PROJECT REPORT

IoT Based Safety Gadget for ChildSafety Monitoring and Notification

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I.INTRODUCTION

Cruel crimes against children have been on the rise in recent years, with victims finding themselves in incredibly perilous situations where using their cellphones to notify their parents or the police is nearly impossible. Despite the fact that technology is constantly evolving, these acts continue to occur in numerous areas.

The major goal of this project is to use modern technology to create a gadget that provides"Smart Child Safety" to protect children, which will be far more effective than current methods in assisting victims.

The device has IoT monitoring and a GSM module that allows the child to be monitored at all times. It also has numerous sensors that are connected to a CPU and are used to detect exact signals such as heart rate, temperature, and other dangers and alert the parents. In the event of a power outage, the wearable serves as a backup. On the device,there is an additional panic button. The purpose of this button is to notify parents and the police of a child's current location whenever they are in a perilous scenario. A GPS module is utilized to access their present location, and a GSM module assists in transmitting the information via SMS to designated contacts. In this approach, the device tries to provide child safety while remaining unobtrusive.

PROJECT OVERVIEW:

1. The main concept is to create a device that may be used to check health and as a safety system.
2. When the panic button is touched, the system should send an SMS as well as a call alarm to the caregiver, along with a live GPS location.
3. To create a dependable and secure system that can detect a fall and deliver a warning message using an accelerometer.
4. It can monitor heart rate, spo2, and temperature, as well as deliver periodic updates.
5. Another goal is to show the potential for increased productivity, efficiency, and cost

savings,as well as to integrate optimized components into an existing design.

PURPOSE:

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 pear. The parent can send a content with particular catch phrase.For example:Area, temperature, UV, Alarm Buzz will ensure back with a content containing the continuous exact area of the youngster which after will gives applications.

2. LITERATURE SURVEY

In today's world women are less secure and have many issues regarding their security purpose.This paper describes about safe and secured electronic system for women which comprises of an Arduino controller and sensors such as temperature LM35, flex sensor, MEMS accelerometer, pulse rate sensor, sound sensor. A buzzer, LCD, GSM and GPS are used in this project. When the woman is in threat, the device senses the body parameters like heartbeat rate, change in temperature, the movement of victim by flex sensor,MEMS accelerometer and the voice of the victim is sensed by sound sensor. When the sensor crosses the threshold limit the device gets activated and traces the location of the victim using the GPS module. By using the GSM module, the victim's location is sent to the registered contact number. Embedded Child Safety wearable Device:The concentration of this paper is to have anSMS Content empowerment.
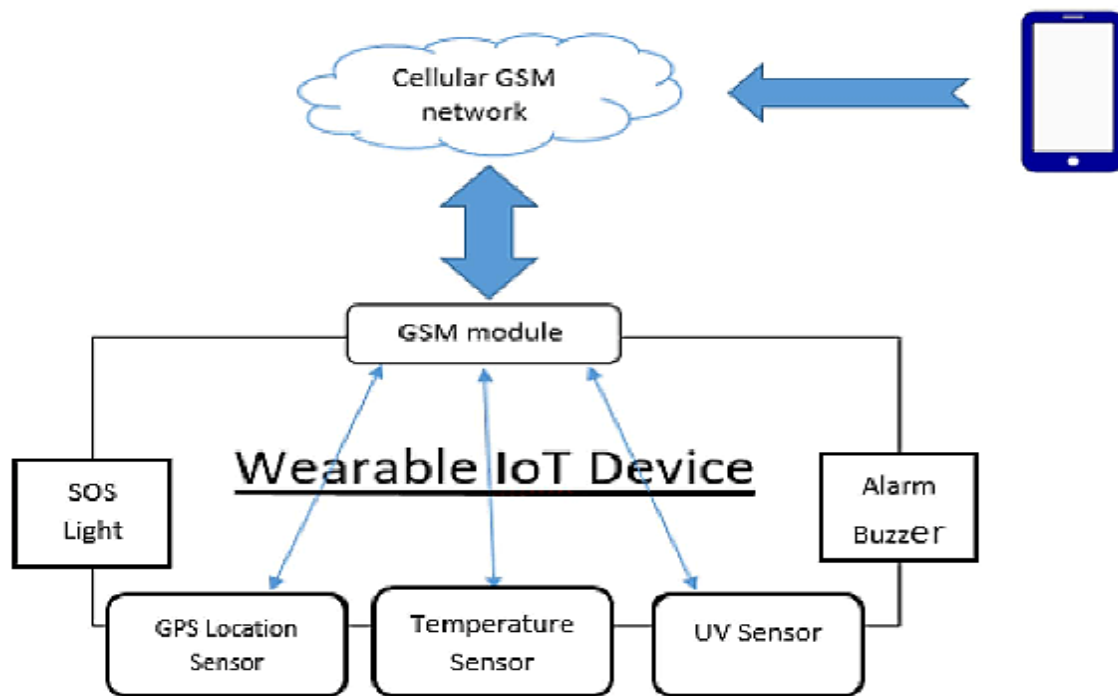
Fig 1. System overview of the wearable device.

