**Project Report Format**

**IoT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING AND NOTIFICATION**

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# 1. INTRODUCTION

1.1 Project Overview

1.1.1 The project is IoT Based Safety Gadget for Child Safety Monitoring & Notification.It is mainly streamed towards child safety solutions by developing a gadget that can be used to monitor the child.

1.2 Purpose

1.2.1 Child safety and tracking has been a huge concern due to the surge of the number of crimes on children.Hence the purpose of this project is to provide an application that can be used to ensure the safety of a child.

# 2. LITERATURE SURVEY

2.1 Existing problem

2.1.1 In today’s world the crime rate associated with children keeps increasing on a large scale due to which a lot of attention has to be given on child’s safety.Reports say that for every 40 seconds, a child goes missing in this world.The crime rate associated with children has been constantly increasing.Hence there is a need to find a solution which monitors the child’s activities.The application constantly tracks the child and notifies it’s parent.

2.2 References

2.2.1 Paper 1;

Smart IOT Device for Child Safety and Tracking

Child safety and tracking is a major concern as the number of crimes on children are reported nowadays. With this motivation, a smart IoT device for child safety and tracking is developed to help the parents to locate and monitor their children. The system is developed using LinkIt ONE board programmed in embedded C and interfaced with temperature, heartbeat, touch sensors and also GPS, GSM & digital camera modules.

Paper 2:

## Child Safety Monitoring System Based on IoT

The overall percentage of child abusements filed nowadays in the world is about 80%, out of which 74% are girl children and the rest are boys. For every 40 seconds, a child goes missing in this world. Children are the backbone of one's nation, if the future of children was affected, it would impact the entire growth of that nation.In our system, we provide an environment where this problem can be resolved in an efficient manner. It allows parents to easily monitor their children in real time just like staying beside them as well as focusing on their own career without any manual intervention.

Paper 3:

## IoT-based Child Security Monitoring System

Nowadays, the crime rate associated with children keeps increasing due to which draws peoples’ attention regarding child safety. This research is conducted to propose a child security smart band utilizing IoT technology.Online questionnaires and semi-structured interviews are methodologies used to collect data. Through information obtained, smart band has been proposed to monitor the safety of children. By this, parents know what is happening remotely and can take actions if something goes wrong.

Paper 4:

IoT Based Smart Gadget for Child Safety and Tracking

This paper is mainly streamed towards child safety solutions by developing a gadget which can be tracked via its GPS locations and also a panic button on gadget is provided to alert the parent via GSM module calling for help. Parental android app is developed to manage and track the device anytime. Smart gadget device is always connected to parental phone which can receive and make phone calls and also receive SMS on gadget via GSM module, also a wireless technology is implemented on device which is useful to bound the device within a region of monitoring range, if device is moving out of monitoring range then an alert will be triggered on binding gadget, this helps you keep a virtual eye on child.

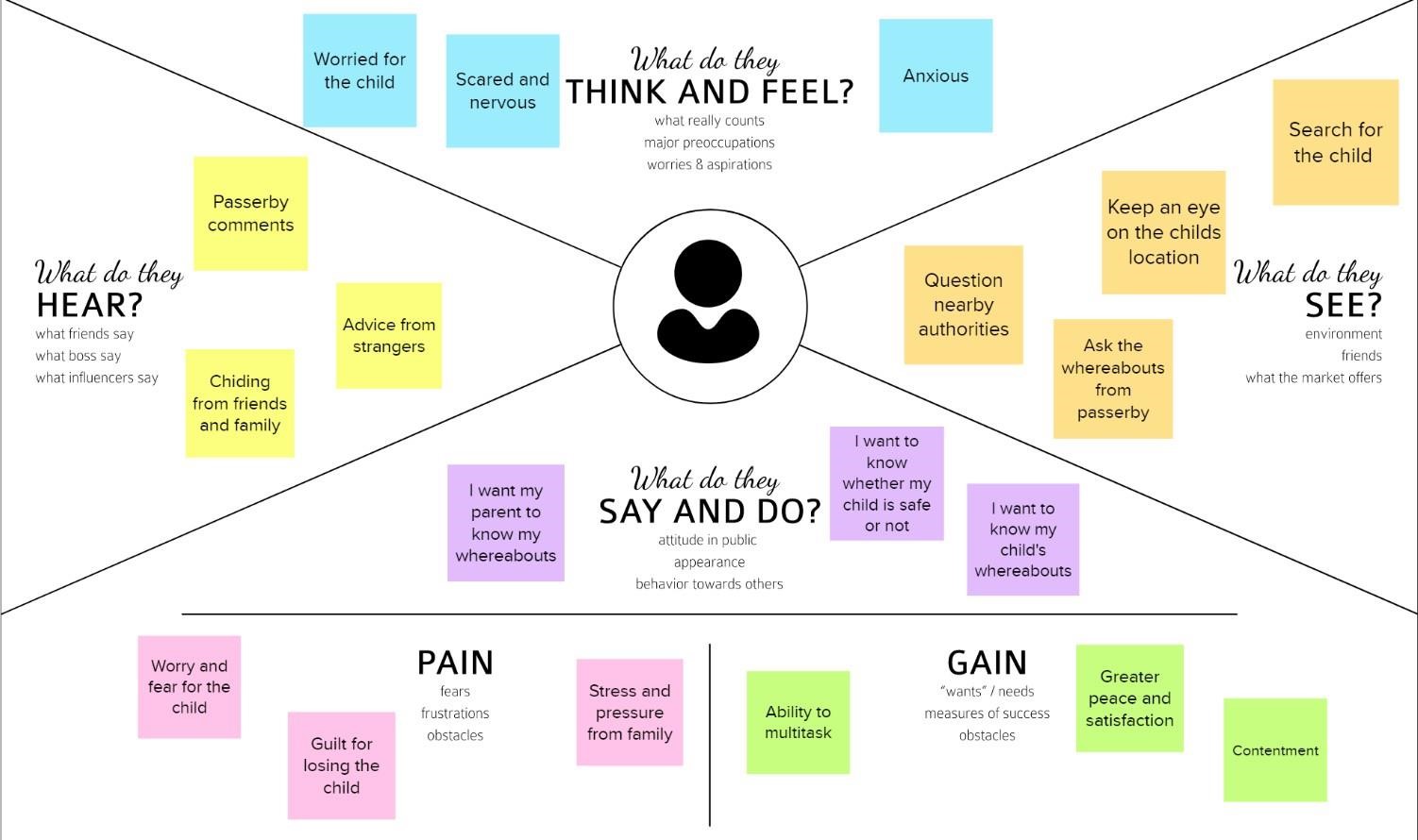
2.3 Problem Statement Definition

2.3.1 To design a child monitoring device using Internet of Things.This application is focussed on ensuring the safety of children.It helps parent or guardian to constantly track their child’s whereabouts.It uses geo-positioning system that sends a notification to the parent or guardian whenever the child crosses the geofence.

