

IoT Based Safety Gadget For Child Safety Monitoring & Notification

PANIMALAR INSTITUTE OF TECHNOLOGY

MEMBERS:

- 1) Mithra shree.K.R
- 2) Ann Maria Fredy
- 3) Swethapriyaa.S
- 4) Tejaswini.G

DATE:18/11/2022

ACKNOWLEDGEMENT

We would like to thank Mrs.Kalaiarasi.D, our professor-in-charge for their support and guidance in completing our project on the topic IoT Based Safety Gadget for Child Safety Monitoring & Notification. It was a great learning experience.

I would like to take this opportunity to express my gratitude to all of my group members Mithra shree.K.R, Ann Maria Fredy, Swethapriyaa.s, Tejaswini.G. The project would not have been successful without their cooperation and inputs.

TABLE OF CONTENTS:

1. Abstract
2. Introduction
3. Literature survey
4. Ideation and proposed solution
5. Requirement analysis
6. Project design
7. Project planning and scheduling
8. Coding and solutioning
9. Testing
10. advantages and disadvantages
11. conclusion
12. futures scope
13. appendix

1.ABSTRACT:

The overall percentage of child abuse cases filed nowadays in the world is about 80%, out of which 74% are girl children and the rest are boys. For every 40 seconds, a child goes missing in this world. Children are the backbone of one's nation, if the future of children was affected, it would impact the entire growth of that nation. Due to the abuse, the emotional and mental stability of the children gets affected which in turn ruins their career and future. These innocent children are not responsible for what happens to them. So, parents are responsible for taking care of their own children. But, due to economic conditions 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. In our system, we provide an environment where this problem can be resolved in an efficient manner. It allows 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.

2.INTRODUCTION:

The internet of things (IoT) refers to the set of devices and systems that stay interconnected with real-world sensors and to the internet. For years' Child safety has been under threat and it is very important to provide a technology-based solution which will help them under panic situations and monitor them using a smart gadget. The proposed system is equipped with GSM and GPS modules for sending and receiving calls and SMS between safety gadget and parental phone, the proposed system also consists of Wi-Fi module used to implement IoT and send all the

monitoring parameters to the cloud for android app monitoring on parental phone. Web application can be used to track the current location of a safety gadget using its location coordinates on the parental phone android app and also via SMS request from parent phone to safety gadget. Panic alert system is used during panic situations and automatic SMS alert and phone call is triggered from safety gadget to the parental phone seeking for help and also monitored for plug and unplug from hand, as soon the gadget is unplugged from hand a SMS is triggered to parental phone and the alert parameter is also updated to the cloud.

Heart-beats, temperature is monitored and the values are updated to cloud continuously for parent app monitoring. Boundary monitoring system is implemented on safety gadgets with the help of BEACON technology, as soon as the safety gadget moves far away from the binding gadget an alert is provided to the parent on the binding gadget. The system is used to monitor the health parameters and also used for location tracking during necessary situations in safety concerns.

3.LITERATURE SURVEY:

A. Embedded IEEE Project Child Safety Wearable device:

The concentration of this paper is to have an SMS content empowered correspondence medium between the children wearable and the parent as nature for GSM portable that correspondence is practically present all over the place. The parent can send a content with particular catchphrases, for example: area, temperature, uv, sos, buzz and wearable gadgets

will answer back with a content containing the continuous exact area of the youngster which after will give applications.

B. Child safety wearable device:

The child safety device is capable of acting as a capable IOT device it provides parents with the real time location, surrounding temperature, UV radiation index and 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. The smart child safety wearable can be enhanced much more in future by using highly compact arduino modules such as the lily pad arduino which can be sewed into fabrics. Also a more power efficient model will have to be created which will be capable of holding the battery for a longer time.

METHODOLOGY:

The Node RED , IBM Cloud, is the brain of our system. All of the nodes and world maps in this room are linked to connections. Using the python language, the node is programmed to do the following functions. New system will be based on "IOT" It will consist of a web based monitoring system. The Node Red collects various types of data from the different modules interfaced to it, such as the GPS module upon being triggered.Alert SMS to Caretaker,Nano to retrieve the live GPS location using the GPS module via serial connection, process the GPS data, and communicate the live location coordinates to the

caretaker by SMS using the GSM module. A call will also be made to the caretaker using an automated system. This GPS allows us to make Geofence around the area in which the parent wants to surround them. This Geofence alerts the parents in case the children are out of that limited area.

