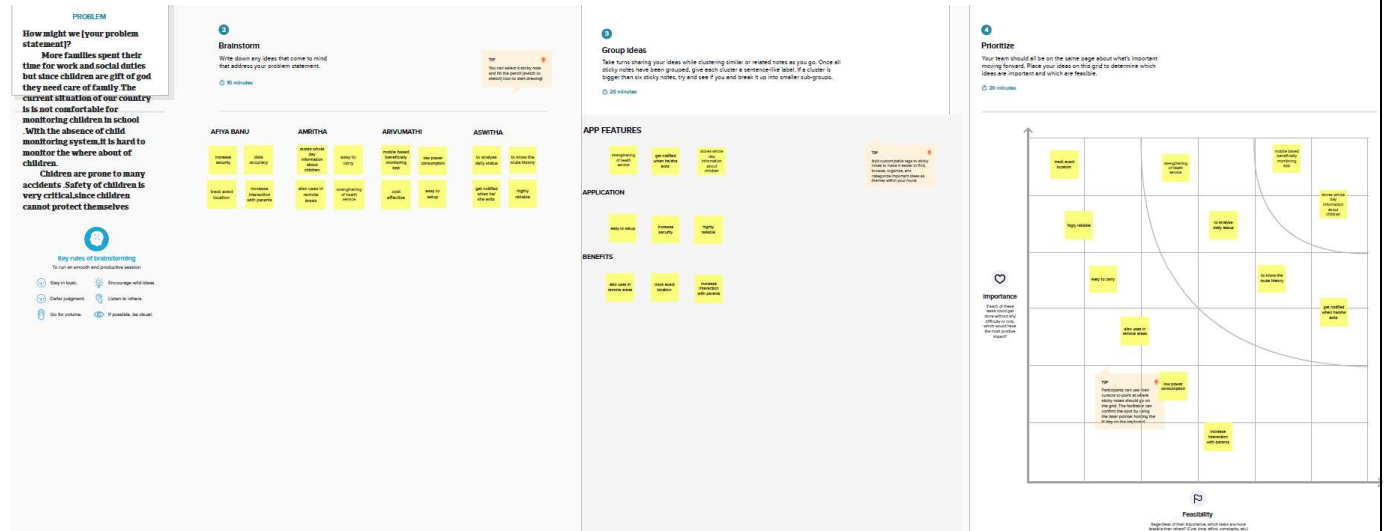
- More families are now spending time on work and social duties, hence away from their children. This causes increased concerns towards their safety and whereabouts, and has made keeping a track of their activities quite challenging. Crimes against children are increasing Year on Year.
- According to a study, roughly 60,000 children Go missing in India every year . There is an assumption that every 10 minutes, a child goes missing. Mumbai and Delhi have the highest rate when compared to other metro cities. With the lack of availability of affordable Child monitoring systems it is hard to monitor the whereabouts of Children. Safety of children is very critical since children cannot protect themselves. A momentary lack in parental supervision should be combated with an appropriate IT solution in context.
- Therefore, it is necessary for the proposed system to alert the parents when the child walks too far away and/or outside the “circle of safety” when they are away .In case of an emergency, or in a situation of panic, the child must be able to communicate with their parents.
- The child safety wearable device can act as a smart device. It provides parents with the real-time location, surrounding temperature, SOS light along with Distress alarm buzzer for their child’s surroundings and the ability to locate their child or alert bystanders in acting to rescue or comfort the child.

3. IDEATION&PROPOSED SOLUTION

3.1 Empathy Map Canvas



3.2 Ideation & Brainstorming



3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	<ul style="list-style-type: none"> ❖ More families spent their time for work and social duties but since children are gift of god they need care of family. ❖ We save children from kidnapping,missing.
2.	Idea / Solution description	<ul style="list-style-type: none"> ❖ Child tracker helps the parents in continuously monitoring the child location.They simply leave their children in school or parks and create a geofence. ❖ By continuously checking child's location notification will be generated if the child crosses the geofence.Notification will be send to according to the child's location to their parents. ❖ The entire location data will be stored in the data base.
3.	Novelty / Uniqueness	<ul style="list-style-type: none"> ❖ Monitoring is a way to connect with children,keep tracking of the exact location of the children.
4.	Social Impact / Customer Satisfaction	<ul style="list-style-type: none"> ❖ It assists parents to monitor their children remotely
5.	Business Model (Revenue Model)	<ul style="list-style-type: none"> ❖ Selling the product directly to the parents ❖ Selling the product to the childcare centers
6.	Scalability of the Solution	<ul style="list-style-type: none"> ❖ In a field of IOT we proposed to deal with