EXISTING PROBLEM

This Project describes about safety and security to Children through various IOT technologies which consists of an Arduino Controller , and sensors such as temperatureDHT11,Flex Sensor, pulse rate sensor.Alarm Buzzer when child presses the SOS Button, GPS and GSM are used in this project. The device is mainly built to save a child when they are in panic. we are also placing the touch sensor near the waist because in case of Kidnapping, Criminal generally carry the child through waist. If any touch on waist sensor is detected, the device sensor senses the body temperature, heartbeat rate, and the movement of victim is done by flex sensor. When the sensor crosses the threshold limit the device gets activated and traces the location of Victim using the GSM Module. By using the GSM Module, the location of Child and victim is sent to the registered Contact Number of parent. A small Hidden camera is also fixed along with the child dress, when the device gets activated ,the camera send the live scenarios to the registered number, so that they can easily find what is happening there.

REFERENCES

1.B. Metallic and A. K. Patro, \"Heart Rate Monitoring SystemUsing Finger Tip ThroughArduino And Processing Software\", International Journal of Science Engineering and Technology Research (IJSETR), vol. 5, no. 1, January 2016, ISSN 2278-7798. [2] Dustin T. Weiler, Stefanie O. Villajuan, Laura Edkins, Sean Cleary and Jason J. Saleem, \"Wearable HeartRate Monitor Technology Accuracy in Research: A Comparative Study between PPG and ECG Technology\", Proceedings of the HumanFactors and Ergonomics Society 2017 Annual Meeting. [3] Marius Valerian Paul et, Oana Maria Neacsu and Andrei Salceanu, \"Wireless monitoring system of the heart rate\", 2014 International Conference and Exposition on Electrical and Power Engineering (EPE), ISBN 978-1-4799- 5849-8. [4] Kalb Venugopal and Amit Kumar\"Centralized Heart Rate Monitoring and Automated Message Alert System using WBAN\", International Journal of Scientific and Research Publications, vol. 3, no. 9, September 2013, ISSN 2250-3153. [5] Kainat Zeba, Lakshmi S Patil, Sanjana R Gowda, R Varsha and Shobha Chandra K, \"Real Time Heart Attack and Heart Rate Monitoring Android Application\", International Journal of Computer Science and Mobile Computing, vol. 7, no. 4, pp. 115-124, April 2018, ISSN 2320-088X. [6] Yuan-Hsiang Lin, I-Chien Jan, P. C. -. Ko, Yen-Yu Chen, Jau-MinWong and Gwo-JenJan, \"A wirelessPDA-based physiological monitoring system for patienttransport\", IEEE Transactions on Information Technology in Bio medicine, vol. 8, no. 4, pp. 439-447, Dec. 2004. [7] H. Ren, H. Jin, C. Chen, H. Ghayvat and W. Chen, \"A Novel Cardiac Auscultation Monitoring System Based on Wireless Sensing for Healthcare\", IEEE Journal of Translational Engineering in Health and Medicine, vol.

PROBLEM STATEMENT DEFINITION

An IoT based wearable smart band for children is proposed in this research for child security purposes. The smart band is waterproof, chargeable and equipped with sensors. Heart rate sensor measures pulse rate and BPM. Sleep quality sensor obtains children's sleep quality, cycle and positions. Altimeter detects changes in height and sense whether children are going down a slope or climbing stairs, thereby measuring calorie count. On the other hand, pedometer is used for counting steps. The motion sensor is applied to determines whether children are jogging or running. Blood pressure sensor used to measure blood pressure. In addition,the respiratory rate sensor detects breathing patterns and respiratory rate.

Furthermore, the temperature sensor is used to detect body temperature. Besides, by using the emotion detector the emotional state, pressure and anxiety levels can be gained. Apart from that, this smart band contains GPS for tracking, identifying children's location and setting geo fences. Via the smart band, children can also contact parents. Emergency button, a feature in which will automatically record video and automatically call 4 emergency contacts when it is pressed. An alert message along with the video clip is sent to parents' devices. The alarm and SOS light will be activated by parents through their devices. As the diagram shows, sensors are connected through the internet. They detect and capture different kinds of data. These collections of data will then be sent to the cloud over the internet for securely process, analyze, monitor,store, access and retrieve data.

3. IDEATION & PROPOSED SOLUTION

Nowadays, crime rate associated with children keeps increasing due to which drawspeoples' utilizing IoT technology. Online questionnaire and semi-structured interview are methodologies used to collect data. The online questionnaire gains feedbacks by sending questions electronically, where answers need to be submitted online. In the semi structured interview, researcher meets and asks respondents some predetermined questions while other being asked are not planned in advanced.