# 3. IDEATION & PROPOSED SOLUTION

2.4 Empathy Map Canvas

2.5 Ideation & Brainstorming

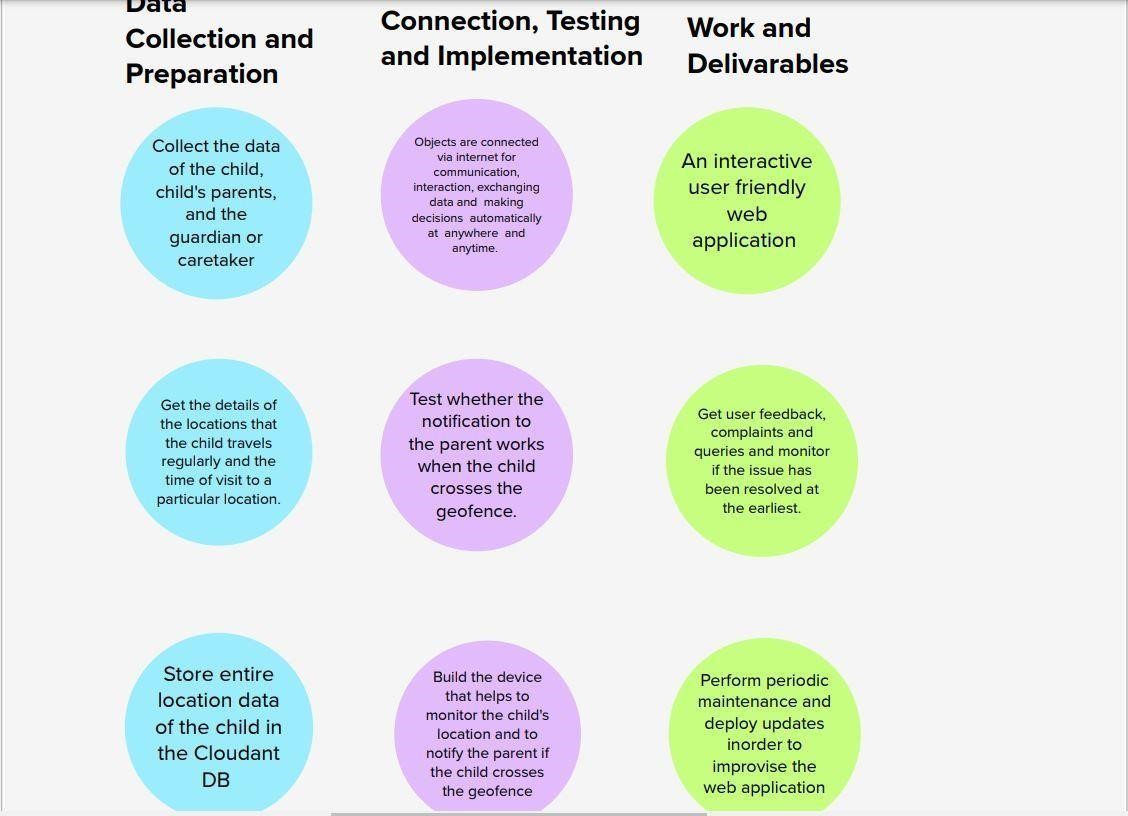


|  |  |  |
| --- | --- | --- |
| information about the child from the parents Collect | Keep track from the all the places that the child is to travel in a particular day | Collect details of the parents if they both parents are working |
| In case back the parents of fine should be | Get the daily routine hapits of the child. | Keep track of all activities of the child. |
| Enable to parents to fix a geofence for the child. | Generate notification if the child crosses the geofence. | Notify the parents about the child s location. |

|  |  |  |
| --- | --- | --- |
| Observe all the places that the child virtual and keep track of it. | Roughly keep track of the timings that a child is prevent in a particular place. | Make node of the distance of all the places that a child frequently visit from the house. |
| Get the child's parents detail and collect the child detail and a longitude. | After collecting my detail make node of the parents occupation. | If both the parents are working then collect the information at the child guardians. |

|  |  |  |
| --- | --- | --- |
| Get the parents detail from the child. | Determine and track node of all the spokes and location that a child visit on a daily basis. | Keep track of all the location and time spend in the place that a while visit along with the distance of those places. |
| Get occupation details of the child parents. | Collect the abstraction and determine whether both the parents are working or not. | In case both the parents and full time workers get the child guardian details. |

|  |  |  |
| --- | --- | --- |
| Collect the medical information about the child is known if about the child medical result. | Get the detail of who is with the child taking care of the child at in particular time period. | Make node of the place that the child moving regularly and the distance of those place then the child house. |
| If the child move 50 meter away from the geofence notify through call. | Keep a security pin to fix the geofence so that only the parents can get the geofence of the child. | If the child move out of the geofence notify through message. |





2.5 Proposed Solution

2.5.1 Problem Statement

A tracker that helps parents track a child's location so that the child does not get into dangerous situations.

2.5.2 Idea / Solution description

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.

2.5.3 Novelty / Uniqueness

A tracker used for child's safety and protection, such that it won’t interfere with the day to day life of the child as well as be a very easy to use interface for parents has not been developed yet. Hence, the proposed solution will ensure that there is a device that can be used in all areas, and uses different sorts of softwares integrated together to maintain accuracy and ensure the safety of the child.