		brilliant sensors and electrical equipment to achieve “CHILD SAFETY MONITORING SYSTEM”
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3.4 Problem Solution

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) Public (parents) CS	6. CUSTOMER CONSTRAINTS Child safety monitoring is governed by some technical limitations like battery capacity. Wearable technique is expensive CC
	2. JOBS-TO-BE-DONE / PROBLEMS J&P <ul style="list-style-type: none"> Lack of information about child location. Need for child's health condition. Need for real time information about abduction. 	9. PROBLEM ROOT CAUSE RC <p>we automatically monitor the child in real time using the IOT with help of GPS.</p>

	4. EMOTIONS: BEFORE / AFTER EM <p>Parents gets frustrated when their child's were missing/ Being happy after the solution has been installed.</p>	
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4. REQUIREMENT ANALYSIS

4.1 Functional requirement

FR-1	User Registration	<ul style="list-style-type: none">✓ Registration through Gmail✓ Registration through phone number
FR-2	User Confirmation	<ul style="list-style-type: none">✓ Confirmation via Email✓ Confirmation via OTP
FR-3	App installation	<ul style="list-style-type: none">✓ Installation through link✓ Installation through play store
FR-4	Settings geofence	<ul style="list-style-type: none">✓ Seeing by user to find child location
FR-5	Detecting child location	<ul style="list-style-type: none">✓ Detecting location via app✓ Detecting location via SMS

FR-6	User Interface	<ul style="list-style-type: none">✓ User Login Form.✓ Admin Login Form.
FR-7	Database	<ul style="list-style-type: none">✓ Stored in cloud for seamless connectivity.✓ Parents and kids link with the distance and the location values obtained from the mobile devices are stored here.✓ The values include parent id, kid id, distance, longitude, latitude etc.

FR-8	Server	<ul style="list-style-type: none"> ✓ It connects the database and the front end application. ✓ The backend server has been implemented to run as a service and is deployed in an IBM cloud instance. ✓ The backend server has been implemented to run as a service and is deployed in an IBM cloud instance.
FR-9	GPS tracking	<ul style="list-style-type: none"> ✓ The system is implemented with a GPS module, which acquires the location information of the user and stores it to the database.
FR-10	API	<ul style="list-style-type: none"> ✓ The value collected is sent to the database using an API.
FR-11	React JS	<ul style="list-style-type: none"> ✓ We are using react js as front end for our project. ✓ Node JS for the back end we are using node js.
FR-12	GPS modules	<ul style="list-style-type: none"> ✓ It receives data directly from satellites.
FR-13	Battery Life	<ul style="list-style-type: none"> ✓ If the child or parent forgets to charge the device for a whole day then also the device will work. ✓ That's why we aim to make this device last the whole day with one charge. It should be long-lasting.

FR-14	Location History	<ul style="list-style-type: none"> ✓ The location history will help to track the child's activity so that the aren't will be updated. ✓ Location history will be there for 30 days. ✓ For example if the child gets missing with the help of location history they aren't can track down their child's activity and also can find their child.
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4.2 Non-Functional requirements

NFR-1	Usability	<ul style="list-style-type: none"> ✓ Device have GSM can help to inform the parents or relatives about the current situations of the child by deliver the message immediately to save the child.
NFR-2	Security	<ul style="list-style-type: none"> ✓ Make children parents more assure about their kid's security, we have a feature in our device called Geo-Fence. ✓ Whenever your child crosses that specific area, you will get an instant no fiction on your phone.
NFR-3	Reliability	<ul style="list-style-type: none"> ✓ Portable ✓ Easy to use ✓ Flexibility