Through information obtained, a smart band have been proposed to monitor the safety of children. By this, parents attention regarding child safety. This research is conducted to propose a child security smart band know what is happening remotely and can take actions if something goes wrong. The future improvements of this device will be adding functions and software to make it works like a phone such as messaging, gallery, Google, YouTube, meanwhile, adding more child security features so that child safety is guaranteed. Keywords: Child security system, Child monitoring system, Internet of Things (IoT), IoT device, Smart band Internet of things (IoT) refers to networked interconnection of objects featured with ubiquity intelligence . In IoT, objects are connected via internet for communication, interaction, exchanging data and making decisions automatically at anywhere and anytime. Thus, introducing the hyper connectivity concept meaning individuals and organizations able to communicate with each other effortlessly and remotely Revealed by and IoT is a revolution in advancing technology causing transformation in information technology, humans' lifestyle, and in businesses processes. The advancements of IoT make it possible to be used in organizations for automating and monitoring business processesIn term of society, IoTcan be used for simplifying daily tasks, creating smart homes, smart cities, devices or application which improves the quality of life. However, security and privacy are the main challenges of IoT which need to be solved as it gathers much personal data capable of revealing sensitive information.Sensor known as a device measuring physical value and converts it into data. Common sensors like the temperature sensor measures heat of an object. Proximity sensor used to detect nearby objects. For the pressure sensor, it calculates pressure applied. Optical sensor able to sense the light intensity Humidity sensor will detect the presence of water vapor in the air. Micro sensor is designed to collects and relays information about the

environment Cloud Cloud computing means shared computing resources (networks, servers, storage, applications, services) are delivered as a service over the Internet from cloud to customer.

According to cloud is an interconnected network of servers providing services for people or businesses. In fact, cloud supports real-time operation, processing, analyzing, connecting, managing and securing IoT devices as well as applications . In addition, it reduces cost since users are paying based on usage without building the physical infrastructure. Furthermore, it allows developers to create projects faster.

Organizations can also access Big Data from the cloudDiscovered by the core concept of cloud is to reduce processing burden on users. Consequently, different devices like PC, laptop,smart phone able to access various utility programs, storage and application development platform over the internet. Safety Device The safety device protects individuals from potential harms and dangers. A research done by proposed the child safety wearable device using raspberry pi 3.

 The raspberry pi 3 gathers data from pi camera, pulse sensor and sound sensors. Then, send collected data to parents' smartphones by SMS using GSM shield. Images captured from pi camera and children's location detected by GPS will also be sent to parents' devices. In another study, designed a wearable smart watch for women security. Sensor inside the smartwatch senses the heartbeat of a child or woman who wears it . When he/she is exposed to attacks, heartbeat rate will be high. When this is detected, alarm sound will be triggered It will then automatically make calls to registered contact and to the nearest police station . Based on the location provided by GPS, police will arrive soon at the correct destination.

Empathy Map Canvas

Gain insight and understanding on solving customer problems.

Build empathy and keep your focus on the user by putting yourself in their shoes.

What do they THINK AND FEEL?
what really counts
major preoccupations
worries & aspirations

Hate about our society | feel insecure | fear can cause emotional problems | Toxic stress due to child abuse | Increase impulsivity due to child abuse

What do they HEAR?
what friends say
what boss say
what influencers say

Safety at Home | Safety at School | safety at exterior zone | Keep a complete description of your child.

CHILD SAFETY

What do they SEE?
environment
friends
what the market offers

children free from insecurity | Gadgets can get in affordable price | peace in parent's mind | remote control by parents

What do they SAY AND DO?
attitude in public
appearance
behavior towards others

have to try it to understand how it actually work | child safety is complex and require further examination | suspect should be severely punished | harsh and emotional tend to escalate a child's aggression

PAIN
fears
frustrations
obstacles

electrical hazards | spills and tripping hazards | child harassment and abuse | motor vehicle hazards | playground hazards

GAIN
"wants" / needs
measures of success
obstacles

continuous child monitor | protecting childern from social insecurities | Navigate the child location through GPS | Automatic alarm when out of range | Sense sudden vibration or call alert

Share your feedback

Edit this template
Right-click to unlock

BRAIN STORM:

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	the main aim of this project is to provide safety to child using smart IOT wearable gadget and android application
2.	Idea / Solution description	This research demonstrates Smart IOT device for child safety and tracking, to help the parents to locate and monitor their children. If any abnormal readings are detected by the sensor, then an SMS and phone call is triggered to the parents mobile
3.	Novelty / Uniqueness	Panic Alert System .The gadget is equipped with panic alert system feature which mainly consist of a button that is triggered only during certain abnormal/panic situations
4.	Social Impact / Customer Satisfaction	Improved safety index of places, providing Freedom for children with special need
5.	Business Model (Revenue Model)	Selling the product directly to the parent(Device with multiple subscription for tracking and notification service)
6.	Scalability of the Solution	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