2.5.4 Social Impact / Customer Satisfaction

Reduce the anxiety, worry and nervousness of a parent when they are not around the child. Having a peace of mind on the child's whereabouts will increase customer satisfaction, as well as the inclusion of an easy to use and interactive user interface. The reduction of child kidnappings, injuries, accidents, and missing children in the country.

2.5.5 Business Model (Revenue Model) Business to Consumer Model

Licensing model

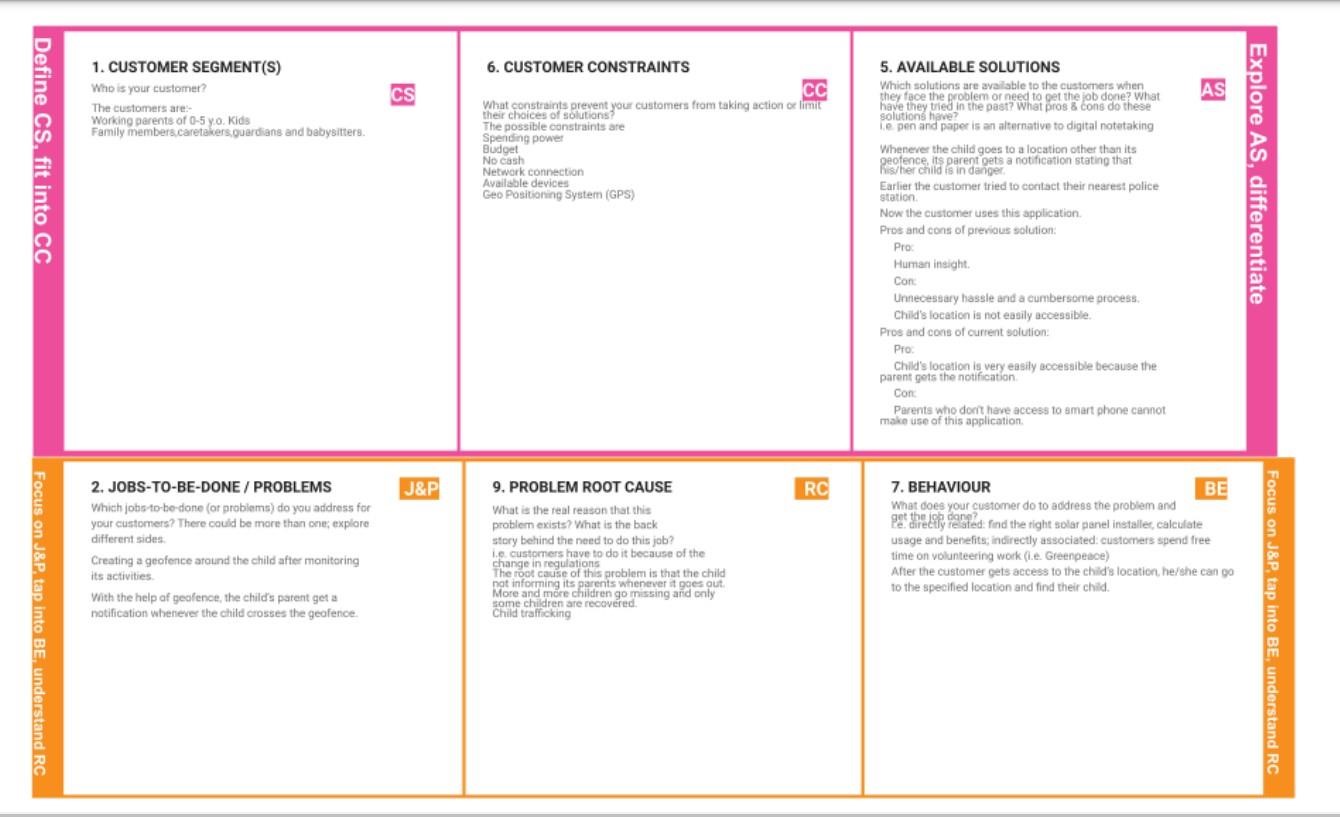
Subscription Model

Freemium Model

2.5.6 Scalability of the Solution

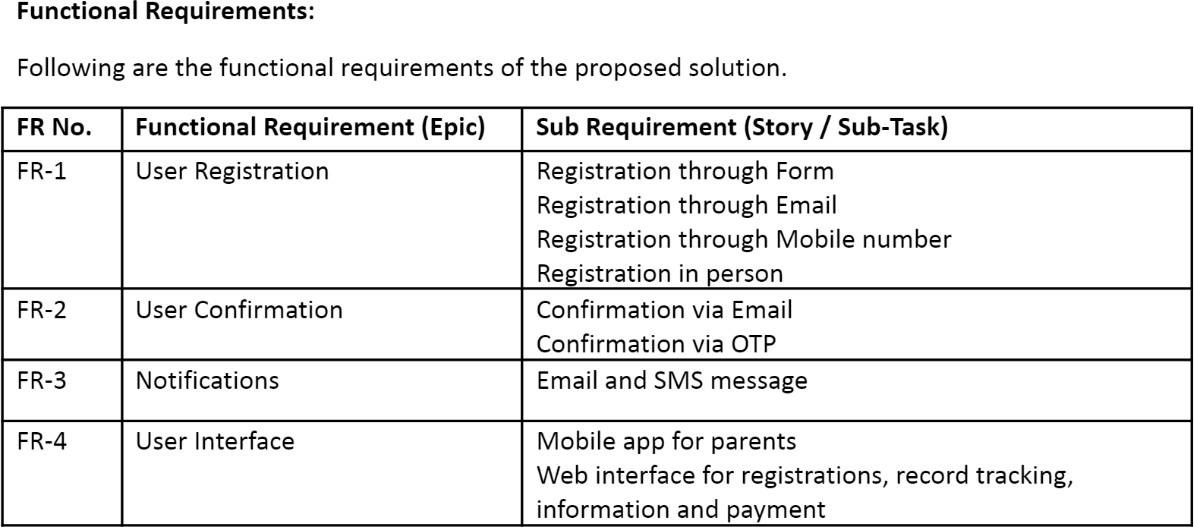
By adopting multiple data storage technologies, controlling the IoT data pipeline, and using automated bootstrapping we ensure that the device is highly scalable.

