TEAM ID: PNT2022TMID23918

Project Report

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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”.

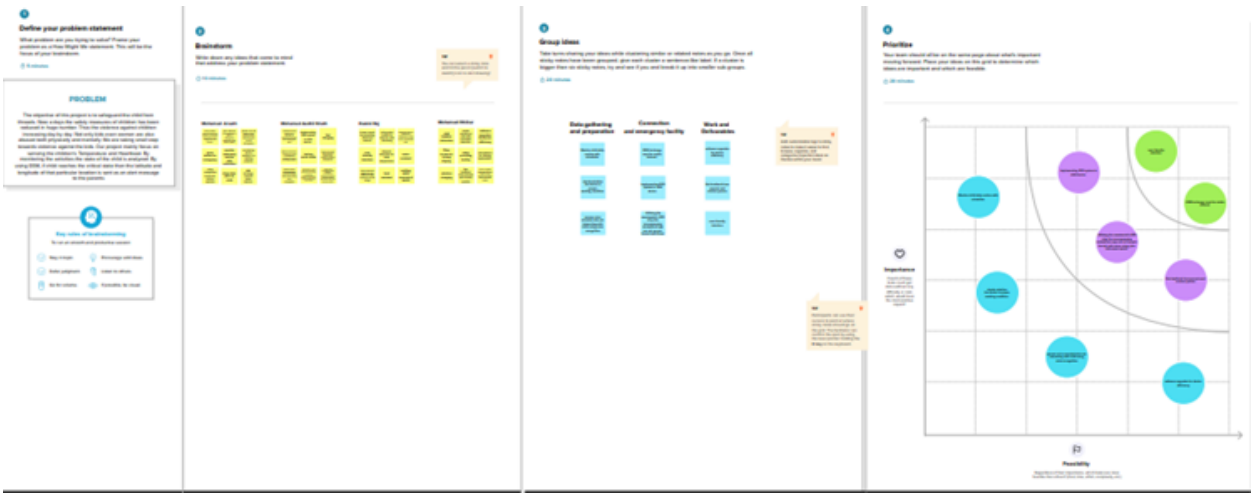
2.3 Problem Statement Definition

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.

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)	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)	Iot 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

4.REQUIREMENT ANALYSIS

4.1 Functional Requirements

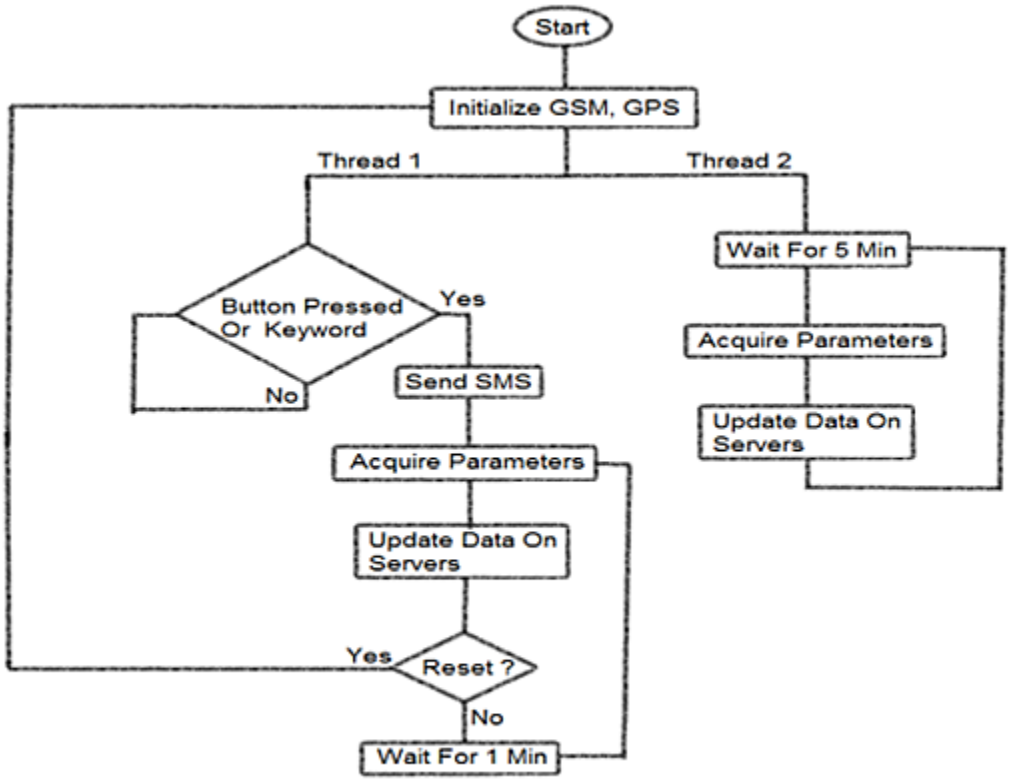
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Notification	Notified via Mobile App
FR-4	User Interface	Mobile App- MIT App Inventor Able to see location of children when they are out of geofence