EXPERIMENTATION:

This work attempts to tackle a social concern that has been destroying the lives of uncountable individuals and their families. This device continuously monitors the individual wearing it, the data being accessible world over enabled by the benefits of cloud computing. The data can thus be downloaded onto any remote station for monitoring and analysis. The machine learning algorithms used make the device intelligent and the accuracy of which increases with continued use. A device like this improves the level of safety of children and girls. Accurate recognition of a dangerous situation is a complex matter, however, the scope for improved accuracy is promising. Specific alert system is also added in addition to tracking.

OUTCOMES:

IOT is getting upgraded day by day and its security is also upgraded. In this proposed system, we are mainly focusing on child remote monitoring system also we are using the radar devices as well as obstacle sensors which will detect the alert

when the child enters the danger zone or else he/she is approaching towards harmful object then alert will be given to the caretaker through the mobile using an alarm or notification. For sensing purpose we are using Waterproof Ultrasonic Obstacle Sensor which are placed in the simple locket that is given to the baby so that locket will give alert to the caretaker through the mobile and for battery backup we are using solar panel through which the energy will get stored in the care taker's shoes and this energy will be dependent on the steps covered by the caretaker. In this proposed system a general method for rapid peak detection is used for depth/height measurement. First, the signal curve is equally divided and maximum and minimum values in each segmentation are collected. The repeated maximum and minima values are removed and all fake peaks are merged in the case of ensuring true peaks remain. Experimental results showed that: compared with traditional methods, the proposed method is more accurate and faster in peak detection, and suitable for a variety of waveforms.

3.1 RELEVANT REFERENCES:

1. Akash Moodbidri, Hamid Shahnasser, "Child safety wearable device," in IEEE Xplore, June 2017.
2. Child safety wearable device Gopinadh Jonnadula¹, Bhanu Prasad Davu, Hari Kishore Kandula, Vinod Donepudi, sivaiah Etukuri Student of ECE, VVIT, Guntur, Andhra Pradesh, India. International Journal for Research in Applied Science & Engineering Technology(IJRASET). Volume 6 Issue II, February 2018.

3. Jatti, Anand & Kannan, Madhvi & M Alisha, R & Vijayalakshmi, P & Sinha, Shrestha.2016. Design and development of an IOT based wearable device for the safety and security of women and girl children.
4. Asmitha pawar, Pratiksha sagare, Tejal sasne, and kiran shinde “Smart security solution for women and children safety based on GPS using IOT”volume2 issue 3march 2017, International Journal of recent innovation in engineering and research.
5. Design and implementation of child safety monitoring system Archana.R, Priyadharshini.A, Sathish Kumar.R, Subashini.R IV-year/Department of ECE mr.R.Arun Prasath[1] AP/ECE Excel College of Engineering and Technology International Journal volume 6 issue 1.
6. Zhigang gao, Hongui guo, Yunfeng xie, and yanjun luo, Hangzhou dianzi university. “Child guard a child- safety monitoring system”, hujiuan lu and keyan, china jiliang university, 2017 IEEE.
7. Ilhan` Ilhana,`Ibrahim Yıldız1,Mehmet Kayrakb,2 , Development of a wireless blood pressuremeasuring device with smart mobile device, computer methods and ptogram in bio medicine (2016) 94-102.
8. M.Pallikonda Rajasekaran, R.Kumar .An IOT based patient monitoring system using Raspberrypi , IEEE International Conference on Computing Technologies and Intelligent Data Engineering (2015),pp. 1-4.
9. A. Visvanathan, R. Banerjee, A.D. Choudhury, A. Sinha, S.Kundu, Smart phone based blood pressure indicator in:Proceedings of the 4th ACM MobiHoc Workshop onPervasive Wireless Healthcare, August, ACM, 2014,pp. 19–24.
10. C.A. Gomez Pachon, M. Valderrama, F. SeguraQuijano,Design and implementation of a wireless tensiometer withsmartphone interface, in: Health Care Exchanges (Pahce),Pan American, 2013, pp. 1–3.