2.6 Problem Solution fit

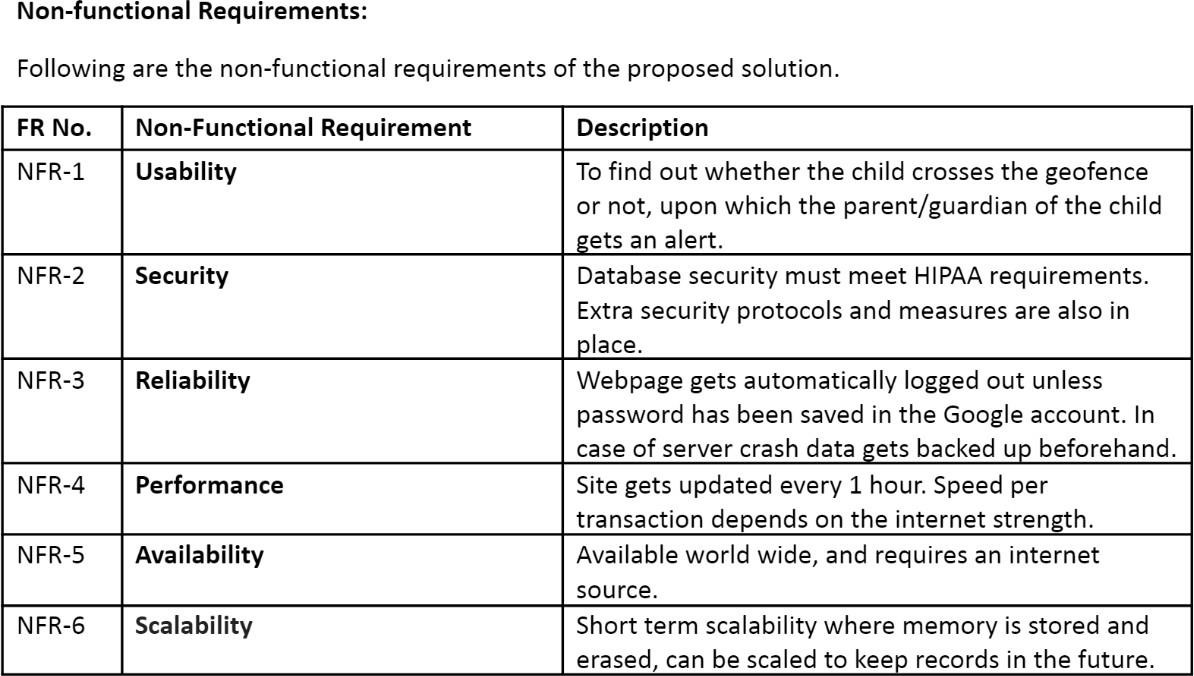


# 3. REQUIREMENT ANALYSIS

3.1 Functional requirement

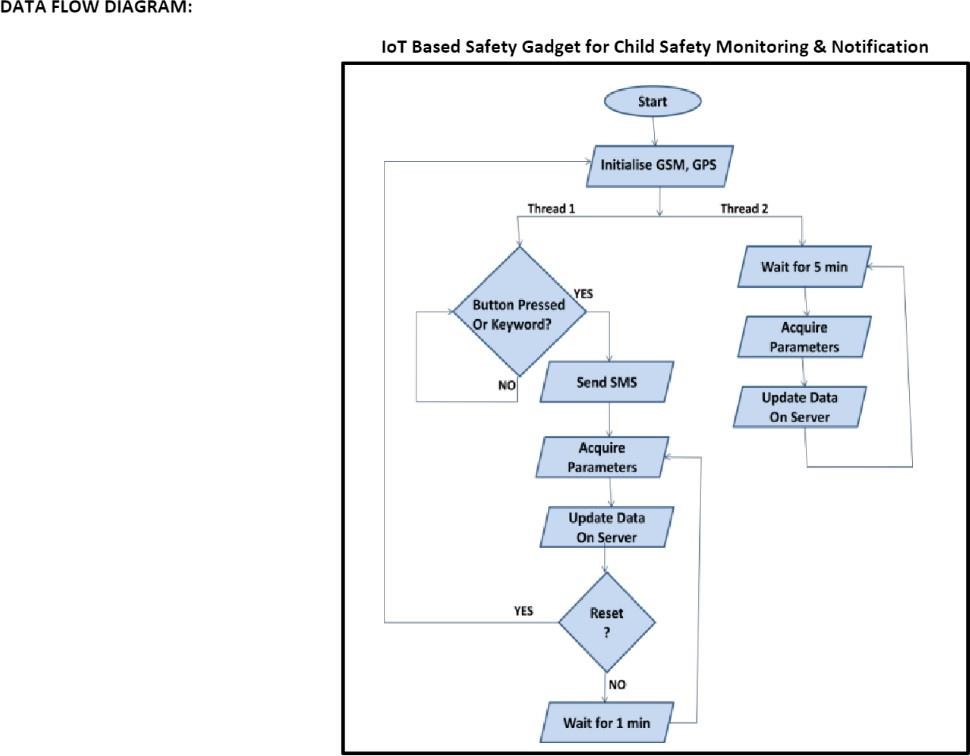


3.2 Non-Functional requirements



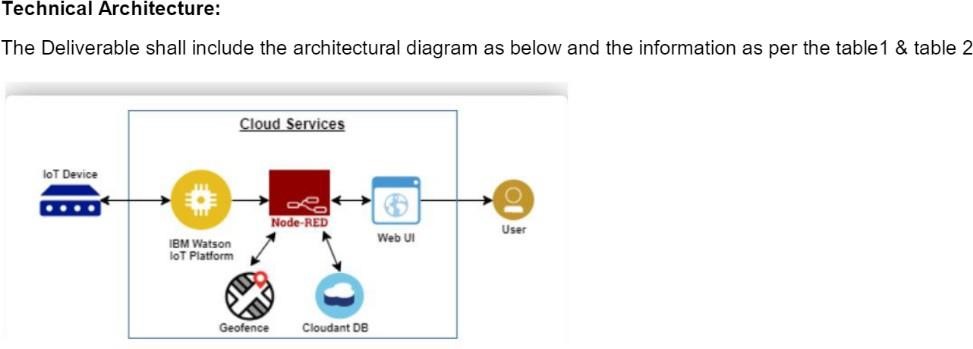
# 4. PROJECT DESIGN

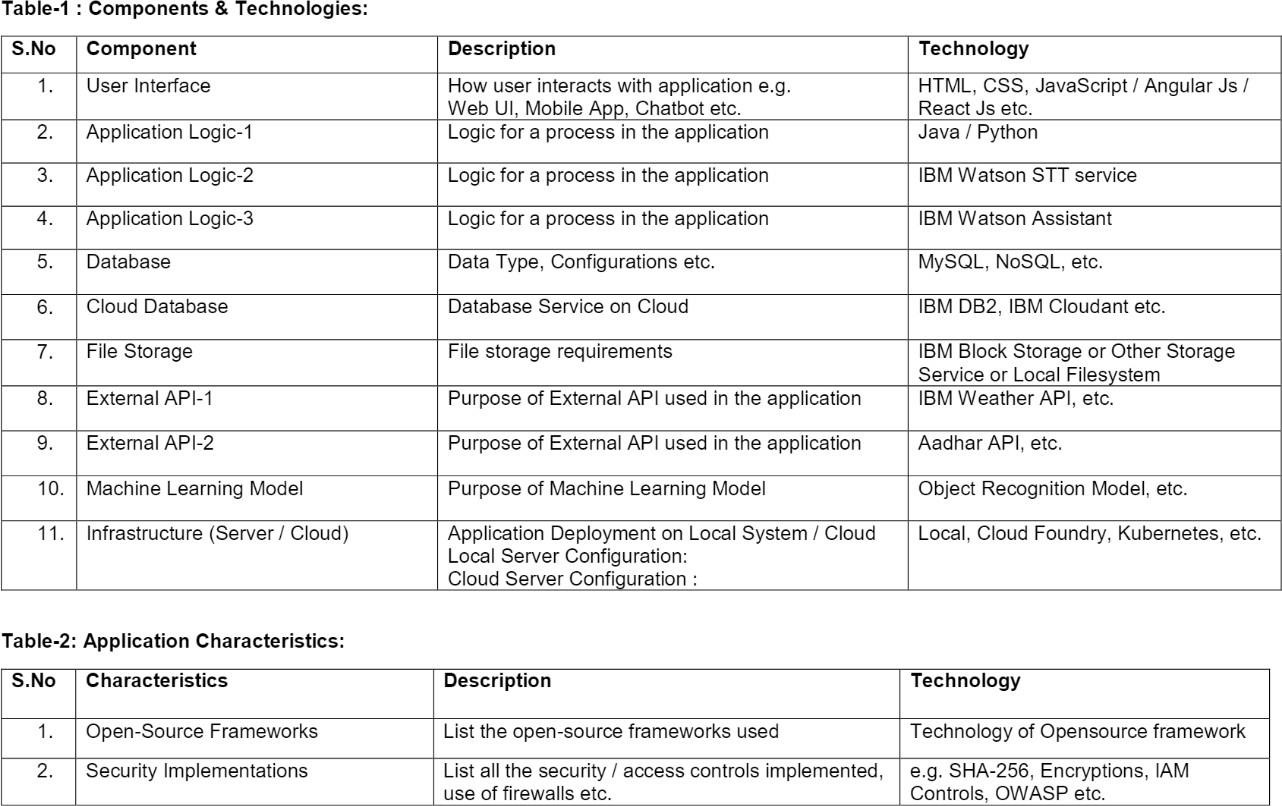
4.1 Data Flow Diagrams

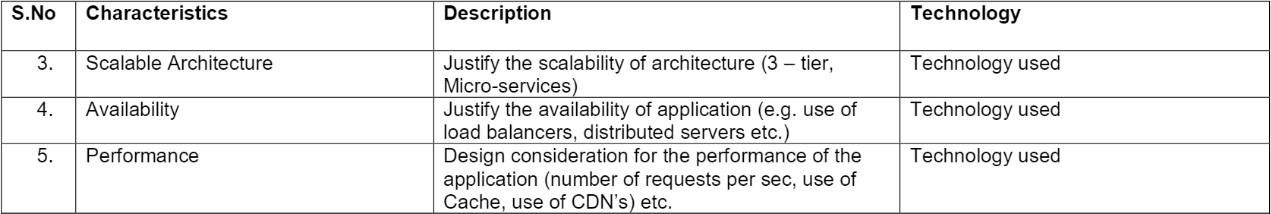


4.2 5.2

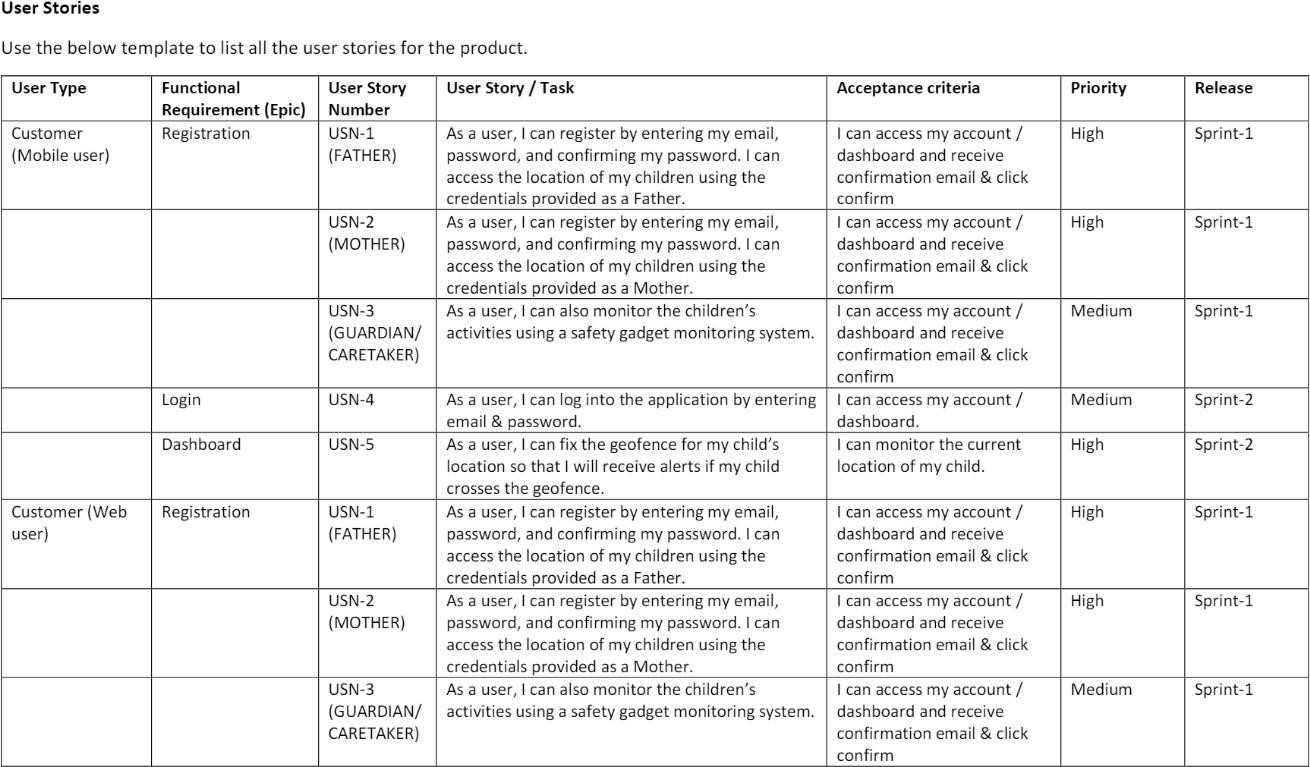
4.3 Solution & Technical Architecture



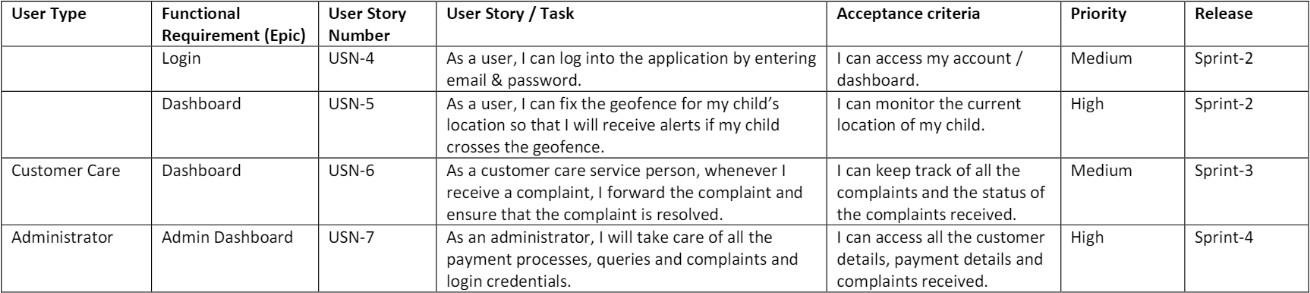




4.4 User Stories



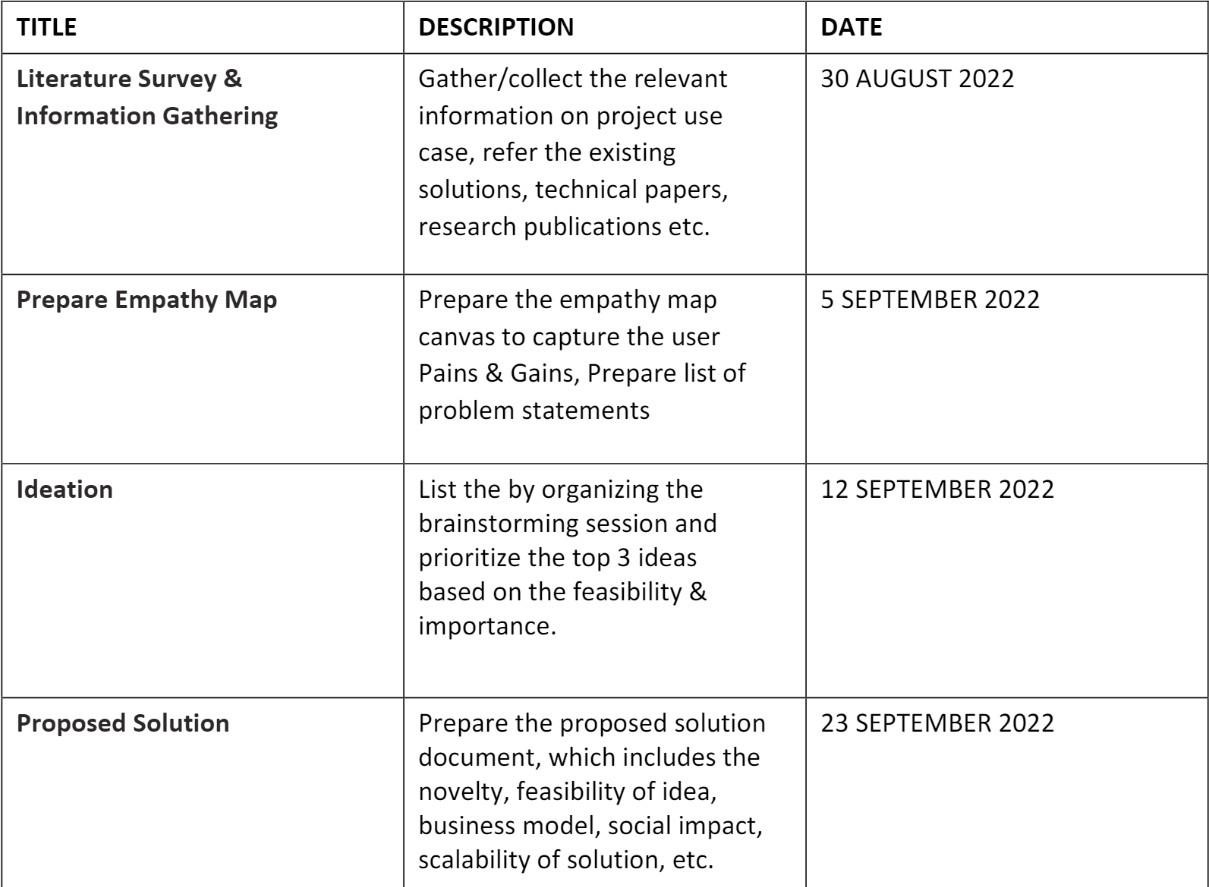
4.5 5.5

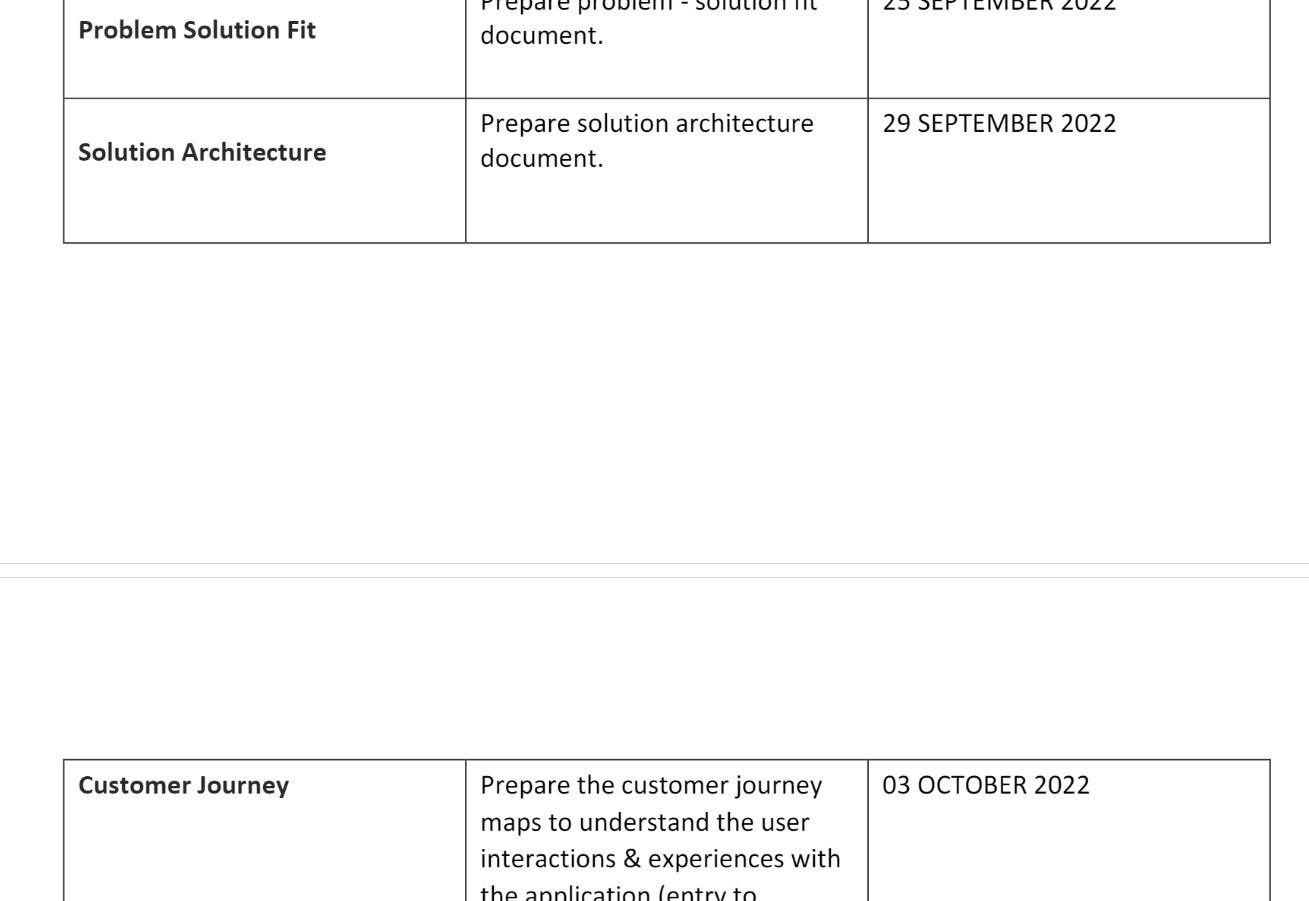


4.6 5.6

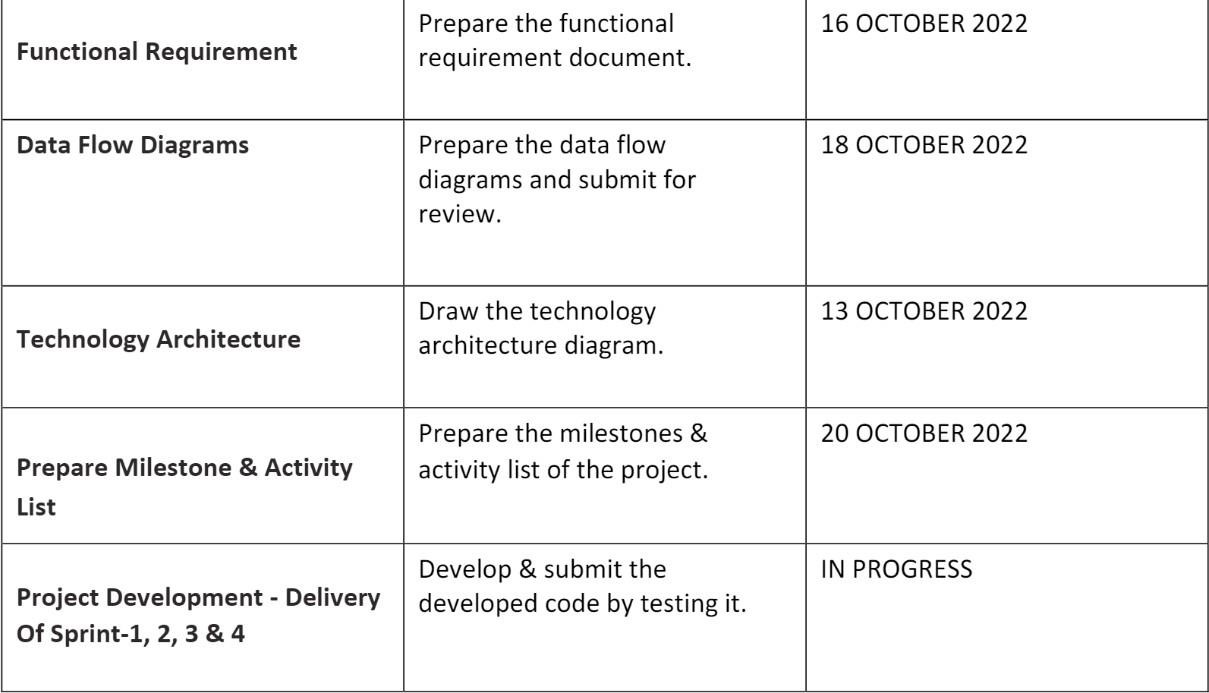
# 5. PROJECT PLANNING & SCHEDULING

5.1 Sprint Planning & Estimation





5.2 6.3



# 6. CODING & SOLUTIONING (Explain the features added in the project along with code)

**6.1 Feature 1**

6.1.1 It is a website application.