4.2 Non- Functional Requirements

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Accessed through Mobile App Showing location (latitude and longitude) of child
NFR-2	**Security**	Database security must meet HIPAA requirements
NFR-3	**Reliability**	Once logged in ,webpage is available until logging out
NFR-4	**Performance**	Each page must load within 2 seconds
NFR-5	**Availability**	Can be available at all time 24/7
NFR-6	**Scalability**	The process must finish within 3 hours so data is available by 8 a.m. local time after an overnight update

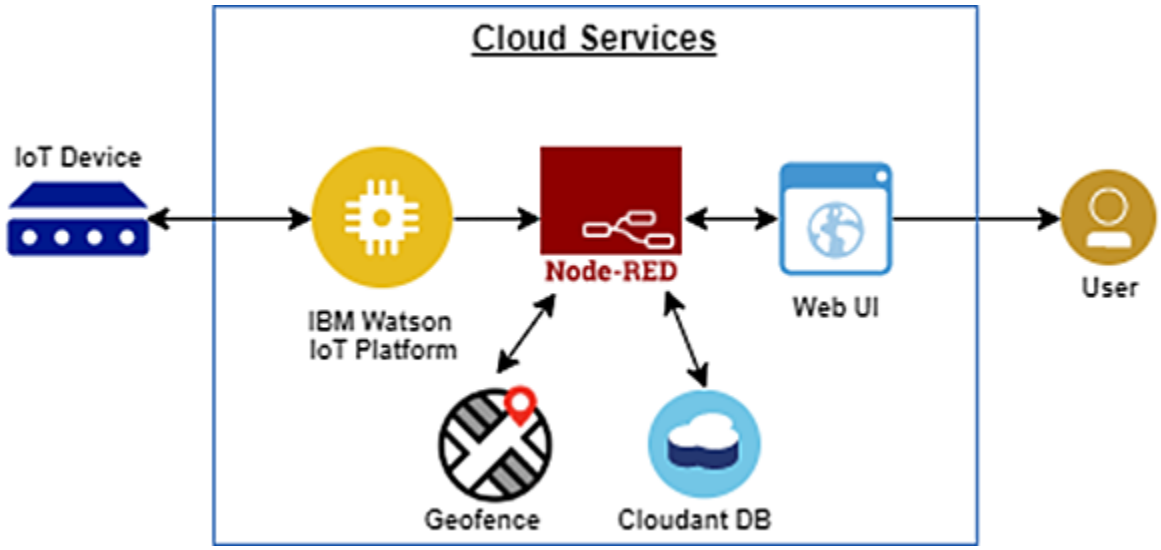
5.PROJECT DESIGN

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 (Parents Mobile user)	Registration	USN-1 (Father)	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)	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)	I too can monitor the children's activities using safety gadget monitoring system.	I can access my account / dashboard and receive confirmation email & click confirm	Medium	Sprint-2
	Login	USN-4 (if required)	Same function to be performed as in previous cases.	Same function to be performed as in previous cases.	Not Yet Determined	---------
	Dashboard	USN-5 (if required)	Same function to be performed as in previous cases.	Same function to be performed as in previous cases.	Not Yet Determined	----------