11. Chandrasekaran, R. Dantu, S. Jonnada, S. Thiyagaraja, K.P.Subbu, Cuffless differential blood pressure estimation using smartphone, IEEE Trans. Biomed. Eng. (2013)1080–1089.
12. Doss, Pradeep, S. N. Siva, and Madhu Sudhan. "Non-invasive health monitoring system for infants using IOT." 2019 1st International Conference on Innovations in Information and Communication Technology (ICIICT). IEEE, 2019.
- 13.. Badgujar, Dipali, Neha Sawant, and Dnyaneshwar Kundande. "Smart and secure IoT based child monitoring system." Int Res J Eng Technol (IRJET) 6.11 (2019).
14. Joshi, Madhuri P., and Deepak C. Mehetre. "IoT based smart cradle system with an Android app for baby monitoring." 2017 International Conference on Computing, Communication, Control and Automation (ICCUBEA). IEEE, 2017.
15. Mandke, Shilpa, et al. "IOT based Infant Health Monitoring System." International Journal of Engineering and Technology (IRJET) (2018).

4.IDEATION AND PROPOSED SOLUTION:

4.1 EMPATHY MAP :

An empathy map is a collaborative tool teams can use to gain a deeper insight into their customers.



4.2 BRAINSTORMING AND IDEATION:

Brainstorming is a method of generating ideas and sharing knowledge to solve a particular commercial or technical problem, in which participants are encouraged to think without interruption. Brainstorming is a group activity where each participant shares their ideas as soon as they come to mind.

Group member-1:

python will be efficient and time saving	Ui can be based on cartoon	Bootstrap can be used
python is a free and open source	anytime accessible software	voice search should be included
python Django and flask can be used	Apart from parents one can access the location	call can be diverted in emergency situation to police

Group member-2:

python can be used	For quick interaction with parent chatbox with voice recorder should be there	even if power supply is not there gadget must work
Emergency alert must be quicker and buzzer must ring	Emergency alert must be quicker and buzzer must ring	Cost must be affordable
Incase of emergency local police must be notified	Multiple language must be used	security system must be well accomplished free from hacking

Group member-3:

c will be more effective	Java script can be used for problem statement	Anytime accessible software
User friendly	backend can be developed with js	security measures should be strong
Authorized user can only track location	Ui can be in bright colour	location should be accurate

Group member-4:

go with python	Login password system	24*7 support should be there
app should support mobile and pc	app can be deployed in heroku and vercel	neaby landmark must be available
backend must be error free	relative can also access	cost should be minimum

4.3 PROPOSED SOLUTION:

Proposed solution should relate the current situation to a desired result and describe the benefits that will accrue when the desired result is achieved.

1.PROBLEM STATEMENT:

The increasing need for protection of the child at present times and also when child can be lost in crowded areas. Using Bluetooth and Wi-Fi not possible to track larger distance.

2.Solution description:

Wearable gadget which tracks health conditions of the child using temperature, heartbeat and accelerometer sensor and sends notifications

to parents about child's health conditions through android mobile application.

3.Uniqueness:

Real-time location tracking and integrate all the features offers by the existing system such as GPS Tracking, Sos. The application requires an initial registration along with emergency contact of user and they asked to update time to time. Whenever user is travelling from one place to another.

4.Customer Satisfaction:

This gadget helps to monitor heartbeat, raise alarm in case of emergency, track the current location ,quick updation of child movements, overall these features makes the parents Stress Free.

5.Business Model :

It helps to reduce their vulnerability in harmful situations. It also means protecting children against social, psychological and emotional insecurity and distress.

6. Scalability of the Solution:

Quantitative and qualitative attributes of scaling up and that effective scaling up initiatives need to be adaptable, sustainable and successful in achieving their objectives. The importance of incorporating monitoring and evaluation throughout the scaling-up process is physical spread of activities, structures or materials described.SO physical spread of activities, structures or Materials.

4.4Problem solution fit:

The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem.