**6.2 Feature 2**

6.2.1 It can be used as a mobile application by scanning the QR Code available on the website.

**6.3 Feature 3**

6.3.1 Using an account, a parent can create multiple accounts for their multiple children.

# 7. TESTING

## 7.1 Test Cases

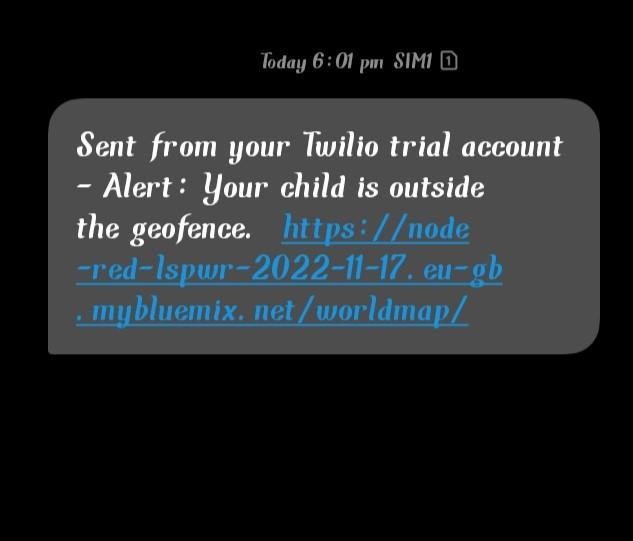
8.1.1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Test ID | Test  Case Descripti  o n | Test Steps | Test Dat  a | Expecte d Results | Actual Result  s | Pass/Fail |
| T01 | The child resides within  the  geofence  . | Log in to the applicatio n.    Click on any of  the  trackers that the parent  has set for a | [‘niveth a.muru  gan110 8@gma il.com,’ 19ec01  5’] | The child stays within  the  geofence  . | The child stays within  the  geofence  . | Pass |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | specific