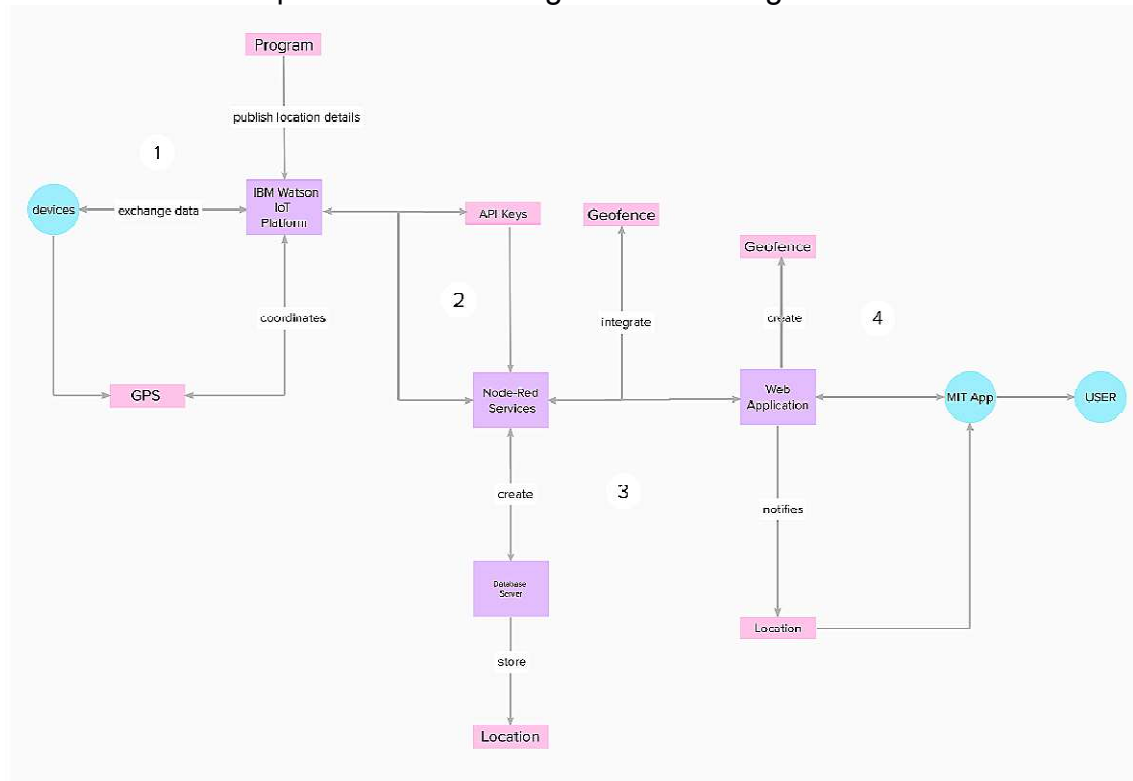
NFR-4	Performance	<ul style="list-style-type: none"> ✓ Create a Child tracker which helps the parents with continuously monitoring the child's location. ✓ The no location will be sent according to the child's location to their parents or caretakers. ✓ The entire location data will be stored in the database.
NFR-5	Availability	<ul style="list-style-type: none"> ✓ Track your child even in a crowd ✓ Get travel details of kids at any me ✓ Know the current location
NFR-6	Scalability	<ul style="list-style-type: none"> ✓ Gadget ensures the safety and tracking of the children. ✓ Parents need not worry about their children.
NFR-7	Valuability	<ul style="list-style-type: none"> ✓ The system should be able to deliver promptly to the financing authority. ✓ In the case of non-profit organizations, the solution should be 'advancing the mission'.
NFR-9	Dynamicity	<ul style="list-style-type: none"> ✓ IoT devices may have the capability to adapt dynamically and change based on their conditions.
NFR-10	Desirability	<ul style="list-style-type: none"> ✓ Navigation should be made easy. ✓ The user should be able to search and find the information he needs without much hassle.