Define CS, fit into CC	<div>CS</div> <div>1. CUSTOMER SEGMENT(S)</div> <div>Who is your customer? i.e. working parents of 0-3 y.o. kids:</div> <div>1) Parents who are engaged in their work.</div> <div>2) Caretaker who are aged.</div> <div>3) Customer who can't be with their child.</div>	<div>CC</div> <div>6. CUSTOMER CONSTRAINTS</div> <div>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.</div> <div>1) Don't know the exact solution to solve the Problem.</div> <div>2) It is too costly to afford.</div>	<div>AS</div> <div>5. AVAILABLE SOLUTIONS</div> <div>What 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 & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking.</div> <div>child tracking and monitoring gadget can be a best solution.</div>	Explore AS, differentiate
Focus on J&P, fit into BE, understand RC	<div>J&P</div> <div>2. JOBS-TO-BE-DONE / PROBLEMS</div> <div>What jobs-to-be-done (or problems) do you address for your customers? There could be more than one, explore different sides.</div> <div>1) To protect the child from harm.</div> <div>2) To track current location.</div> <div>3) To raise alarm in case of emergency.</div> <div>4) To inform the police in case of crisis.</div> <div>5) To track the heartbeat and temperature.</div>	<div>RC</div> <div>9. PROBLEM ROOT CAUSE</div> <div>What is the real reason that this problem exists? What is the back story behind the need to do this job? i.e. customers' have to do it because of the change in legislation.</div> <div>Due to lack of child safety and increasing fear of the parents about the child locations and their actions.</div>	<div>BE</div> <div>7. BEHAVIOUR</div> <div>What would your customer do to address the problem and get the job done? i.e. Parents who hire the repair or panel installer estimate usage and benefits; indirectly associated, customers spend time on volunteering work (i.e. Grants3600)</div> <div>1) Wearable tracker that helps to monitor their children.</div> <div>2) Alert GPS can also be a solution.</div>	Focus on J&P, fit into BE, understand RC
Identify strong TR & EM	<div>TR</div> <div>3. TRIGGERS</div> <div>What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news</div> <div>Because of the increasing abducts in the society and the child who is not grown enough to take care of themselves.</div>	<div>SL</div> <div>10. YOUR SOLUTION</div> <div>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.</div> <div>To design a gadget for protection and alert the parents in emergency.</div>	<div>CH</div> <div>8. CHANNELS of BEHAVIOUR</div> <div>K1 ONLINE What kind of actions do customers take online? Extract online channels from #7</div> <div>K2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development</div> <div>Online: Apps can be developed to track the children live location.</div> <div>Offline: sensor can be used.</div>	Identify strong TR & EM
	<div>EM</div> <div>4. EMOTIONS: BEFORE / AFTER</div> <div>How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure > confident, in control - use it in your communication strategy & design.</div> <div>Before: worried, disconsolate.</div> <div>After: intrepid, peaceful</div>			

5.REQUIREMENT ANALYSIS:

5.1FUNCTIONAL REQUIREMENT:

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / SubTask)
FR-1	Temperature	If the temperature level exceeds the room temperature then the alert message will be sent using GSM to the specified users.
FR-2	Pulse sensor	The Pulse sensor is used to detect any abnormal feelings experienced by the child like fear, anxiety, nervousness, drowsiness and several other illnesses which manipulates the normal heart rate.

FR-3	GPS	GPS is used to track the live location of the child who is wearing that device. With the help of GPS, we can easily perform Geo-fencing concept, in which we can feed a particular boundary to that device.
FR-4	GSM	If the child goes beyond that particular boundary specified, the respective guardians will receive an alert call using GSM.
FR-5	Web camera	we can monitor the child live through live video streaming whenever we get notified in abnormal cases.
FR-6	Raspberry Pi microprocessor	Raspberry Pi microprocessor in which all other sensors, GPS and GSM are integrated. The users are required to register using their credentials to use the application.