PROBLEM SOLUTION FIT

Project Title: Project Design Phase-I - Solution Fit Template   Team ID: PNT2022TMIDxxxxxx

Define CS, fit into CC	**1. CUSTOMER SEGMENT(S)** CS	**6. CUSTOMER CONSTRAINTS** CC	**5. AVAILABLE SOLUTIONS** AS	Explore AS, differentiate
	Who is your customer? i.e. working parents of 0-5 y.o. kids	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.	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 is an alternative to digital notetaking	
	• Our customers are the parents of the children who are all below the age of 16. • Handicapped and Microcephaly children and those who are facing Malnutrition are also our customer.	• Power consumption is considerably low and mostly gadget use low power consumption equipments. • It use solar batteries to recharge addition with Lithium-Ion batteries. • The gadget can be available at affordable price.	• Embed an best antenna in the gadget and reset router atleast every month to refresh for uninterrupted internet connection. • Substitute lowest cost material for manufacture. • Manage location services and using better GPS connection.	

Focus on J&P, tap into BE, understand RC	**2. JOBS-TO-BE-DONE / PROBLEMS** J&P	**9. PROBLEM ROOT CAUSE** RC	**7. BEHAVIOUR** BE	Focus on J&P, tap into BE, understand RC
	Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.	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 regulations.	What does your customer do to address the problem and get the job done? i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)	
	• whether the gadget has uninterrupted internet/GPS connectivity? • whether the gadget has ceaseless power supply? • what if the gadget causes health hazards to children? • can we buy the gadget with affordable price?	• Due to improper manufacturing of gadgets cause damage. • Violence against the children has increased due to the pandemic and multiple humanitarian crisis. • Mentally illness children can loss their way to their home.	• This gadget benefits and the usage make life easier. • Insecurity in children's mind will get vanished.	

Identify strong TR & EM	**3. TRIGGERS** TR	**10. YOUR SOLUTION** SL	**8. CHANNELS of BEHAVIOUR** CH	Identify strong TR & EM
	What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.	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.	**8.1 ONLINE** What kind of actions do customers take online? Extract online channels from #7	
	• Getting information about the gadget from the official websites,advertisements in papers.	• Continuous surveillance of the children make their parents feel relief. • Handicapped children's location can be monitored. • Pulse of the children will be monitored and actions will take according to that.	**8.2 OFFLINE** What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development. Online: Installing sim in the gadget will allow us to access internet.so location can be access via sim cards. Offline: GPS service provide location access via connecting with the satellites.	
	4. EMOTIONS: BEFORE / AFTER EM			
	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.			
	• Before: parents may feel insecure once they face problems about their child security. • After : parents may feel free and able to do their work without any worry.Insecurity will be vanished.			

METHODS:

Research methodology, a method for identifying, collecting, processing and interpreting data using some techniques, then drawing conclusions to address the problem. It is a significant section since it allows readers to evaluate overall validity and reliability of the research paper [20]. For this research, online questionnaire and semi-structured interview are employed. Online questionnaireserves as quantitative research to measure users' attitude, behavior and factors influencing their acceptance towardsthe child securitysystem. After that, a semi-structured interview is conductedas qualitative research helping in understanding trends, users' preferences, opinions and thoughts about current condition and IoT-based child security system. Besides, 50 parents nursing one or more children at most 12 years old are participating in this research. The data gathered will be used to prove the severity of current situation and the need to use IoT-based child security system.

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, reductionof crime rate brings about long-term positiveeffects such as improving country's reputation and quality of life [26], increasing community security, safety, and cohesion as well as generating economicbenefits for individuals, committee and taxpayers [23].

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.

Explora Go, a waterproof watch phone for children branded Explora which includes pedometer, alarm clockand stopwatch. It possesses an app available at Playstore and Appstore. With GPS and multiple services, Explora Go shows children's' location and supports the setup of safety zones. Meanwhile, it contains a SIM card and acts like a phone enables voice calls from 10 pre-saved contacts. Similar to a phone, Explora Go can send

and receive text messages, emojis, images and voice messages. It is also equipped with the SOSbutton that children can press to notify emergency contacts of their location. Beyond that, Wi-Fi and Bluetooth are available in Explora Go. It also supports the schedule function in which school schedules can be specified during which watch will only display time and make emergency calls.The safety device protects individuals from potential harms and dangers. A research done by [1] proposed the child safety wearable device using raspberry pi 3. The raspberry pi 3 gathers data from pi camera, pulsesensor and sound sensors.

4. REQUIREMENT ANALYSIS

Non-functional Requirements:

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

| FR No.	Non-Functional Requirement	Description
NFR-1	Usability	How easy is it for a customer to use the system?
NFR-2	Security	How well are the system and its data protected against attacks?
NFR-3	Reliability	How often does the system experience critical failure? eg: the system must perform without failure in 95 percent of use case
NFR-4	Performance	How fast does the system return results?
NFR-5	Availability	How is the user availability time compared to downtime?
NFR-6	Scalability	How much will this performance change with higher workloads?

