

# Project Report

|              |  |
|--------------|--|
| Date         | 19 November 2022   |
| Team ID      | PNT2022TMID39048   |
| Project Name | Project – IOT-Based Safety Gadget for Child Safety Monitoring and Notification |

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# **1.INTRODUCTION**

## **1.1 Project Overview**

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.

## **1.2 Purpose**

It assists parents to monitor their children remotely. In case situations happen, notifications will be sent to parents so that actions can be taken. Through this, child safety can be ensured. By this, parents know what is happening remotely and can take actions if something goes wrong. It provides parents with the real-time location to monitor the child. It makes parents to make monitor their child from their workplace. Parents can be relax and calm by using this device.

## **2.LITERATURE SURVEY**

### **2.1 Existing Problem**

Parents need to ensure safety of their children but in realtime they need to get to work and need to worry about their child whether he/she is safe or not. So to ensure safety they need to monitor & to notify their child what he/she is doing and to know whether they are in safe atmosphere or not to ensure the safety of the child.

### **2.2 References**

- A. Jatti, M. Kannan, R. M. Alisha, P. Vijayalakshmi and S. Sinha, "Design and development of an IOT based wearable device for the safety and security of women and girl children," 2016 IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT), Bangalore, 2016, pp. 1108-1112.
- David Hanes, Gonzalo, Patrick Grosetete, Robert, Barton, Jerome Henry "IoT Fundamental and Networking Technologies, Protocols".

### **2.3 Problem Statement Definition**

The objective of this project is to safeguard the child from threads. Now a days the safety measures of children has been reduced in huge number. Thus the violence against children increasing day by day. Our project mainly focus on sensing the children's Temperature and Heartbeat. By monitoring the activities the state of the child is analyzed. By using GSM, if child reaches the critical state then the latitude and longitude of that particular location is sent as an alert message to the parents.

| Sl.No | AUTHOR  | YEAR | JOURNAL NAME   | ABOUT  |
|-------|---|------|--|--|
| 1     | N. Senthamilarasi<br><br>N. Divya Bharathi  | 2012 | Child Safety Monitoring System Based on IoT  | It makes parents to easily monitor their children in real time just like staying beside them as well as focusing on their own career without any manual intervention.  |
| 2     | M Nandini<br>Priyanka,<br>S Murugan,<br>K N H Srinivas,<br>T D S<br>Sarveswararao,<br>E Kusuma<br>Kumari. | 2019 | International Journal of Innovative Technology and Exploring Engineering (IJITEE)<br>Smart IOT Device for Child Safety and Tracking<br><br><a href="https://www.ijitee.org/wp-content/uploads/papers/v8i8/H6836068819.pdf">https://www.ijitee.org/wp-content/uploads/papers/v8i8/H6836068819.pdf</a> | 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                                     |
| 3     | Mr.Vinod Mane,<br>Durgesh Musale,<br>Rohan Joshi,<br>Aditya Toney,<br>Anand Pande,<br>Shashank Kohade     | 2020 | IoT Enabled Children Safety System<br>(International Research Journal of Engineering and Technology (IRJET))<br><br><a href="https://www.irjet.net/archives/V7/i1/IRJET-V7I143.pdf">https://www.irjet.net/archives/V7/i1/IRJET-V7I143.pdf</a>  | It is a IOT based project and their approach is to monitor school bus in this new era of smart cities  |
| 4     | Lai Yi Heng,<br>Intan Farahana<br>Binti Kamsin  | 2021 | (Proceedings of the 3rd International Conference on Integrated Intelligent Computing Communication & Security (ICIIC 2021)<br>IoT-based Child Security Monitoring System   | Enable tracking of the child's location and capturing of data remotely such as temperature, pulse, respiratory rate, quality of sleep and many more. To show the child's actual data with reference values.● |
| 5     | Fathima, N.,<br>Ahammed, A.,<br>Banu, R.,   | 2017 | Optimized neighbor discovery in Internet of Things (IoT).  | This device helps in optimized discovery of the child using data collected   |