child. |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Upon  clicking  on any tracker the child’s  location  can be seen and tracked. |  |  |  |  |
| T02 | The child is outside  the  geofence  . | Log in to the applicatio n.    Click on any of  the trackers that the parent  has set for a  specific child.    Upon  clicking  on any tracker the child’s  location  can be seen and tracked. | [‘19ec0 17@ac etcbe.e du.in’,’  Sept@  2 022’] | The child is not within  the  geofence  . | The child is not within the geofence | Pass |

## 7.2 User Acceptance Testing



# 8. RESULT

**8.1 Performance Metrics**

# Fast updation of child’s location

* User Friendly interface
* Low data involvement

# 9. ADVANTAGES & DISADVANTAGES 9.1 Advantages

9.1.1 A parent can access the child's location 24x7.

9.1.2 It provides real time detection.

9.1.3 Parent receives instant notification when the child crosses the geofence.

9.1.4 Easy to use interface.

9.1.5 A parent can create as many as nodes for multiple children.

## 9.2 Disadvantages

9.2.1 Our application cannot be used without internet connection.

9.2.2 To access the child’s location the parent has to access the web application.

# 10. CONCLUSION

10.1 A parent can access their child’s location in a realtime way.The child tracker frequently updates the location of the child.Any parent can make use of this application to track their child after establishing a geofence around their child.Hence, this application serves as a platform that can be used to monitor a child and ensure safety of the child .

# 11. FUTURE SCOPE

11.1 The application can be made an offline application inorder for people to access their child’s location in the absence of internet connection.

11.2 The application is currently a web based application.It has scope to be made into a hybrid application by making it into a native application.

# 13.APPENDIX Source Code :-

import time

import wiotp.sdk.application

print("Hello") myConfig={ "identity":{

"orgId":"af8k8g",

"typeId":"Tracker",

"deviceId":"12345",

},

"auth":{

"token":"12345678"

}

}

client=wiotp.sdk.device.DeviceClient(config=myConfig,logHandlers=None) client.connect() while True:

name="Child"

latitude=17.4219272 longitude=78.5488783

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

client.publishEvent(eventId="status",msgFormat="json",data=myData,qos=0,onPublish=None) print("Data published to IBM IoT Platform: ",myData)

time.sleep(5)

client.disconnect()

**Drive Link :-** <https://drive.google.com/file/d/1H43uGG69-_lT6_ccmSdGuI2xPUNMR4jX/view?usp=share_link>