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirements	Description
FR-1	Notification System	Parents want to be notified when their child is too far away from them.
FR-2	Secure personal information/Privacy	Encryption of data,Any personal data should be deleted as soon as the child is found by the parents;alternatively interviewees suggested data may be stored for upto 24h
FR-3	Local Ranging/Positioning	GPS is a common and available technology; however it is unreliable and should not be expected to work for indoor applications.
FR-4	Voice Navigation	Interviewees prefer to be guided by either voice or map navigation. Generally a map was preferred however two users preferred a car-like voice navigation.
FR-5	Variable Sensitivity	The device should be attractive to the child (colourful design).Alternatively the device should be embedded in clothing or somehow locke
FR-6	Early Alarm	The alarm sensitivity should be adjusted by the parent; this is preferred to a fixed alarm sensitivity setting.

5. PROJECT DESIGN:

Data Flow Diagrams

A Data Flow Diagram (DFD) is a traditional visual representation of the information flowswithin a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data entersand leaves the system, what changesthe information, and where data is stored.

Zero Level DFD - Internet Monitoring System
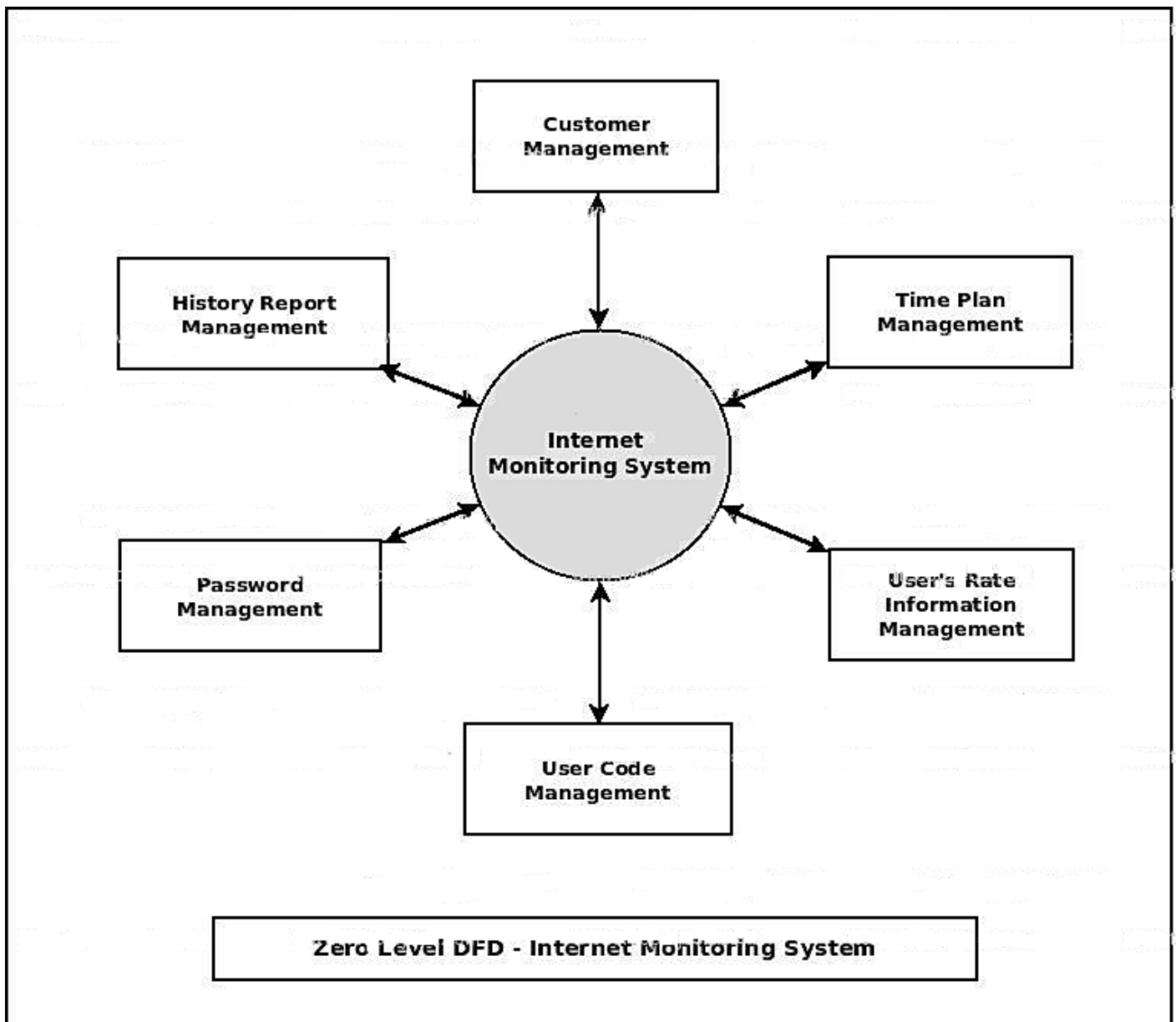
USER STORIES