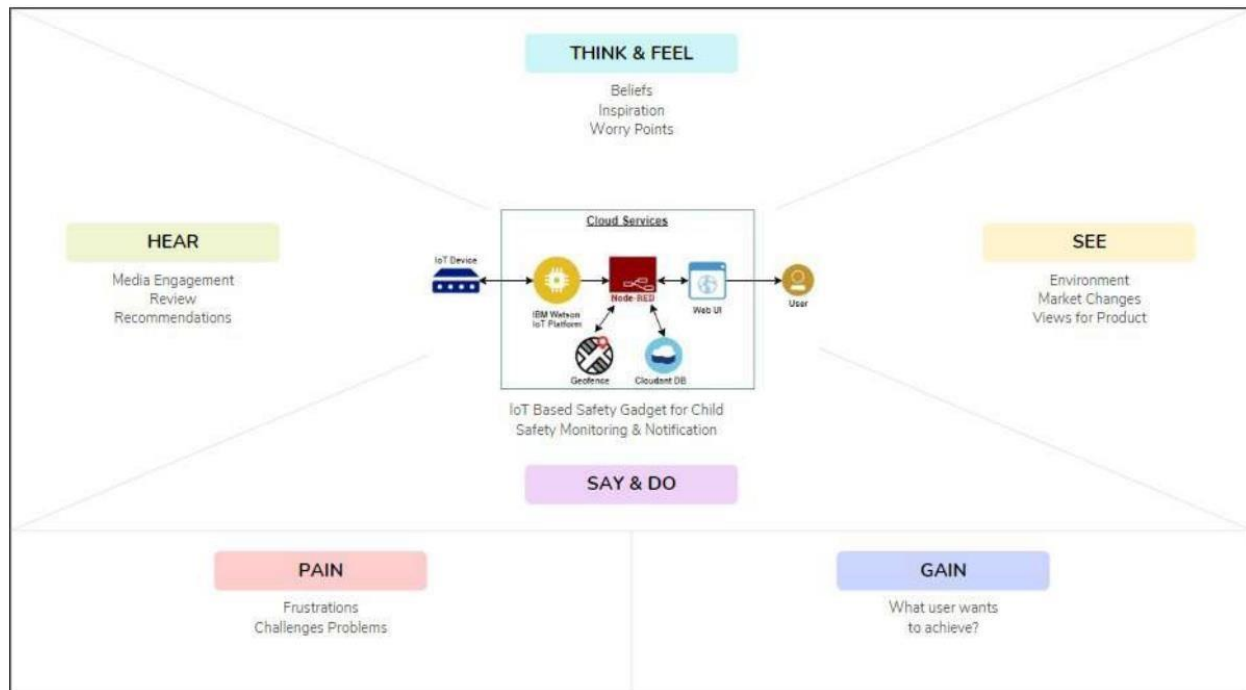
|   |   |      |   |  |
|---|---|------|---|--|
|   | Parameshachari,<br>B.D<br>Naik, N.M   |      | ( International Conference<br>on Electrical, Electronics,<br>Communication,<br>Computer, and<br>Optimization Techniques<br>(ICEECOT) (pp. 1-5).<br>IEEE.)   |  |
| 6 | Prakriti Agarwal,<br>R Ramya,<br>Rachana<br>Ravikumar,<br>Sabarish G,<br>Sreenivasa Setty | 2020 | Survey on Child Safety<br>Wearable Device Using<br>IoT Sensors and Cloud<br>Computing<br>(International Journal of<br>Innovative Science and<br>Research Technology)  | The design of this model<br>involves developing a<br>medium for communication<br>between the parent/guardian<br>and the child's wearable<br>device. The child's location<br>is tracked using GSM<br>mobile communication to<br>specify the location of the<br>child in real-time.  |
| 7 | Mrs. P Chitra,<br>Aarthi S,<br>Anitha K,<br>Angammal R,<br>Abinaya D                      | 2022 | Monitoring and<br>Prevention of Child<br>Abuse Using IoT<br><br><a href="https://www.ijraset.com/research-paper/monitoring-and-prevention-of-child-abuse-using-iot">https://www.ijraset.com/research-paper/monitoring-and-prevention-of-child-abuse-using-iot</a> | This paper focuses on the<br>important issue of how<br>people surrounding a<br>missing child can assist the<br>youngster and play a crucial<br>role in the child's safety and<br>health monitoring until they<br>are reunited with their<br>parents.   |
| 8 | Dr. T. VP.<br>Sundararajan  | 2018 | Activity Tracker<br>Wrist Band for<br>Children Monitoring<br>using IOT  | The children with Activity<br>Tracker that has access to<br>IOT monitoring and GSM<br>technology keeps<br>monitoring the children.<br>The system has sensors<br>interfaced with the<br>processor which keeps<br>sensing the vital signals<br>such as heart beat rate,<br>temperature, etc. So<br>whenever some perilous<br>situations arise there may<br>be an indication to parents |
| 9 | Pietro Battistoni<br>*ORCID, Monica<br>SebilloORCID                                       | 2021 | An IoT-Based Mobile<br>System for Safety<br>Monitoring of Lone<br>Workers   | This paper proposes a<br>distributed solution of<br>Smart Personal Protective<br>Equipment for the safety  |

|    |                             |      |   |   |
|----|-----------------------------|------|---|---|
|    | andGiuliana Vitiello        |      |   | <p>monitoring of Lone Workers by adopting low-cost electronic devices. In addition to the same hazards as anyone else, Lone Workers need additional and specific systems due to the higher risk they run on a work site. To this end, the <i>Edge-Computing</i> paradigm can be adopted to deploy an architecture embedding wearable devices, which alerts safety managers when workers do not wear the prescribed Personal Protective Equipment and supports a fast rescue when a worker seeks help or an accidental fall is automatically detected.</p>                                     |
| 10 | Fei Mingming ,<br>Shi Yanli | 2014 | Design and implementation anti-lost children system based on internet of things | <p>In this paper, the current rapid development of society for children brought to this reality is lost, combined with existing and emerging technologies, Internet of Things inlife related application solutions proposed, which can be determined at any location to avoid the safety of children parents worry about other issues. Although at present no specific implementation, and the idea is still preliminary stage, but levels of the method, rationality, practicality and applicability have good theoretical basis, and the method utilizes advanced technology, with good</p> |

|  |  |  |  |   |
|--|--|--|--|---|
|  |  |  |  | scalability and adaptability, with some room for development, there is a certain profit margin. |
|--|--|--|--|---|