6.PROJECT PLANNING & SCHEDULING

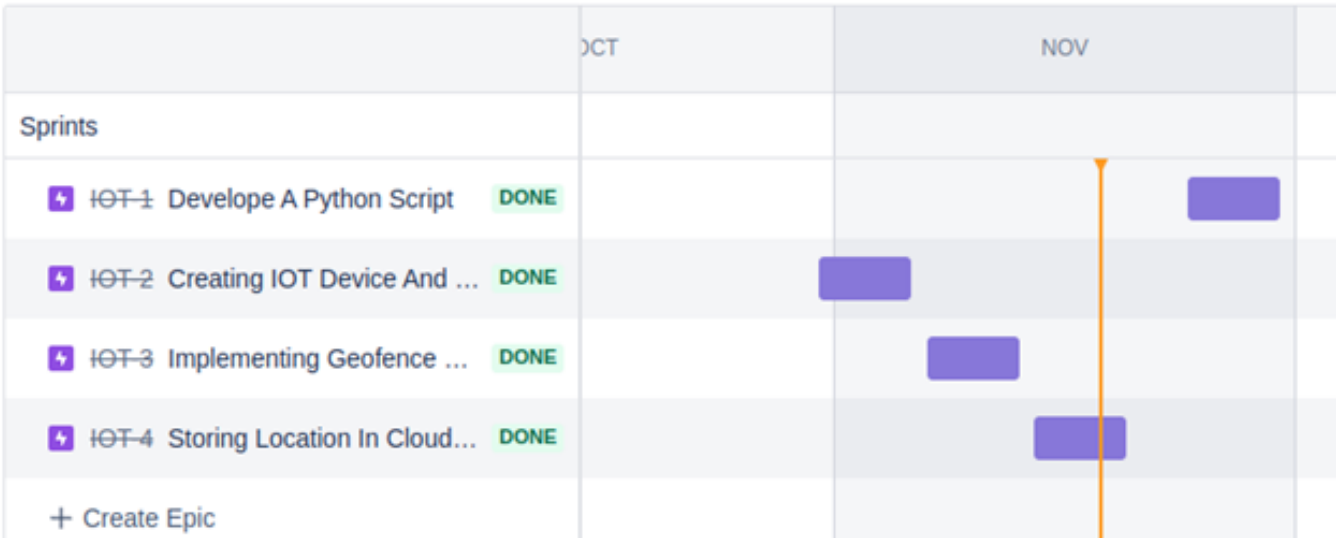
6.1 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	User Registration	USN-1	Registration through app	2	High	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
Sprint-1	User Confirmation	USN-2	Confirmation via Email Confirmation via OTP	1	High	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
Sprint-2	User login	USN-3	Setting up User Id and password	2	Low	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
Sprint-1	App permission	USN-4	Grant the permission for the app to access location, contact etc..	2	Medium	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
Sprint-1	Interface with the Device	USN-5	Connecting the device with the registered app with the device ID.	1	High	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
Sprint	**Functional Requirement (Epic)**	**User Story Number**	**User Story / Task**	**Story Points**	**Priority**	**Team Members**
Sprint-2	Setting Geo-location	USN-6	Creating the Geo-location area in the map	2	Low	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
Sprint-3	Database	USN-7	Location history is stored in the cloud. Can be accessed from the dashboard.	2	High	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
Sprint-4	Tracking location	USN-8	Tracking the location through app. Tracking the location through website.	2	High	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar

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	31 Oct 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	07 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	14 Nov 2022

6.3 Reports from JIRA



7.CODING

7.1 Coding

```
import json

import wiotp.sdk.device

import time

myConfig ={

 "identity":{

 "orgId": "rdegyk",

 "typeId":"safetygad",

 "deviceId":"gad1"

 },

 "auth":{

 "token":"gyg06jzil(!lTGsKxV"

 }

}

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 Iot 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 thefuture 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 abusements, 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": "rdegyk",

 "typeId":"safetygad",

 "deviceId":"gad1"
```

```
 },
 "auth":{
 "token":"gyg06jzil(!lTGsKxV"
 }
}
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 Iot platform: ",myData)
 time.sleep(2)
 client.disconnect()
```

Code for OUT Area Location:

```
import json

import wiotp.sdk.device

import time

myConfig ={

 "identity":{

 "orgId": "rdegyk",

 "typeId":"safetygad",

 "deviceId":"gad1"

 },

 "auth":{

 "token":"gyg06jzil(!lTGsKxV"

 }

}

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

logHandlers=None)

client.connect()

while True:

 name="locater"
```

```
#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-16184-1659609202

Project Demo:

https://drive.google.com/drive/folders/18P7kxrOHelE3ogZRn_sprCFZgwPZvSKZ?usp=sharing