Solution & TechnicalArchitecture

User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		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	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-6	As a user,I will be able to check the application status		High	Sprint-2

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Web user)	Registration	USN-7	As a user,I can able to register for the application by entering my email,password and confirming my password	I can able to access my account/dashboard	High	Sprint-1
Customer care Executive		USN-8	As a user,I will be receiving confirmation email Once i have registered for the application	I can able to receive confirmation email & click confirm	High	Sprint-1
Administrator		USN-9	As a user,I can able to register for the application through facebook	I can able to register & access the Dashboard with Facebook Login	Low	Sprint-2
		USN-10	As a user,I can register for the application through Gmail		Medium	Sprint-1
		USN-11	As a user,I can able to log into the application by entering email & password		High	Sprint-1
		USN-12	As a user, I am able to check the application status		High	Sprint-2

6.PROJECT PLANNING & SCHEDULING

SprintPlanning & Estimation

Product Backlog, Sprint Schedule, andEstimation(4 Marks)

Use the below template to create a product backlog and sprint schedule

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 email, password, and assuring the same password.	5	High	THIRUPUGAZHI
Sprint-1	Confirmation of Email	USN-2	As a user, I will receive a confirmation email once I have registered for the application	5	High	THIRUPUGAZHI
Sprint-1	Authentication	USN-3	As a user, I can register for the application through Gmail and mobile app.	10	Medium	SWETHA
Sprint-1	Login	USN-4	As a user, I can log into the application by entering mail id & password	10	High	SANDHIYA
Sprint-1	Dashboard	USN-5	As a user, I need to enable the view the functions that I can perform	10	High	JYOTHI
Sprint-2	Iot Device Watson communication	USN-6	The data from Iot device should reach IBMcloud	7	High	THIRUPUGAZHI SWETHA SANDHIYA JYOTHI
Sprint-3	Node RED Cloudant DB communication	USN-7	The data stored in IBM cloud should be properly integrated with cloudant DB	7	Medium	SWETHA SANDHIYA JYOTHI THIRUPUGAZHI
Sprint-4	Geofencing	USN-8	The geofencing of the child should be done based on the geographical coordinates	6	Low	JYOTHI THIRUPUGAZHI SANDHIYA SWETHA

Sprint delivery schedule

Project Tracker, Velocity & Burndown Chart: (4 Marks)

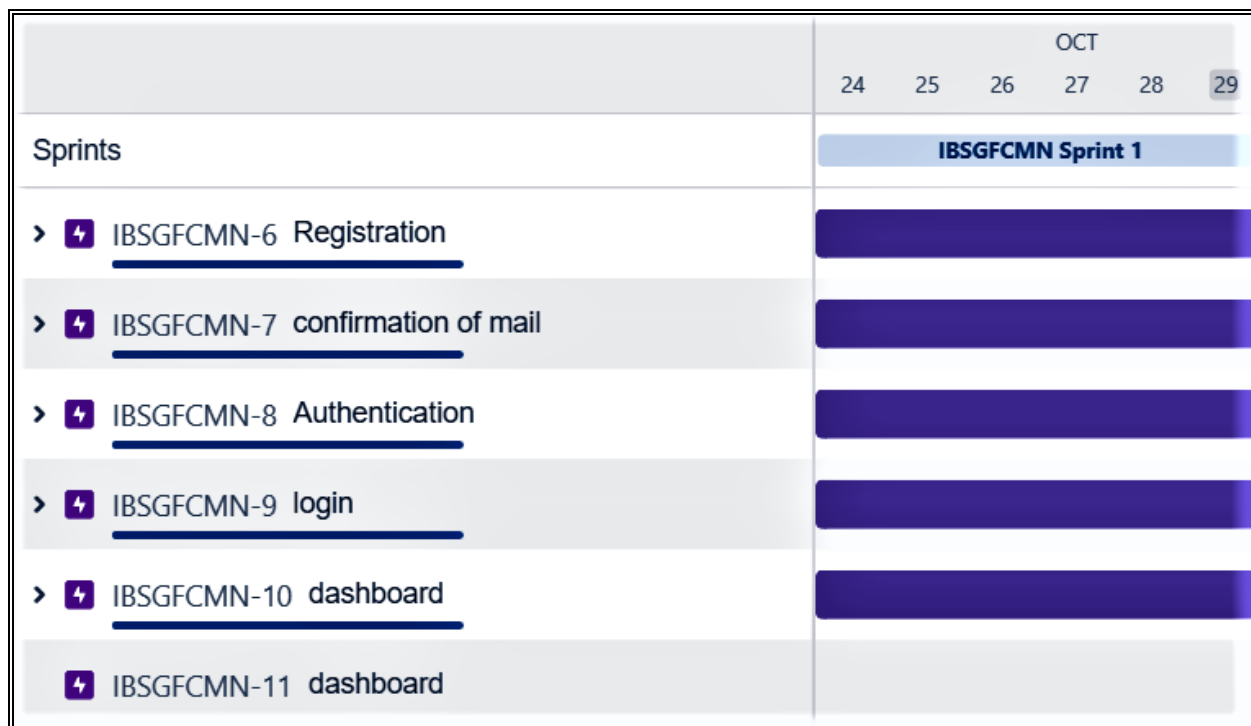| Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct2022	08 Nov 2022	20	08 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	14 Nov 2022	20	14 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