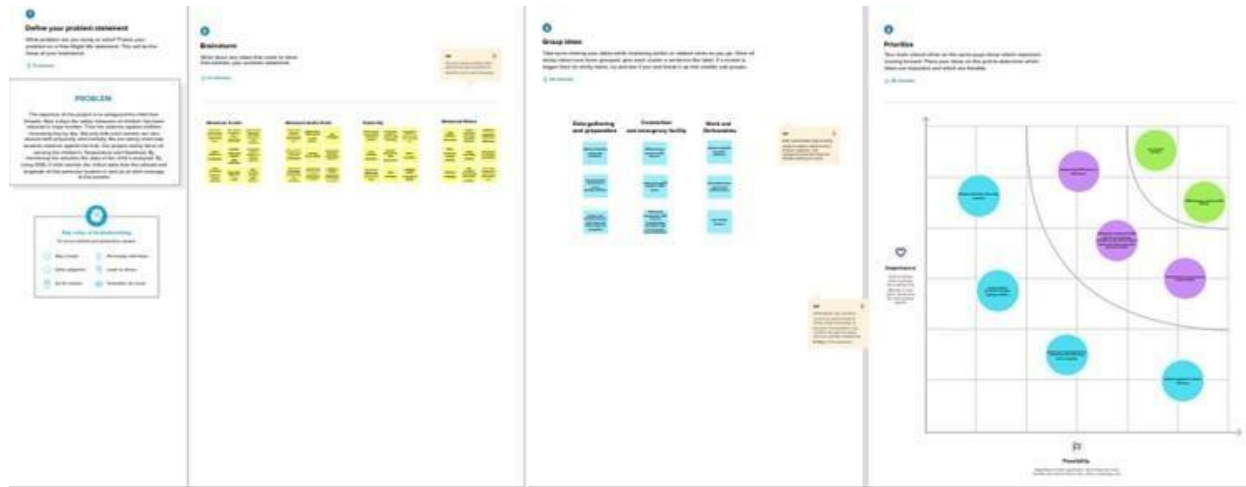
## 3.IDEATION & PROPOSED SOLUTION

### 3.1 Empathy Map Canvas





## 3.2 Ideation & Brainstorming



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

IoT or the internet of things is characterized as a forthcoming innovation that empowers us to create worldwide networked machines and also the devices that can be helped for exchanging of communication.

As we all know that the real-time application has been increasing day by day, the smart connection also had increased. Rapid population growth, led to the increase in global life expectancy and the advance of technology, paving the pathway for the creation of age-friendly environments. This had led to the necessity in designing new products for infants protection.

Infants or toddlers need parents' attention 24×7. In this present era, the cases regarding missing children have been increasing day by day, which was the main motivation that comes for the safety of little children. However, the parents cannot continuously monitor their babies' conditions either in normal or abnormal situations. Still, certain incidents like infant attacks have been reported, it is necessary to protect the baby.

### **Step-2: Brainstorm, Idea Listing and Grouping**

#### **Team Member 1: E. Grashia Rajlin**

Child and women safety is a challenging problem nowadays due to antisocial elements in the society. The crime rate is day by day increasing. Schools and working places need high surveillance for ensuring the safety among children and women. Smart phones are playing major role for ensuring the safety, where some mobile based applications provide alert systems. During the emergency, mobile apps alert the control room of nearby police station or caretakers of children. The literature shows that location tracking devices are available in the market, but it does not provide the 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 emergency, it should send the alert to the parents automatically.

#### **Team Member 2: R. Noor Mohamed**

The children are too young to take care of themselves. We cannot monitor the children at all times in school, play area, and outside place. In this paper, we discuss the concept of child safety device based on Internet of things. The aim of this device is to provide safety to the child by allowing the parent to locate the child and view their surroundings. This device can be used to monitor the temperature and motion of the child. If any problem persists, the GSM mobile communication module automatically sends a text message to the parent as SMS.

#### **Team Member 3: A. Ragul**

Crimes on children keep increasing despite actions have been taken by the government. Revealed by [9], the overall percentage of child abasements worldwide is about 80% nowadays, out of which 74% are girls and the remaining are boys. For every 40 seconds, a child is gone missing in the world. Due to that, parents are worried for their children and perhaps, a hard challenge for them to guarantee safety of their children when they are out.

To cope with the issue, the system is proposed with these objectives:

Enable tracking of the child's location and capturing of data remotely such as temperature, pulse, respiratory rate, quality of sleep and many more.

To show the child's actual data with reference values.

Enable sending of notification if the child is out of location or when the device realizes abnormal conditions/situations

#### **Team Member 4: K. Vanmathi**

Develop a prototype of IoT wearable smart band connected to parents' mobile apps so that they can monitor the actual condition of children at anytime and anyplace. Besides, unlike existing smart band, which is less focusing on child security aspect, the proposed system emphasizes in getting as much data as possible so that actual situation can be identified. , the information indicating children's status, along with reference values will be sent to parents' devices with the app installed. If children's actual data is not within the range of reference value, alert notification and some suggestions will be sent to parents' devices. Also, when children leave geofences, notification will be sent to parents' device.

### **Step-3: Idea Prioritization**

The section mainly discussed about significant of the research and why this study needs to be carried out. The child security system benefits parents as well as children. Since it aids in locating children, monitoring child's condition and security status instantly at anyplace and any time, parents who often tied up in work or neglect their children are gaining advantages from it. Through the proposed system, immediate

actions can be taken forthwith in case the child is threatened. Thus, child security is guaranteed, crime rate related to children is reduced and eventually, parents can rest assured. In fact, reduction of crime rate brings about long-term positive effects such as improving country's reputation and quality of life, increasing community security, safety, and cohesion as well as generating economic benefits for individuals, committee and taxpayers. Besides, the proposed system makes ample use of IoT, proving IoT is evolving which can be included in multiple areas comprising the child security field.