5. PROJECT DESIGN

5.1 Data Flow Diagrams

FLows:

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

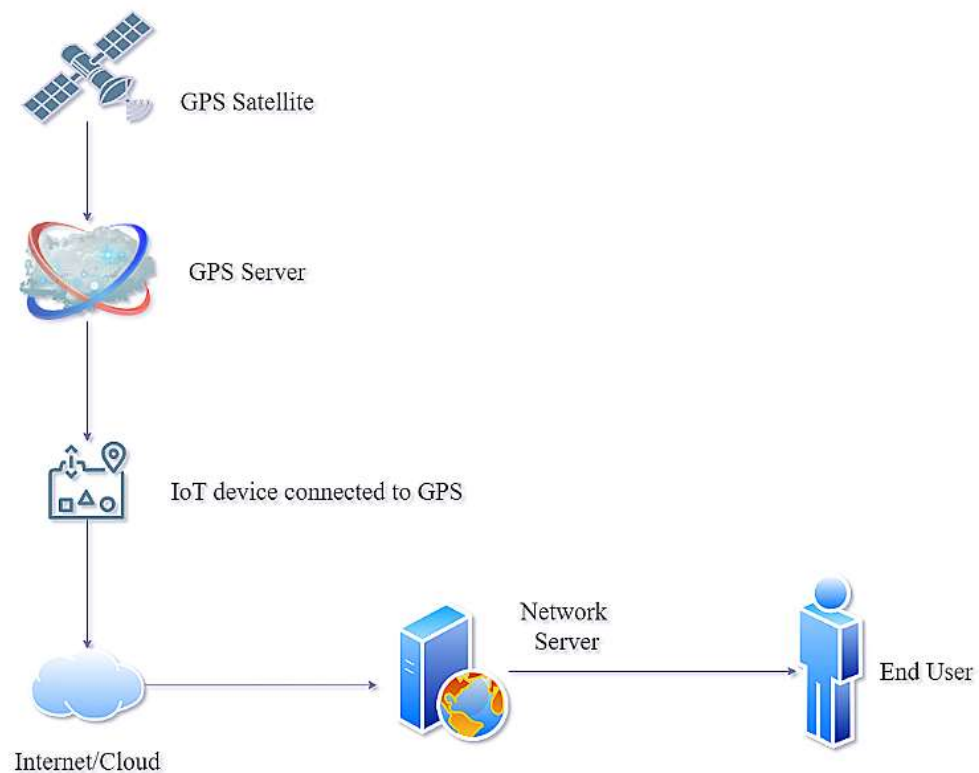


5.2 Solution & Technical Architecture

SOLUTION ARCHITECTURE:

➤ Using the Minimum Viable Architecture model can ultimately result in a highly polished end product as it relies on testing assumptions with small experiments and guiding development using the findings of said experiments.

- Providing a flexible framework that can help achieve target business objectives, MVA responds to evolving customer requirements and technologies and can go a long way in promoting agility.
- The safety of a child at a large public event is a major concern for event organizers and parents. We address this important concern and proposes an architecture model of the IoTenable smart child safety tracking digital system.



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

TECHNICAL ARCHITECTURE:

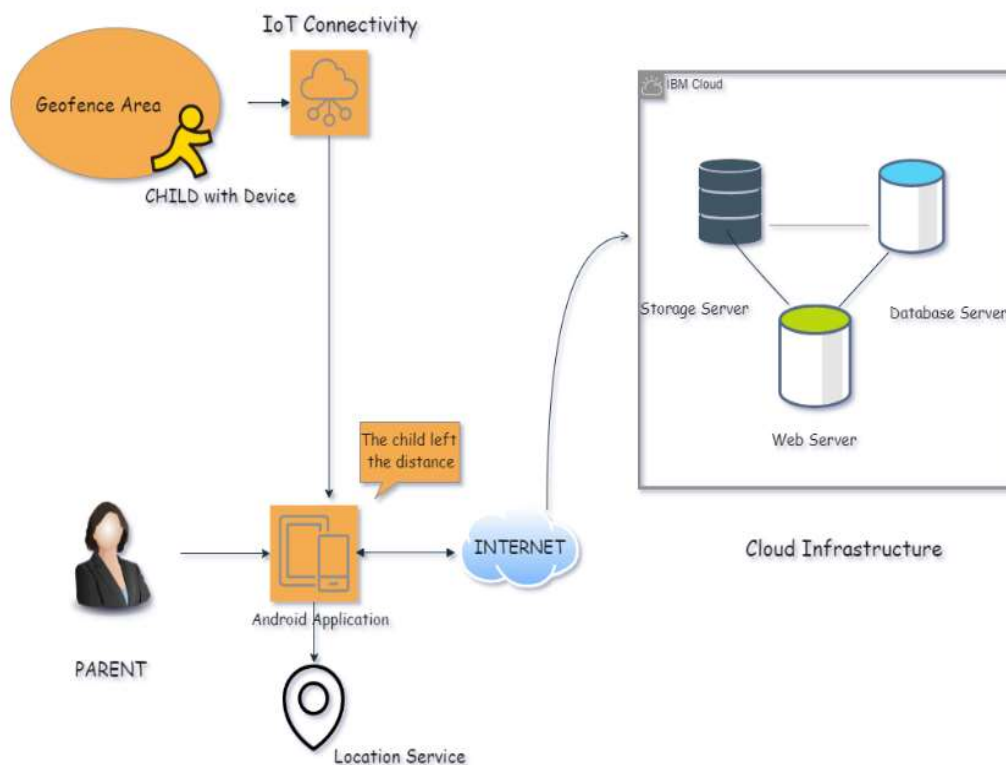


Table-1 :
Components & Technologies:

S.No	Component	Description
1.	User Interface	Web UI
2.	Application -1	To publish location details in IBM Watson Platform
3.	Application -2	Process in the IoT application
4.	Application -3	It assists the IoT application
5.	Database	Data Configuration Types
6.	Cloud Database	Database Service Cloud
7.	File Storage	File storage required
8.	External API-1	Connect the device to IoT platform
9.	External API-2	Connect the node services
10.	Machine Learning Model	It uses past behavior to identify patterns and builds models that predict future behavior

Table-2:
Application Characteristics:

S.No	Characteristics	Description
1.	Open-Source Frameworks	Sensors, software applications & Cloud application

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

5.3 User Stories

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

			email & password	
	Dashboard	USN-6	As a user,I can see the desired information on the screen of the phone	I can access my screen
Customer (Web user)	Users	USN-1	As a user, I can integrate all users in this account	I can configure the account active and inactive
	Web applicator	USN-2	As a web applicator, I can form	I can program the code in server
Administrator		USN-1	As a user,I can manage the application	I can configure the settings their account
Devices	Simulation	USN-1	As a user, I can connect the required parameter in device.	I can deliver the product
		USN-2	As a user, I can activate the device	I can applicable the child devices
Message Sender	API requests	USN-1	As a message sender, API requests whenever some function is invoked from a device.	I can send receive the from an application
	Fast SMS	USN-2	As a sender, I can send bulk messages	I can receive the message in device

			devices	
Authenticator	User	USN-1	As a user, I can use identification technique in IoT device	I can emminent security
	Open Authorization	USN-2	As a user, I uses an open standard communication protocol	It provides tokens to the end users
	Identifier	USN-3	User successfully register into the system	It stores the user's unique identification
Admin	Admin Authorities	USN-1	In this other end-users are restricted	to add device into the system
	User	USN-1	As a user, I can create	The user can login to IoT

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Product backlog, Sprint Schedule, Estimation

Sprint	FUNCTIONAL REQUIREMENT(EPIC)	USER STORY NUMBER	USER STORY/TASK	STORY POINTS	PRIORITY	TEAM MEMBERS
SPRINT 1	Create and Configure IBM Cloud Services	USN 1	As a user I need to enroll the cloud registration	3	HIGH	Afiya Banu H
SPRINT 1		USN 2	As a user I will create IBM cloud account	2	MEDIUM	Afiya Banu H
SPRINT 1		USN 3	After creating cloud account launch IBM Watson IOT Platform by accessing cloud account	5	HIGH	Arivumathi G
SPRINT 1		USN 4	Create the node in IBM Watson platform	7	HIGH	Amritha A
SPRINT 1		USN 5	After Creating node get device type and id	1	LOW	Aswitha R