5.2 NON-FUNCTIONAL REQUIREMENT:

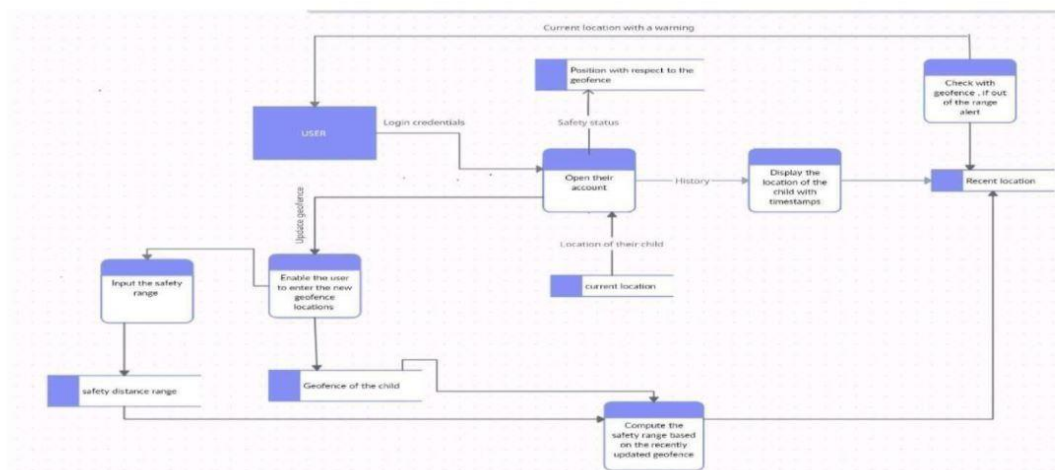
FR No	Non-Functional Requirement	Description
NFR-1	Usability	Enable tracking of the child's location and capturing data remotely such as temperature, pulse, respiratory rate and many more.
NFR-2	Security	To trigger the alarm and enable automatic video recording whenever the emergency button is pressed.

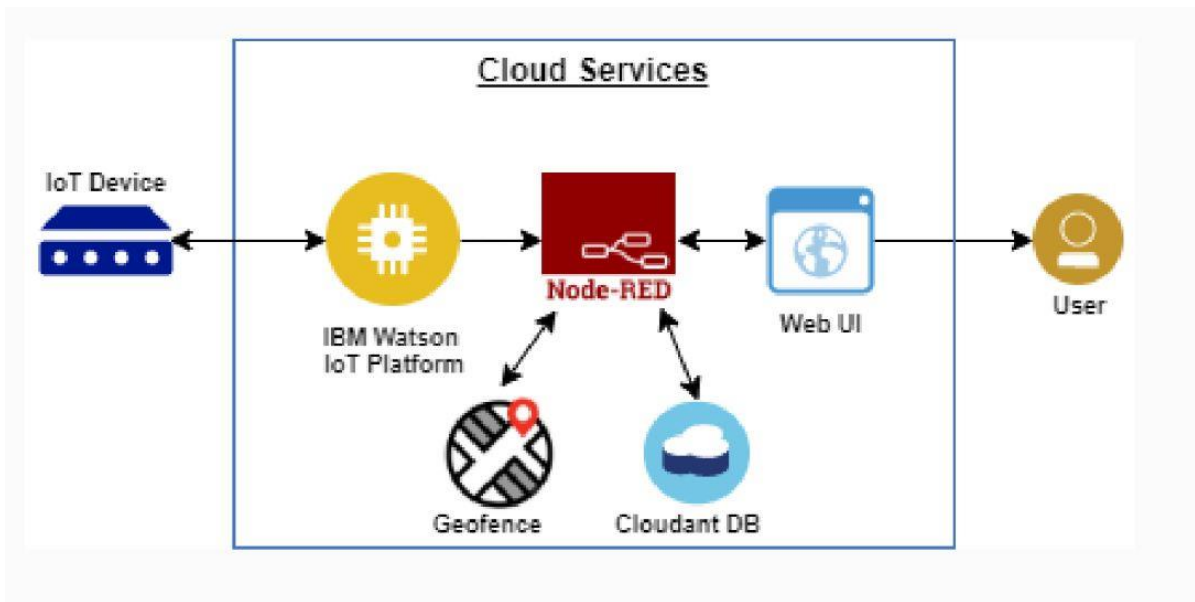
NFR-3	Reliability	Enable sending of notification, if the child is out of location or when the device realizes abnormal condition or situations
NFR-4	Performance	When a child is facing an emergency situation, device button should be pressed so that the device captures the image along with the user information to the enrolled mobile numbers
NFR-5	Availability	Child monitor, audio monitor, location monitor, video monitor
NFR-6	Scalability	If problem arises parents can see all the features like location, temperature, heart beat of the child along with live view around the children without hindrance