Throughout the research, it is clearly explained the IoT concept, child safety issues and the need of using child security system. Some previous studies have been included for designing the IoT-based child security smart band. It assists parents to monitor their children remotely. In case situations happen, notifications will be sent to parents so that actions can be taken. Through this, child safety can be ensured and crime rate will be reduced. However, the proposed device is not robust enough and does not contain sufficient functions to operate like a mobile phone. Hence, the future enchantments will be adding more features, software, applications, hardware to make the proposed system capable of working more intelligently, meanwhile guarantee the safety of children

### 3.3 Proposed Solution

| S.No. | Parameter                                | Description   |
|-------|--|---|
| 1.    | Problem Statement (Problem to be solved) | When someone near the child this device alerts the parents whereas the parents in other distanced place.  |
| 2.    | Idea / Solution description              | The aim of this device is to provide safety to the child by allowing the parent to locate the child and view their surroundings. This device can be used to monitor the temperature and motion of the child. The other features of the device are emergency light and alarm buzzer which are activated when the ultrasonic sensor sense something near child. After automatically send the SMS to parents and call also received to the parents . |
| 3.    | Novelty / Uniqueness                     | The enchantments will be adding more features, software, applications, hardware to make the proposed system.  |
| 4.    | Social Impact / Customer Satisfaction    | The feedbacks of parents and children were highly promising. Results showed that 86.4% of the parents are satisfied with the time controller, around 91.1% of the children are satisfied with the proposed interface and 100% of the children are satisfied with the multiple sessions of the time allowed and video algorithm  |
| 5.    | Business Model (Revenue Model)           | lot based risk monitoring device for child is done through smart device i.e., smart watch Through this device the respected parameters are monitored by the connected person.   |
| 6.    | Scalability of the Solution              | It can be given up to 4 out of 5.   |

## 3.4 Problem Solution fit

|  |   |  |  |   |
|--|---|--|--|---|
| Define CS, fit into CC                   | <b>1. CUSTOMER SEGMENT(S)</b> <span>CS</span><br>Who is your customer?<br>working parents who are not able to save their child (0-5) willing to use these .   | <b>6. CUSTOMER CONSTRAINTS</b> <span>CC</span><br>What constraints prevent your customers from taking action or limit their choices of solutions? I.e., spending power, budget, no cash, network connection, available devices.<br>For predictive analytics to make the most impact on child protection practice and outcomes, it must embrace established criteria of validity, equity, reliability, and usefulness.  | <b>5. AVAILABLE SOLUTIONS</b> <span>AS</span><br>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 & cons do these solutions have? I.e., pen and paper<br>The most important reason for monitoring each child's development is to determine whether a child's is on track. Looking for developmental milestones is important to understanding each child's development and behaviour.   | Explore AS, differentiate               |
|  | <b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <span>J&amp;P</span><br>Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.<br>Parents can't able to save their child from their workplace and Over parenting tends to deprive children of bad and negative experiences, which are crucial to a child's emotional growth. One form of overparenting is excessive monitoring.   | <b>9. PROBLEM ROOT CAUSE</b> <span>RC</span><br>What is the real reason that this problem exists? What is the back it's exactly what it sounds like—an exercise to determine the root cause for a failure or issue, so that the solution is based on the true problem, not just addressing the symptoms.   | <b>7. BEHAVIOUR</b> <span>BE</span><br>What does your customer do to address the problem and get the job done?<br>The parents can monitor their child from their workplace when children have frequent emotional outbursts, it can be a sign that they haven't yet developed the skills they need to cope with feelings like frustration, anxiety and anger. Handling big emotions in a healthy, mature way requires a variety of skills, including.   |   |
| Focus on J&P, fit into BE, understand RC | <b>3. TRIGGERS</b> <span>T</span><br>What triggers customers to act?<br>I.e., seeing their neighbour installing solar panels, reading about a more efficient solution in the news.<br>It's not the situation or the feeling that's the problem; it's how kids think about these things and what they say to themselves that causes problems and child (0-2) years didn't know about anything this will trigger  | <b>10. YOUR SOLUTION</b> <span>S</span><br>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.<br>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.<br><br>• The most important reason for monitoring each child's activities is to determine whether a child's activities is on track. Using ultrasonic sensor sense something near child and activate piece buzz and SMS and dialing function to parents will be done immediately. | <b>8.CHANNELS of BEHAVIOUR</b> <span>C</span><br><b>8.1 ONLINE</b><br>What kind of actions do customers take online? Extract online channels from #7<br><b>8.2 OFFLINE</b><br>What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.<br>Understanding how children perceive and interact with the point of sale has been the focus of various studies in the past decade. It is well documented that children have preferences in terms of shopping destinations .For working parents necessarily needed one. | Focus on AS, fit into BE, understand RC |
|  | <b>4. EMOTIONS: BEFORE / AFTER</b> <span>E</span><br>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.<br>BEFORE: Divergent thinking is a style of thinking that generates a range of alternative solutions or ideas to a problem that has multiple answers.<br>AFTER: Feeling protective of your child is often manifested in the form of 'motherly' instincts. The feeling of protecting and wanting the best for your children is the ultimate parenting goal |  |  |   |
| Identify strong TR & EM                  |   |  |  | Identify strong TR & EM                 |