SPRINT 1		USN 6	Simulate the node created	3	MEDIUM	Aswitha R
SPRINT 2	Create and access Node-Red	USN 7	As a user I can create Node-Red by app deployment	5	HIGH	Arivumathi G
SPRINT 2		USN 8	Connect IBM Watson with node red through API key	2	LOW	Amritha A
SPRINT 2		USN 9	Design the project flow using Node-Red	7	HIGH	Afiya banu H
SPRINT 2		USN 10	Check for the proper connections and the output in the node red application	3	MEDIUM	Arivumathi G
SPRINT 3	Create a database in cloud ant DB	USN 11	Launch the Cloud ant DB and Create database to store the location data	4	HIGH	Aswitha R
SPRINT 3	Develop the python script	USN 12	Install the python software	2	LOW	Arivumathi G
SPRINT 3		USN 13	Develop the python scripts to publish details to IBM IOT Platform	6	HIGH	Amritha A
SPRINT 3		USN 14	Integrate the device id,authentication token in python script	2	LOW	Arivumathi G
SPRINT 3		USN 15	Develop the python code for publishing the location(latitude&longitud e)to IBM IoT Platform	8	HIGH	Amritha A
SPRINT 4	Create the mobile application using MIT App Inventor	USN 16	Develop the mobile application using MIT App Inventor	5	HIGH	Aswitha R
SPRINT 4		USN 17	Connect to the IBM IoT Platform and get the location and store the data in the cloudant	2	MEDIUM	Amritha A
SPRINT 4		USN 18	Create the Geo fence and Google map for location identification	8	HIGH	Afiyabanu H

SPRINT 4		USN 19	Integrate the geofence and Google map to check if the child is inside or outside the geofence	11	HIGH	Afiyabanu H
SPRINT 4		USN 20	Send the notifications if the child is outside the geofence	4	HIGH	Aswitha R

6.2 Sprint Delivery Schedule

Project Tracker, Velocity & Burndown Chart

SPRINT	TOTAL STORY POINT	DURATION	SPRINT START DATE	SPRINT END DATE(PLANNED)	STORY POINTS COMPLETED(AS ON PLANNED END DATE)	SPRINT RELEASE DATE(ACTUAL)
SPRINT 1	21	6 Days	24 OCT 2022	29 OCT 2022	21	29 OCT 2022
SPRINT 2	17	6 Days	05 NOV 2022	05 NOV 2022	17	05 NOV 2022
SPRINT 3	22	6 Days	12 NOV 2022	12 NOV 2022	22	12 NOV 2022
SPRINT 4	30	6 Days	14 NOV 2022	19 NOV 2022	30	19 NOV 2022

Velocity:

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

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

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

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

6. CODING & SOLUTIONING

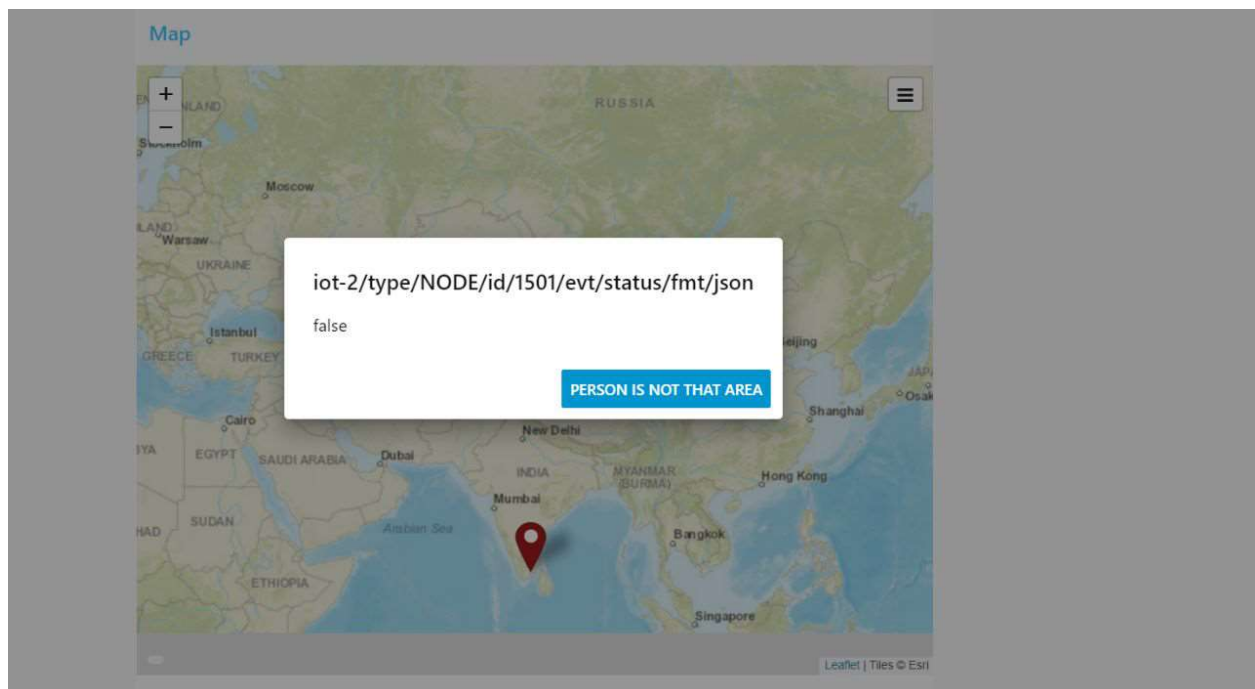
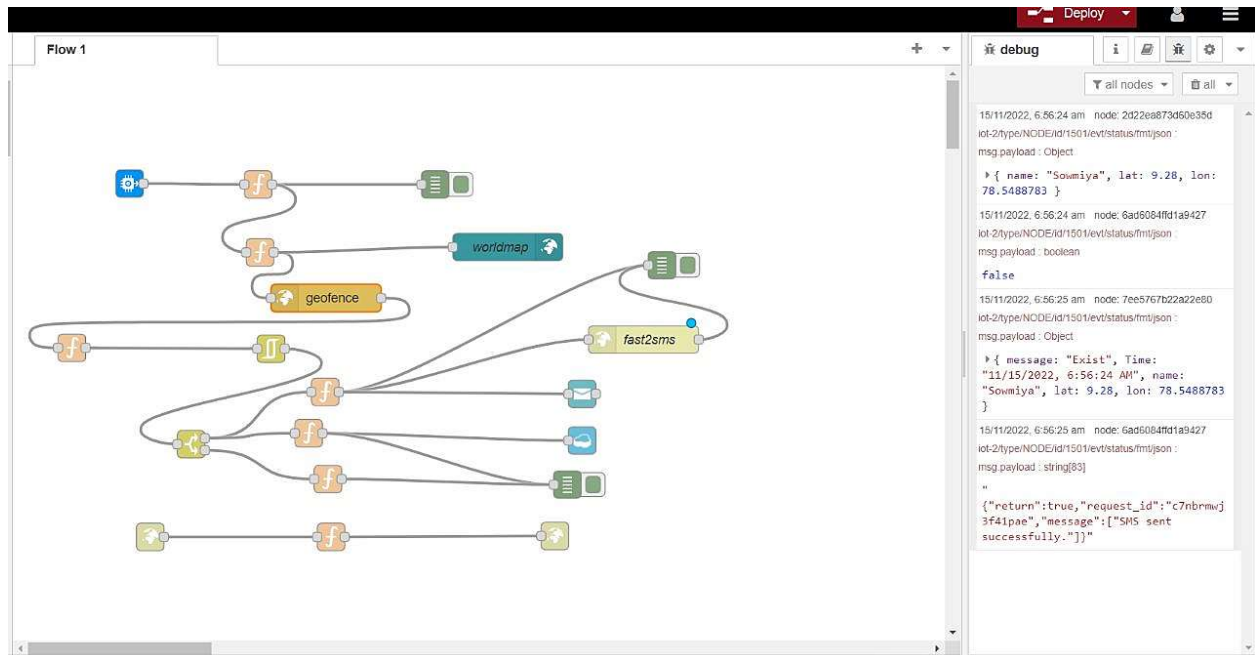
6.1 Feature 1 - PYTHON CODE