6.PROJECT DESIGN:

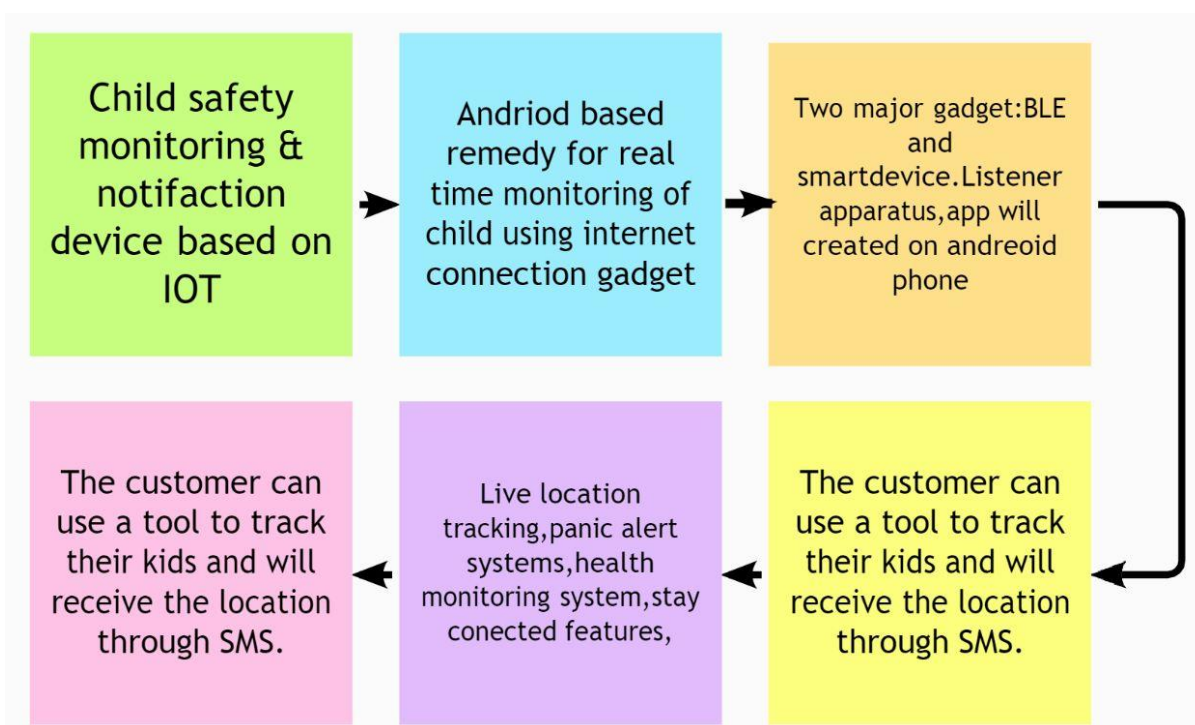
6.1.DATA FLOW DIAGRAM:

DATA FLOW DIAGRAM





6.2 SOLUTION AND TECHNICAL ARCHITECTURE:



6.3USER STORIES:

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user and web 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
		USN-2	As a user, I will receive 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	High	Sprint-2
	Login	USN-4	As a user, I can register for the application through Gmail		High	Sprint-1
Customer Care Executive	Login		As I enter I can view the working of the application and scan for any glitches and monitor the operation and check if	I can login only with my provided credentials	Medium	Sprint3

			all the users are authorized.			
Administrator	Login		Maintaining making sure database containing locations secure accurate updated constantly.	I can login only with my provided credentials	High	Sprint3

7.Project planning and scheduling:

7.1sprint planning and 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, and password, and confirming my password.	4	High	Mithra shree.K.R
Sprint-1	Confirmation Email	USN-2	As a user, I will receive a confirmationemail once I have registered for the application	4	High	Ann Maria Fredy
Sprint-1	Authentication	USN-3	As a user, I can register for the application through Gmail and mobileapp.	4	Medium	Swethapriyaa.S
Sprint-1	Login	USN-4	As a user, I can log into the application by entering email & password	4	High	Tejaswini.G
Sprint-1	Dashboard	USN-5	As a user, I need to be able to view the functions that I can perform	4	High	Mithra shree.K.R
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-2	Notification	USN-1	As a user, I should be able to notify my parent and guardian in emergency situations	10	High	Ann Maria Fredy
Sprint-2	Store data	USN-1	As a user, I need to continuously store my location data into the database.	10	Medium	Swethapriyaa.S
Sprint-3	Communication	USN-1,2	As a user, I should be able to communicate with my parents	6	Low	Tejaswini.G