|    |                          |   |
|----|--------------------------|---|
| 1. | CUSTOMER SEGMENT(S)      | Our Customers are mainly parents who are working and do not have enough time to take care of their children. Such parents are not provided with availability at anytime to look after their children. If the case so they are in need of something to make their children under the surveillance of them. |
| 2. | JOBS-TO-BE-DONE/PROBLEMS | To enhance the operating condition of the developed solution the way it is not supposed to deal with any fault at any point of time so that the child safety can be highly ensured. To ensure the parents that their surveillance on their children can never be taken off                                |
| 3. | TRIGGERS                 | The trigger which induces the customers is the one that when other working parents give a try to this and comment a positive review on this, they also erdtoday center their  |

|    |                        |   |
|----|------------------------|---|
|    |                        | childsafety. The trigger which induces the customers is the one that when other working parents give a try to this and comment a positive review on this, they also erdtoday center their childsafety.  |
| 4. | EMOTIONS: BEFORE/AFTER | Customers(Parents) are being frustratesd that their children are doing safe or not before using the gadget designed. Once they start to use the developed solution they might feel free to focus on their work and also the surveillance of their children would happen with ease at any point of time                      |
| 5. | AVAILABLE SOLUTIONS    | Of course the solutions are available readily in the market such as angel monitoring system, Child GPS Tracking System, Child Safety GSM Kit, etc.... One such constraint the customers facing are cost and inefficiencies in the working once purchased.   |
| 6. | CUSTOMER CONSTRAINTS   | The constraints our customers facing are such connectivity issues or may be the protocols being used for communication. There may be chances of issues arised due to technical disefficiencies. Giving a second thought, price to be afforded for buying the developed solution kit might be the one they could not afford. |
| 7. | BEHAVIOUR              | Our proposed solution has the modes of working in both offline and Online. In case of any disconnectivities happen the gadget which ha been developed might tend to work on a plan B ehich includes the backup of the failure of actual working kit.  |
| 8. | CHANNELS of BEHAVIOUR  | Our proposed solution has the modes of working in both offline and Online. In case of any disconnectivities happen the gadget which has been developed might tend to work on a plan B ehich includes the backup of the failure of actual working kit.   |
| 9. | PROBLEM ROOT CAUSE     | Considering the origination of the problem, it occurs in the base of merely irrespective persons that are no way relatable to the children but for the currency kind of thing and also the child abuse(mainly in case of girl children)   |
| 10 | YOUR SOLUTION          | Our Team has highly been intending to develop an efficient solution to overcome all the flaws that the existing solutions hold back still. We are highly on demand to ensure the efficient functionalities of the developing module the way it will not fail at anytime.  |

## 4.REQUIREMENT ANALYSIS

### 4.1 Functional Requirements

| SI No. | Functional Requirement (Epic) | Sub Requirement (Story / Sub-Task)   |
|--------|-------------------------------|--|
| 1.     | User Registration             | Registration through Form<br>Registration through Gmail<br>Registration through LinkedIn   |
| 2.     | User Confirmation             | Confirmation via Email<br>Confirmation via OTP   |
| 3.     | Authentication                | Only the authorized person for that product will know<br>Ensures security  |
| 4.     | User Interface                | The Inventor Able to see the location of children when they are out of geofence will also track the exact information about the children |
| 5.     | Notification                  | Notified through mobile and mail   |