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

```
1 import time
2 import wiotp.sdk.application
3 print("Hello")
4 myConfig = {
5     "identity": {
6         "orgId": "f3jda21",
7         "typeId": "Tracker",
8         "deviceId": "28",
9     },
10    "auth": {
11        "token": "123456789"
12    }
13 }
14 client = wiotp.sdk.device.DeviceClient(config = myConfig, logHandlers
15 client.connect()
16
17 while True:
18     name = "Child"
19     #in area location
20
21     latitude = 17.4219272
22     longitude = 78.5488783
23
```

7.2 Feature 2 -NODE-RED Service

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



6.3 Feature 3 - Fast2sms

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

7. TESTING

Test Scenarios

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

User Acceptance Testing

1.Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the[IoT Based Safety Gadget For Child Safety Monitoring & Notification] project at the time of the release to User Acceptance Testing (UAT).

2.Defect Analysis

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

Resolution	Severity 1	Severity 2	Severity 3
By Design	5	3	2
Duplicate	0	0	0
External	2	0	0
Fixed	6	2	0
Not Reproduced	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	
Print Engine	1	0	
Client Application	2	0	
Security	1	0	
Outsource Shipping	1	0	
Exception Reporting	1	0	

8. RESULTS

8.1 Performance Metrics

NFT - Risk Assessment					
S.No	Project Name	Scope/feature	Functional Changes	Hardware Changes	Software Changes
1	IoT Based Safety Gadget for Child Safety Monitoring & Notification	Existing	No Changes	No Changes	No Changes

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

End Of Test Report

NFT Test approach	
Load Test	
Scenario Name	Load Test - Location Tracker SAMPLE PROJECT
Scenario Type	Load Test - Duration 30 minutes
Scenario Objectives	To Stimulate Python Code(Location Details) a of Location Tracker SAMPLE PROJECT
Steps	1. We have integrate IBM Watson IoT Platform details from python program. 2. We also integrate fast SMS service in order parent

9. ADVANTAGES & DISADVANTAGES

Advantages

1. Peace of mind for parents

Parents no longer need to ring their child continuously, thus causing them to feel embarrassed, or interrupting their play and exploration.

Location tracking can also ease unnecessary worry if a child doesn't answer the phone straight away - through GPS tracking, a parent can receive a quick update and put their mind to rest.

2. Gives kids more freedom

It gives children more freedom because when parents know where the children are, means they're more relaxed about letting the kids go further afield.

3. Reassurance for children

Location tracking can also be reassuring for the child, particularly if they get lost - this is especially useful if a child wanders off in a crowded place.

4. Know the current location

Our Kids GPS Tracker provides real-time location of your children. You can track the live locations of your kids, where they are and what they are doing.

5. Get geofence details of kids at any time

Send alert Notification to the parents if their children cross the geofence.

Disadvantage

1. Kids may become more secretive

Young people may respond to being tracked by becoming increasingly secretive and flouting the surveillance by, for example, leaving their phone at a friend's house so their parents think they're there.

2. They don't become streetwise

Young people run the risk of not learning to be independent and safe on their own.

3. Internet and social media access

Children need a smartphone for their parents to install a tracking app, but this can expose them to the potential dangers associated with social media and the internet such as cyberbullying, inappropriate contact with strangers and unsupervised access to inappropriate information.

4. Trust issues

If they're being tracked, young people may feel their parents think they can't be trusted. By contrast, if they feel they are trusted, such responsibility can help them behave in a trustworthy manner.

10. CONCLUSION

This Project demonstrates smart IoT devices for child safety tracking and monitoring, to help the parents to locate and monitor their children. We have integrated IBM Watson IoT Platform in order to get this location details (i.e. latitude & longitude) from python program and we also integrate Fast SMS service in order to send an alert to guardian/ parent. The system also consists of mobile app and send all the monitored parameters to cloud on parental phone.

11. FUTURE SCOPE

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. GPS device comes with a panic button that lets your child alert you when something is wrong or they need help.

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