Sprint-3	IOT Device – Watson communication	USN-1,3	The data from IOT device should reach IBM Cloud	7	Medium	Mithra shree.K.R
Sprint-3	Node RED-Cloudant DB communication	USN-1,4	The data stored in IBM Cloud should be properly integrated with Cloudant DB	7	High	Ann Maria Fredy
Sprint-4	User – WebUI interface	USN-1,5	The Web UI should get inputs from the user	10	High	Swethapriyaa.S
Sprint-4	Geofencing	USN-1,2,5	The geofencing of the child should be done based on the geographical coordinates	10	High	Tejaswini.G

7.2sprint delivery schedule:

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	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
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

8.CODING AND SOLUTIONING:

```
import json

import wiotp.sdk.device

import time

myConfig = {

    "identity":{

        "orgId": "krs15q",

        "typeId": "NodeMCU",

        "deviceId": "12345"

    },
```

```

    "auth": {
        "token": "vQez)XDErNEXZxtg-u"
    }
}

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= 78.5488783

    myData={'name': name, 'lat':latitude, 'lon':longitude}

    client.publishEvent(eventId="status", msgFormat="json",
data=myData, qos=0, onPublish=None )

    print("Data published to IBM Iot platform: ",myData)

    time.sleep(5)

client.disconnect()

```

				Date	16 November 2022							
				Team ID	PNT2022PDR0010							
				Project Name	Project - IoT Based Safety Gauge for Child Safety Monitoring & Notifications							
				Maximum Marks	4 marks							
Testcase ID	Feature Type	Component	Test Scenario	Pre-Requsite	Steps To Execute	Test Data	Expected Results	Actual Result	Status	TC for Automation (Y/N)	BUG ID	Executed By
IBM_Cloud_TC_001	Functional	IBM Cloud Service	Verify the logs cloud services	Software	<ol style="list-style-type: none">1. Login in using cloud .idm.com2. Open protocols on ICT3. Then apply code to the logs4. The page will be directed to the IBM cloud account	email: abc@gmail.com Password: 16789090	Successfully created the IBM account	Working as expected	Pass	YES	NIL	<div>Mishra shree K.R</div> <div>Anu Maria Freidy</div> <div>Swapnila S</div> <div>Tejaswini G</div>
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	<ol style="list-style-type: none">1. In IBM Cloud Service go to catalog2. Create and launch the IBM Watson IoT Platform3. Go to the Platform by clicking organization ID4. Create a New IoT & configure the IoT service and ID5. Generate the API Key	Create a device & integrate with code	<div>{name: "Smartwatch", "167429272, 16678348873", "167429272, 16678348873"}</div>	Working as expected	Pass	YES	NIL	<div>Mishra shree K.R</div> <div>Anu Maria Freidy</div> <div>Swapnila S</div> <div>Tejaswini G</div>
PythonCode_TC_003	Code	Python 3.9	Verify whether the python code is without error by running it	Software	<ol style="list-style-type: none">1. Download the python version 3.92. Type the program and save it with the extension .py3. Verify it by compiling the code	<div>import gpio import rpiwpiid.device import time @contextmanager myContext = ["idmkey": ["idmkey": "1", "orgid": "16678348873"]]</div>	<div>002-16-18-25-57-235 request http://idmkey.device DeviceClient INFO Connected successfully id=167429272 id=167429272</div>	Working as expected	Pass	YES	NIL	<div>Mishra shree K.R</div> <div>Anu Maria Freidy</div> <div>Swapnila S</div> <div>Tejaswini G</div>
Node_Red_TC_004	Non-Functional	IBM Cloud Service	Verify to create a node-red services	IBM cloud services	<ol style="list-style-type: none">1. IBM cloud go to catalog2. Create a Node-Red app3. Click onto Deploy App4. Visit the app URL5. We need to connect the Node-Red with the IBM watson	We use a python code to from a color change range between the child is present in the circle or not	Successfully created the Node-Red	Working as expected	Pass	NO	NIL	<div>Mishra shree K.R</div> <div>Anu Maria Freidy</div> <div>Swapnila S</div> <div>Tejaswini G</div>
CloudwatchDB_TC_005	Default	IBM Cloud Service	Verify the events is stored in the database	IBM Cloud Service	<ol style="list-style-type: none">1. Go to IBM Cloud Services2. In resources list, click onto cloudwatch3. Click onto create dashboard to redirect to the cloud DB4. Click onto create DB	Document tracks	Successfully created the Database	Working as expected	Pass	NO	NIL	<div>Mishra shree K.R</div> <div>Anu Maria Freidy</div> <div>Swapnila S</div> <div>Tejaswini G</div>
Web UI_TC_006	Functional	Node-Red Service	To create a web UI to interact with user	Node-Red Service	<ol style="list-style-type: none">1. Go to Node-Red Dashboard2. Make the necessary connection and deploy it3. Copy the URL and paste it in the web site with "url" extension.4. Display the child and pedice location.	Shows the location of parent and child	As display the expected is displayed as expected	Working as expected	Pass	NO	NIL	<div>Mishra shree K.R</div> <div>Anu Maria Freidy</div> <div>Swapnila S</div> <div>Tejaswini G</div>
FirebaseService_TC_007	Functional	Firebase Service	To send SMS to the particular child's guardian	Software	<ol style="list-style-type: none">1. Login to Firebase Service2. Go to API and select quick API3. SMS initiate send using Firebase SMS option in the registered number	Show the pop up SMS	Alert: The person is not in the particular pedice area	Working as expected	Pass	NO	NIL	<div>Mishra shree K.R</div> <div>Anu Maria Freidy</div> <div>Swapnila S</div> <div>Tejaswini G</div>