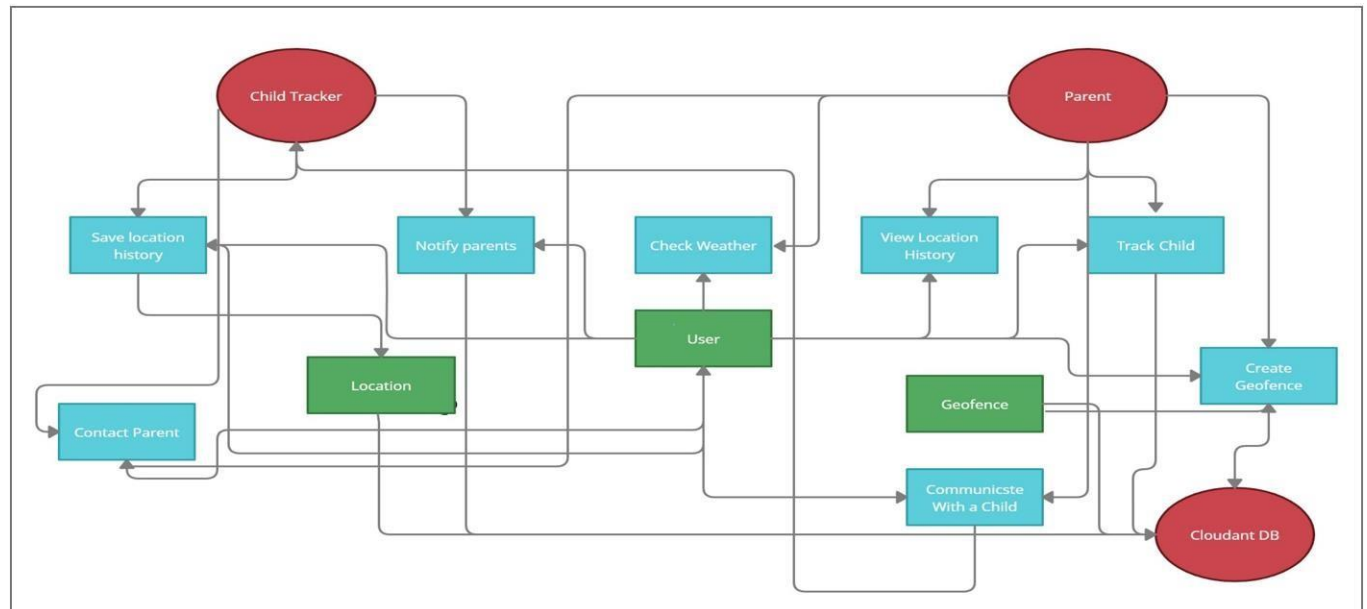
### 4.2 Non- Functional Requirements

| SI No. | Non-Functional Requirement | Description   |
|--------|----------------------------|---|
| 1.     | Usability                  | Accessed through Mobile App Showing location (latitude and longitude) of child and also other measures to ensure safety like notification. Portable and comfortable to use.   |
| 2.     | Security                   | Database security and ensuring the safety of the product while in use.  |
| 3.     | Reliability                | Once logged in, the webpage is available until logging out of the app, and a comfortable platform or creates a good environment for users to use.                             |
| 4.     | Performance                | Each page must load within 4 seconds and database needs to be updated every few seconds and a notification must be sent immediately if seen a change in the child's location. |
| 5.     | Availability               | The data must be available whenever needed and the product should be able to use at any time.   |

|    |             |   |
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| 6. | Scalability | The process must be flexible to use at anytime and versatile. |
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## 5. PROJECT DESIGN

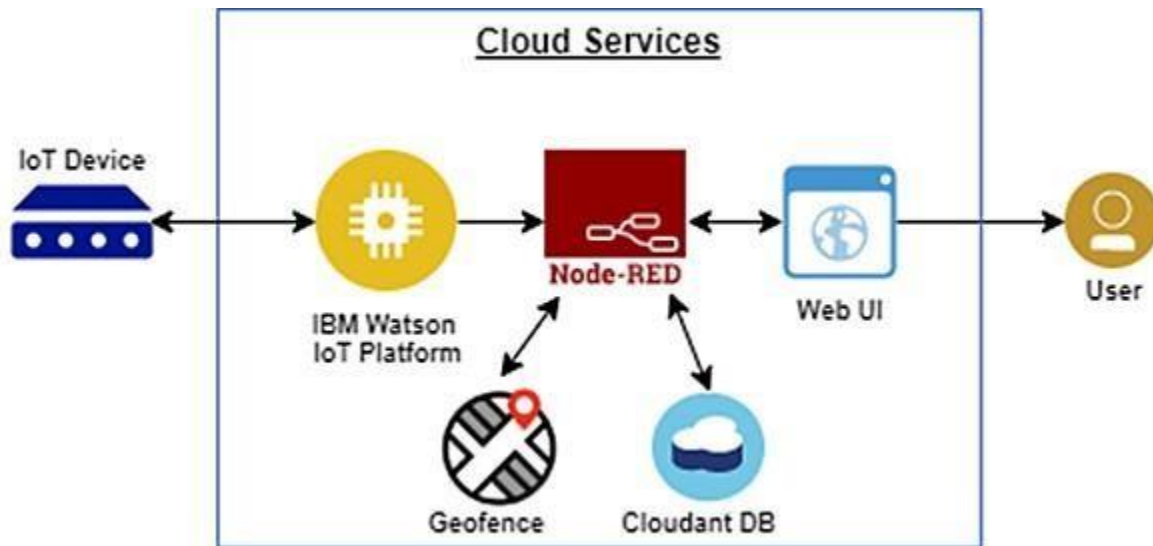
## 5.1 Data Flow Diagrams



## 5.2 Solution & Technical Architecture

The device has IOT monitoring allows to monitor the child from anywhere with any portable devices. Ultrasonic sensor are used which sense when someone near child and alarm buzz will established SMS and dialing function is made to parent





### 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 (FATHER)              | As a user, I can register by entering my email, password, and confirming my password. I can access the location of my children using the credentials provided as a Father. | I can access my account / dashboard and receive confirmation email & click confirm | High     | Sprint-1 |
|                        |                               | USN-2 (MOTHER)              | As a user, I can register by entering my email, password, and confirming my password. I can access the location of my children using the credentials provided as a Mother. | I can access my account / dashboard and receive confirmation email & click confirm | High     | Sprint-1 |
|                        |                               | USN-3 (GUARDIAN/ CARETAKER) | As a user, I can also monitor the children's activities using a safety gadget monitoring system.   | I can access my account / dashboard and receive confirmation email & click confirm | Medium   | Sprint-1 |
|                        | Login                         | USN-4                       | As a user, I can log into the application by entering email & password.  | I can access my account / dashboard.   | Medium   | Sprint-2 |
|                        | Dashboard                     | USN-5                       | As a user, I can fix the geofence for my child's location so that I will receive alerts if   | I can monitor the current location of my child.                                    | High     | Sprint-2 |