Velocity:
Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)
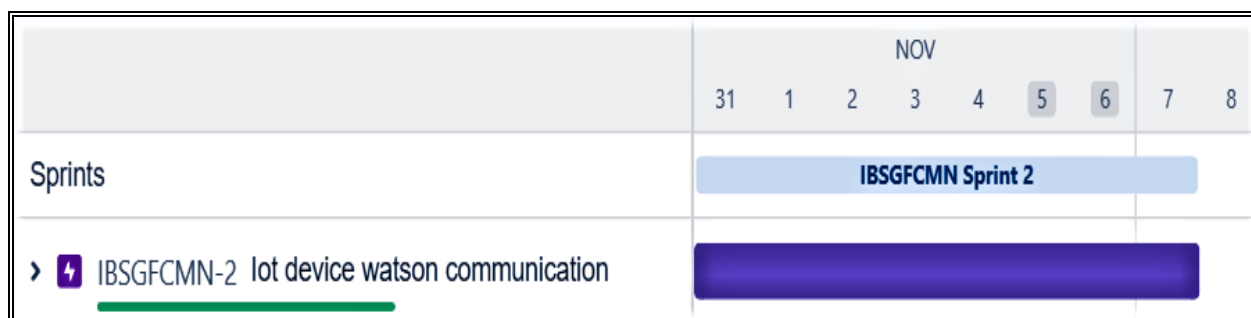
$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

Reports from JIRA

SPRINT 1:

	OCT					
	24	25	26	27	28	29

Sprints — IBSGFCMN Sprint 1

> ⚡ IBSGFCMN-6 Registration

> ⚡ IBSGFCMN-7 confirmation of mail

> ⚡ IBSGFCMN-8 Authentication

> ⚡ IBSGFCMN-9 login

> ⚡ IBSGFCMN-10 dashboard

⚡ IBSGFCMN-11 dashboard

SPRINT 2:

	NOV								
	31	1	2	3	4	5	6	7	8

Sprints — IBSGFCMN Sprint 2

> ⚡ IBSGFCMN-2 lot device watson communication

SPRINT 3:

				NOV				
	7	8	9	10	11	12	13	14
Sprints				IBSGFCMN Sprint 3				
⚡ IBSGFCMN-2 Node red cloudant DB communication								
⚡ IBSGFCMN-3 Node red cloudant DB communication								

SPRINT 4:

			NOV			
	14	15	16	17	18	19
Sprints			IBSGFCMN Sprint 4			
› ⚡ IBSGFCMN-2 Geofencing						

CODING & SOLUTIONING (Explainthe features addedin the project alongwith code):

PYTHON CODE:

```python
import json

import wiotp.sdk.device

import time


myConfig = {
        "identity": {
            "orgId": "hj5fmy",
            "typeId": "NodeMCU",
            "deviceId":"12345"
        },
        "auth": {
          "token": "12345678"
        }
}
client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()

while True:

name ="smartbridge"#in area location


   #latitude=17.4219272
   #longitude=78.5488783

   #out area location
   latitude=17.4219272
   longitude=78.5488783
   myData={'name':name,'lat':latitude,'log':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()
```
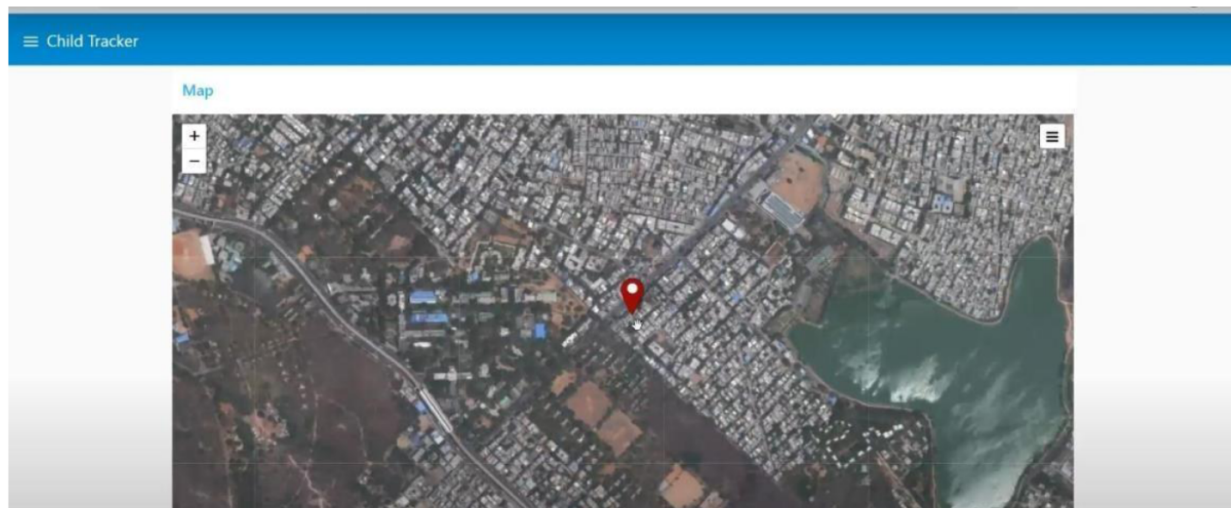
Feature 1:

A GPS tracker so you can see where your child is at all times and an SOS button that your child can press to send an emergency alert to you.

Feature 2:

It should also have a two-way communication system so you can talk to your child and they can talk to you.

RESULTS:

The result obtained was,

Live Location Tracking:

GPS is installed on gadget to track its current location can be tracked on android app and via SMS request sent from parent phone to safety gadget.

9.ADVANTAGES & DISADVANTAGES

ADVANTAGES:

    i.   Easy Availability &Affordability.

    ii.   Tracking Made Easy.

    iii.   Smart watch is Technology in Disguise.

    iv.   Watch over your kids.

    v.   Track kids when they are away from home and out of your sight.

DISADVANTAGES:

    vi.   Data security concerns.

    vii.   Technical concerns.

    viii.   Capabilities are limited.

    ix.   Wearable technology is expensive.

10.CONCLUSION

Camera Module can be used for surveillance of the child surroundings. This gets a clearer picture of the location or place this wearable can also be incorporated on a camera module . The hardware that can be used would be a adafruit TTL serial camera or any other camera module. Since the major focus of this wearable is the GSM module which is a better alternative than Bluetooth, Wi -Fi or ZigBee due to the short range and connectivity issues.Some camera module supports video streaming.

Due to the constraint of trying to use only SMS, only four wire connections are used. The red and black wires will be connected directly to +5V and GND respectively to the Arduino Uno board. The RX pin is used for sending data via arduino Uno and GSM board .The TX pin is utilized for receiving incoming data from the modules. The 10 K resistor divider is used. The camera's serial data pins utilizesa 3.3V logic, and it would be a good idea to divide the 5V down sothat it reaches 2.5V. Normally the output from the digital 0 pin is 5V high. Resistors are connected such that camera input never reachesbeyond 3.3V.

Two digital pins and a software serial port will be used by Arduino Uno while communicatingwith the camera. An external storage micro board can be used to save the images provisionally asthe camera or the Arduino Uno do not have sufficient onboard storage space to save snapshots .Camera operates on a typical baud rate of 38400 baud. The camera collects information in the same method as the GPS module does. It will be on standby power saving mode and waits for the keyword 'snapshot' or any other word well-defined in the program.This keyword is sent from the user's mobilephone to the GSM kit.

This in turn activatesthe camera by the ArduinoUno .Then a snapshotof the surroundings can be taken and the file can be saved temporarily on the external SD (Secure Digital)memory card. After this process, Arduino Uno will access the stored images from the SD storageand relocate it to the GSM module.This in turn is send to the user through SMS text.

Android App: An automated bot is required to respond to text message responses from the user. This is the main idea behind the use of Android App. Response options are predefined and provided to the user at a single click of a button. Specific keywords that are to be sent must be memorized by the user. In addition to it, the automated bot can be pre-programmed

to present the user with a set of predefined and specified keyword such as "Location," "Snapshot," "SOS," etc. As a future scope, additional specific keywords could be added. For eg,"Humidity," "Altitude," etc could be added. Android app offers extra edge to the user for understanding easily. Provision of a predefined keyword button for getting Location is the main notion in Android App. This eases the work.

11.FUTURESCOPE:

The child safety wearable system acts as a smart device. Child's surroundings can be located withthehelp of accurate and precise real-time location.Surrounding environment temperature, SOS light alongwith Distress buzzers are provided in this system .This helps in locatingtheir child .Thisalso aids thebystanders to rescue the child. The smart childsafety wearable can be boostedconsiderably in thefuture by using extremely squeezed . Arduino modules like Lily Pad Arduinowhich can beembroidered into fabrics. Also as a future scope, more power efficient model can be created that holds the batteryfor a longer time.

12.APPENDIX

Project Demo Link

https://www.mediafire.com/file/vhemwrq30u9039m/video1731243211.mp4/file