9.2 UAT testing:

A phase of software development in which the software is tested in the "real world" by the intended audience or business representative.

- Defect analysis:

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

- Test case analysis:

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

10.ADVANTAGE AND DISADVANTAGE:

10.1 ADVANTAGE:

1. Staying conneted
2. Data accuracy
3. Efficiency
4. It can be used in any cell phone and doesn't necessarily require an expensive smart phone.

10.2 DISADVANTAGE:

- High cost but once it is implemented the expenses can be reduced.

11.CONCLUSION:

The word Future resembles the word Children. As Dr. A.P.J Abdul Kalam's words "Youngsters are the future pillars of one's nation", today's children are tomorrow's youngsters, preserving their dreams and life for a better future is necessary. Therefore, each and every parent should take care of their own children, without letting them fall into the dark world of abuse, which entirely ruins them physically, mentally and emotionally, destroying our future. Hence, considering the importance of our future, our project makes it easy for parents to track their children and to visually monitor them on regular basis, which makes them ensure the safety of their children and reduces the rate of incidents of child abuse.

12.FUTURE SCOPE:

In our system, we automatically monitor the child in real time using Internet of Things, with the help of GPS, GSM, and Raspberry Pi. This system requires network connectivity, satellite communication, and high-speed data connection when we use a web camera and GPS to monitor. It is difficult to monitor when there occurs any hindrance to

satellite communication or any network issue. There also occurs time delays in video streaming through the server. Hence in the future, these issues can be overcome by using the Zigbee concept or accessing the system without internet and using high-speed server transmission.

13.APPENDIX:

13.1Source code:

```
import json

import wiotp.sdk.device

import time

myConfig = {
    "identity":{
        "orgId": "krs15q",
        "typeId": "NodeMCU",
        "deviceId": "12345"
    },
    "auth": {
        "token": "vQez)XD ErNEXZxtg-u"
    }
}

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= 78.5488783
myData={'name': name, 'lat':latitude, 'lon':longitude}
client.publishEvent(eventId="status",                      msgFormat="json",
data=myData, qos=0, onPublish=None )
print("Data published to IBM Iot platform: ",myData)
time.sleep(5)
client.disconnect()
```

13.2.GITHUB & PROJECT DEMO LINK:

GITHUB LINK:

<https://github.com/IBM-EPBL/IBM-Project-1948-1658421116>