|                     |                 |                             |  |  |        |          |
|---------------------|-----------------|-----------------------------|--|--|--------|----------|
|                     |                 |                             | my child crosses the geofence.   |  |        |          |
| Customer (Web user) | Registration    | USN-1 (FATHER)              | As a user, I can register by entering my email, password, and confirming my password. I can access the location of my children using the credentials provided as a Father. | I can access my account / dashboard and receive confirmation email & click confirm | High   | Sprint-1 |
|                     |                 | USN-2 (MOTHER)              | As a user, I can register by entering my email, password, and confirming my password. I can access the location of my children using the credentials provided as a Mother. | I can access my account / dashboard and receive confirmation email & click confirm | High   | Sprint-1 |
|                     |                 | USN-3 (GUARDIAN/ CARETAKER) | As a user, I can also monitor the children's activities using a safety gadget monitoring system.   | I can access my account / dashboard and receive confirmation email & click confirm | Medium | Sprint-1 |
|                     | Login           | USN-4                       | As a user, I can log into the application by entering email & password.  | I can access my account / dashboard.   | Medium | Sprint-2 |
|                     | Dashboard       | USN-5                       | As a user, I can fix the geofence for my child's location so that I will receive alerts if my child crosses the geofence.  | I can monitor the current location of my child.                                    | High   | Sprint-2 |
| Customer Care       | Dashboard       | USN-6                       | As a customer care service person, whenever I receive a complaint, I forward the complaint and ensure that the complaint is resolved.                                      | I can keep track of all the complaints and the status of the complaints received.  | Medium | Sprint-3 |
| Administrator       | Admin Dashboard | USN-7                       | As an administrator, I will take care of all the payment processes, queries and complaints and login credentials.  | I can access all the customer details, payment details and complaints received.    | High   | Sprint-4 |

## 6.PROJECT PLANNING & SCHEDULING

### 6.1 Sprint Planning & Estimation

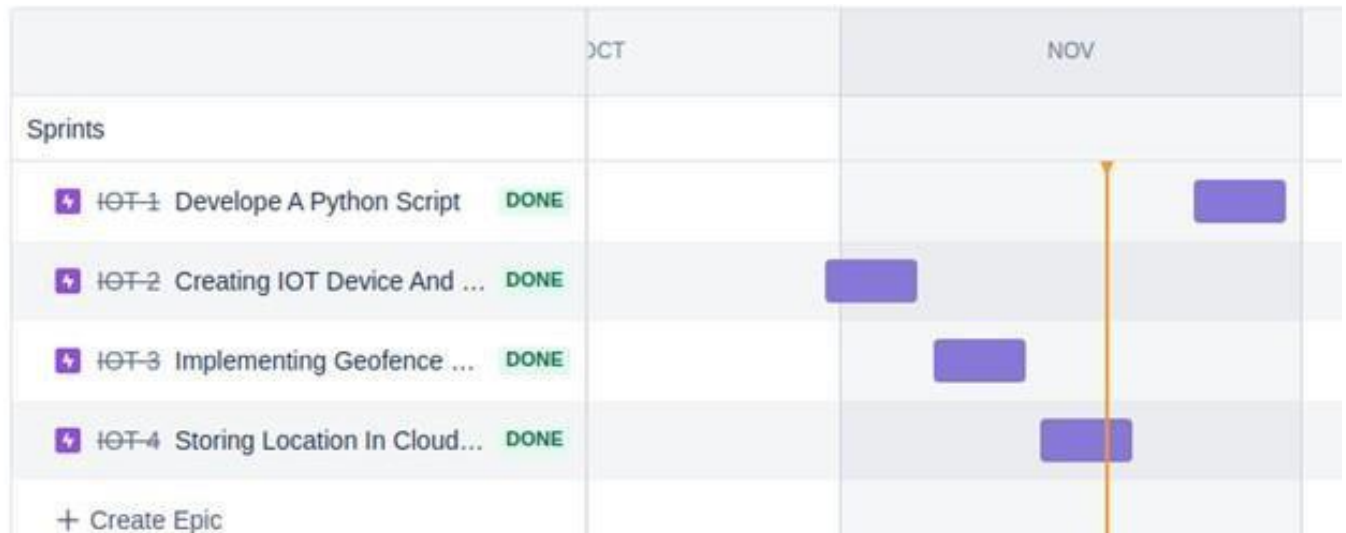
| Sprint   | Functional Requirement (Epic)       | User Story Number | User Story / Task   | Story Points | Priority | Team Members                 |
|----------|-------------------------------------|-------------------|---|--------------|----------|------------------------------|
| Sprint-1 | Registration                        | USN-1             | As a user, I can register for the application by entering my email, and password, and confirming my password. | 4            | High     | GRASHIA RAJLIN               |
| Sprint-1 | Confirmation Email                  | USN-2             | As a user, I will receive a confirmation email once I have registered for the application                     | 4            | High     | NOOR MOHAMED                 |
| Sprint-1 | Authentication                      | USN-3             | As a user, I can register for the application through Gmail and mobile app.                                   | 4            | Medium   | VANMATHI                     |
| Sprint-1 | Login                               | USN-4             | As a user, I can log into the application by entering email & password  | 4            | High     | RAGUL                        |
| Sprint-1 | Dashboard                           | USN-1             | As a user, I need to be able to view the functions that I can perform   | 4            | High     | GRASHIA RAJLIN               |
| Sprint-2 | Notification                        | USN-1             | As a user, I should be able to notify my parent and guardian in emergency situations                          | 10           | High     | GRASHIA RAJLIN               |
| Sprint-2 | Store data                          | USN-2             | As a user, I need to continuously store my location data into the database.                                   | 10           | Medium   | NOOR MOHAMED                 |
| Sprint-3 | Communication                       | USN-3,1           | I should be able to communicate with my parents   | 6            | Low      | VANMATHI, GRASHIA RAJLIN     |
| Sprint-3 | IoT Device – Watson communication   | USN-1,4           | The data from IoT device should reach IBM Cloud   | 7            | Medium   | GRASHIA RAJLIN, RAGUL        |
| Sprint-3 | Node RED- Cloudant DB communication | USN-1,2           | The data stored in IBM Cloud should be properly integrated with Cloudant DB                                   | 7            | High     | GRASHIA RAJLIN, NOOR MOHAMED |
| Sprint-4 | User – WebUI interface              | USN-1,4           | The Web UI should get inputs from the user  | 6            | High     | GRASHIA RAJLIN, RAGUL        |

|          |            |           |  |   |      |   |
|----------|------------|-----------|--|---|------|---|
| Sprint-4 | Geofencing | USN-2,3,1 | The geofencing of the child should be done based on the geographical coordinates | 7 | High | NOOR MOHAMED, VANMATHI, GRASHIA RAJLIN. |
|----------|------------|-----------|--|---|------|---|

## 6.2 Sprint 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-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                  |

## 6.3 Reports from JIRA



## 7.CODING

### 7.1 Coding

```
import json
```

```
import wiotp.sdk.device
```

```
import time
```

```
myConfig = {
```

```
    "identity": {
```

```
        "orgId": "rdegyc",
```

```
        "typeId": "safetygad",
```

```
        "deviceId": "gad1"
```

```
    },
```

```
    "auth": {
```

```
        "token": "gyg06jzil(!ITGsKxV"
```

```
    }
```

```
}
```

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

```
client.connect()
```

```
while True:

    name="locater"

    #in area location

    #latitude=13.145997614532394

    #longitude=80.0619303452179

    #out area location

    latitude=13.15412

    longitude=80.05729

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

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

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

    time.sleep(2)

client.disconnect()
```

## 7.2 Geo-fence

A geofence is a virtual perimeter for a real-world geographic area.[1] A geofence could be dynamically generated (as in a radius around a point location) or match a predefined set of boundaries (such as school zones or neighborhood boundaries).The use of a geofence is called geofencing, and one example of use involves a location-aware device of a location-based service (LBS) user entering or

exiting a geofence. This activity could trigger an alert to the device's user as well as messaging to the geofence operator. This info, which could contain the location of the device, could be sent to a mobile telephone or an email account.

## **8.RESULTS**

### **8.1 Performance Metrics**

It is being used as it allows the correct sample of respondents to be selected due to which becomes convenient to obtain results. Besides, the results offered are affordable and usable. Since the respondents are properly chosen, the results tend to be more accurate, precise and reliable.

## **9.ADVANTAGES & DISADVANTAGES**

### **9.1 Advantages**

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

### **9.2 Disadvantages**

It can be easily removed or damaged while playing and by any intruders.This requires internet connectivity to get monitored and to notify alert messages to parents.

## **10.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 to fall into the dark world of abuse, which entirely ruin 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.

## **11. 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 web camera and GPS to lively monitor. It is difficult to monitor when there occurs any hindrance to satellite communication or any network issue. There also occurs time delay in video streaming through the server. Hence in the future, these issues can be overcome by using Zigbee concept or accessing the system without internet and using high-speed server transmission.

## **12. APPENDIX**

### **Source Code**

#### **Code for IN Area Location:**

```
import json
import

wiotp.sdk.device

import time
myConfig

={

"identity":{

"orgId": "rdegk",
```



```
"typeId":"safetygad",

"deviceId":"gad1"

},

"auth":{

"token":"gyg06jzil(!ITGsKxV"

}} client =

wiotp.sdk.device.DeviceClient(config=myConfig,

logHandlers=None) client.connect() while True:

name="locater"

#in area location

latitude=13.145997614532394

longitude=80.0619303452179

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

client.publishEvent(eventId="status", msgFormat="json",

data=myData, qos=0, onPublish=None)

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

time.sleep(2)

client.disconnect()
```

## Code for OUT Area Location:

```
import json
import wiotp.sdk.device

import time
myConfig = {

    "identity": {

        "orgId": "rdegyc",

        "typeId": "safetygad",

        "deviceId": "gad1"

    },

    "auth": {

        "token": "gyg06jzil(!ITGsKxV"

    } }
client = wiotp.sdk.device.DeviceClient(config=myConfig,

logHandlers=None)
client.connect()
while True:

    name="locator"

    #out area location

    latitude=13.15412
```

```
longitude=80.05729
```

```
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(2)
```

```
client.disconnect()
```

**GitHub Link:** <https://github.com/IBM-EPBL/IBM-Project-421-1658300633>

**Project Demo:** [https://drive.google.com/file/d/1L2dMshgHD-QKt\\_Wvhr9bwNDBjfpOl8zd/view?usp=drivesdk](https://drive.google.com/file/d/1L2dMshgHD-QKt_Wvhr9bwNDBjfpOl8zd/view?usp=drivesdk)