PROJECT REPORT

IOT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING AND NOTIFICATION

Team ID : PNT2022TMID23803

Team Members : 4

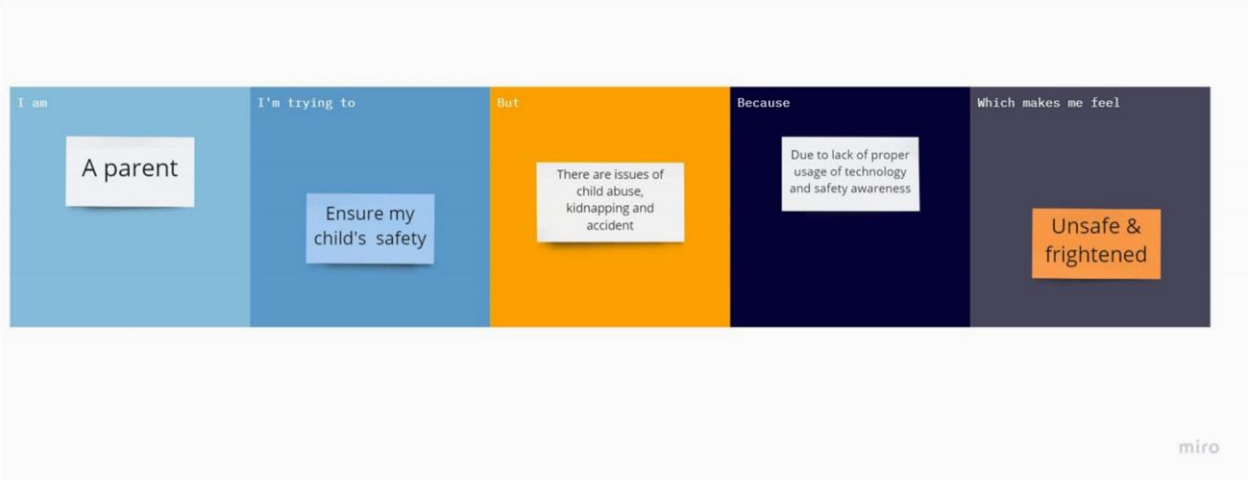
Team Leader : AKSHAYA J

Team member 1: DEEPIKA G

Team member 2 : DHARANI K

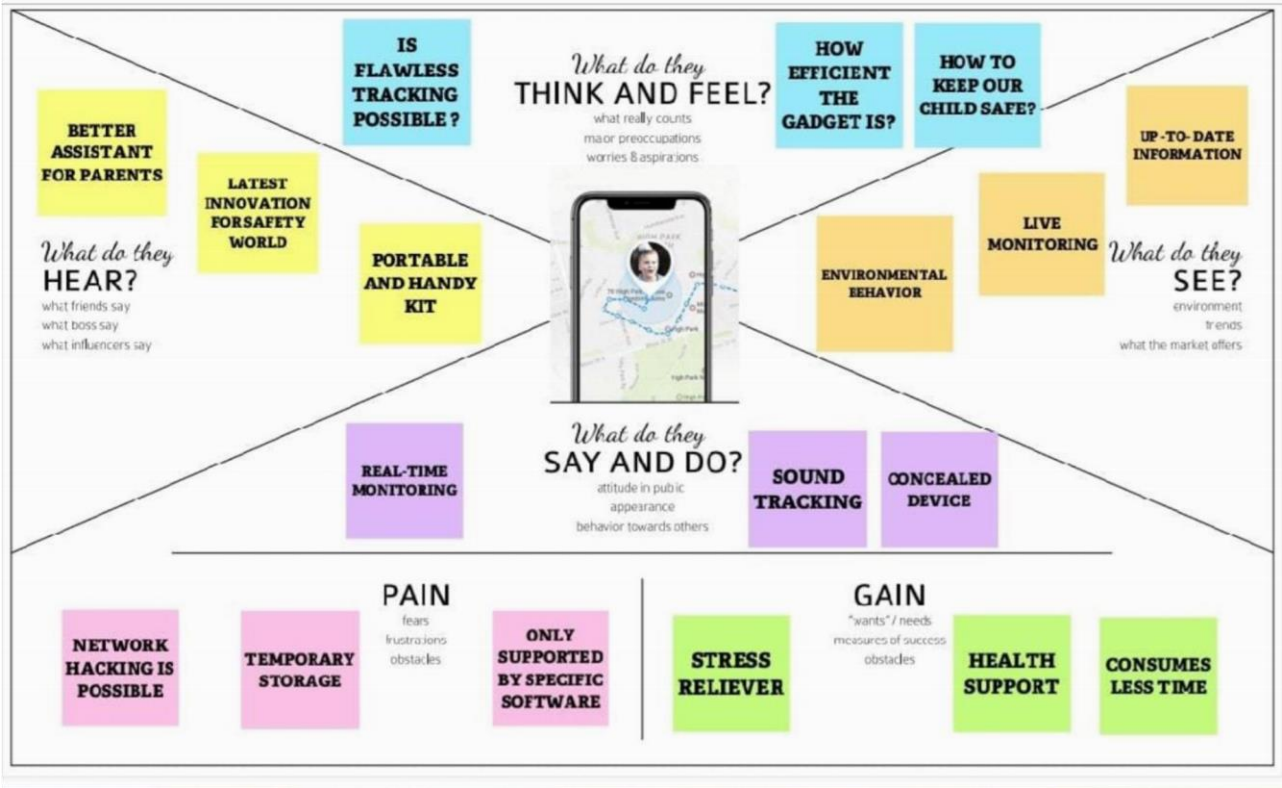
Team member 3 : EZHILARASI S

Problem Statement Definition:

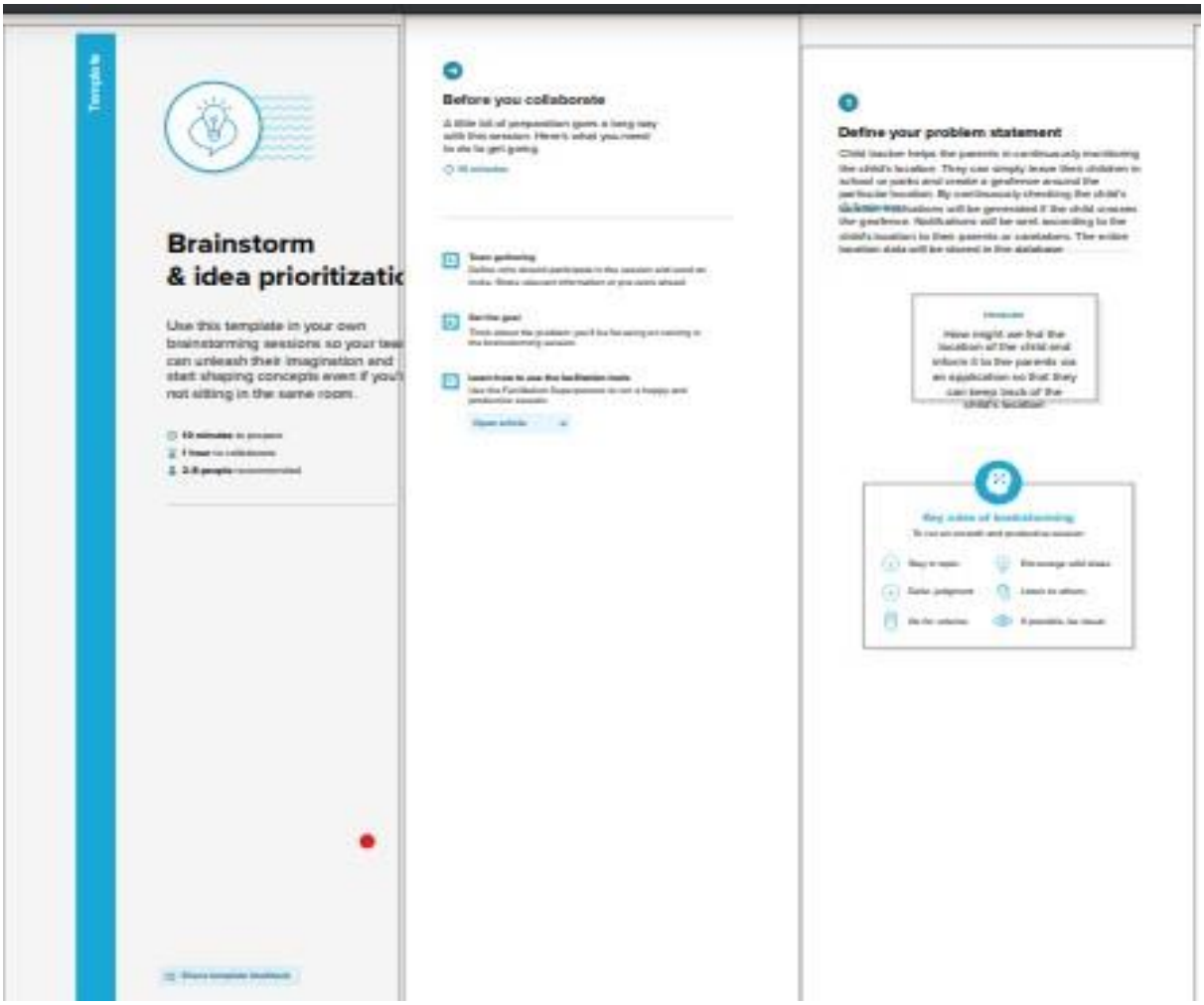


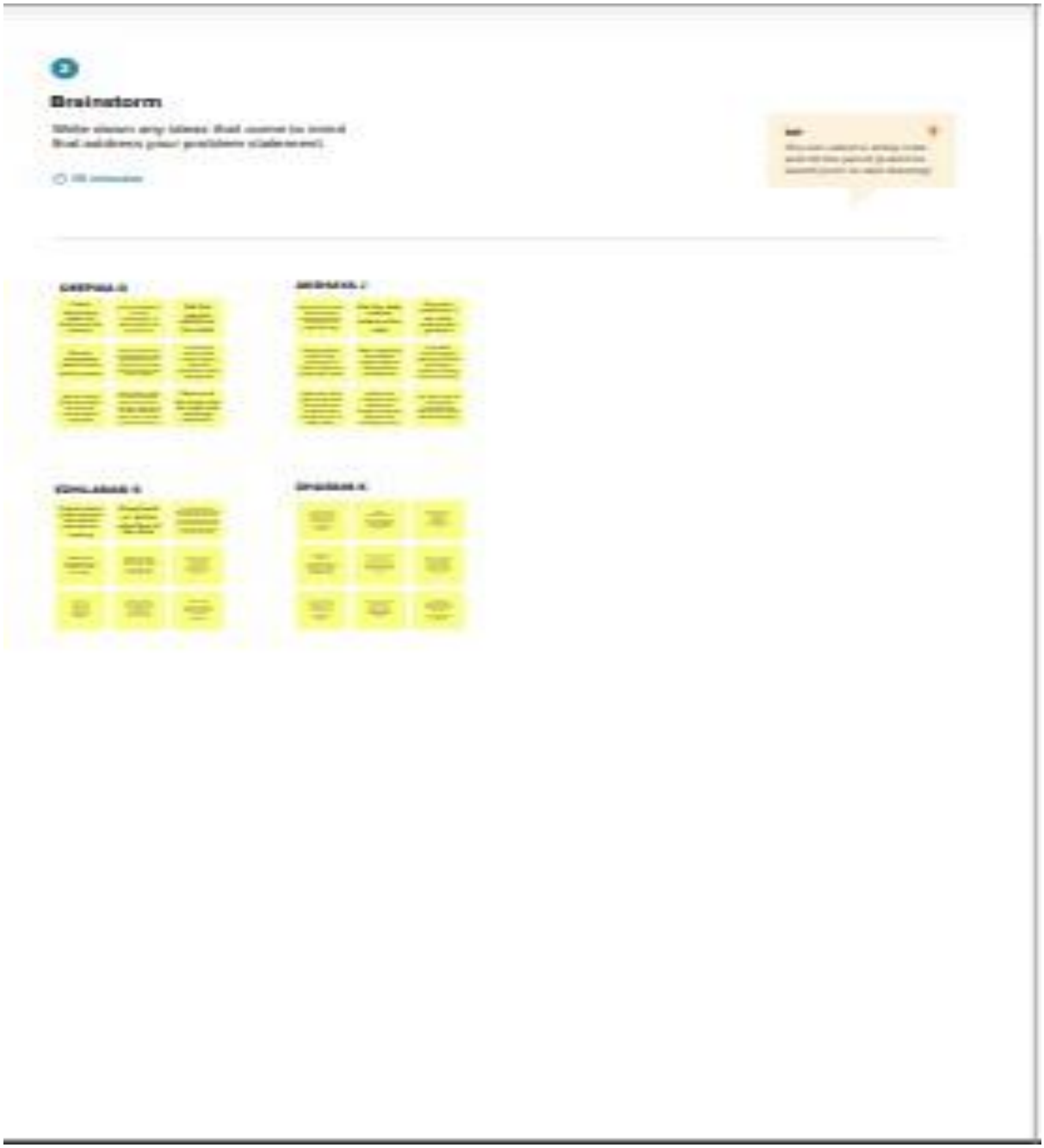
IDEATION & PROPOSED SOLUTION:

Empathy Map Canvas:



Ideation & Brainstorming:


Template
Brainstorm
& idea prioritizatio
Use this template in your own brainstorming sessions so your tea
can unleash their imagination and
start shaping concepts even if you'
not sitting in the same room.
Before you collaborate
Define your problem statement


2
Brainstorm

3 Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes

4 Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes

5 After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

Share the mural
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.

Export the mural
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

Keep moving forward

Strategy blueprint
Define the components of a new idea or strategy.
Open the template

Customer experience journey map
Understand customer needs, motivations, and obstacles for an experience.
Open the template

Strengths, weaknesses, opportunities & threats
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.
Open the template

Share template feedback

Proposed Solution:

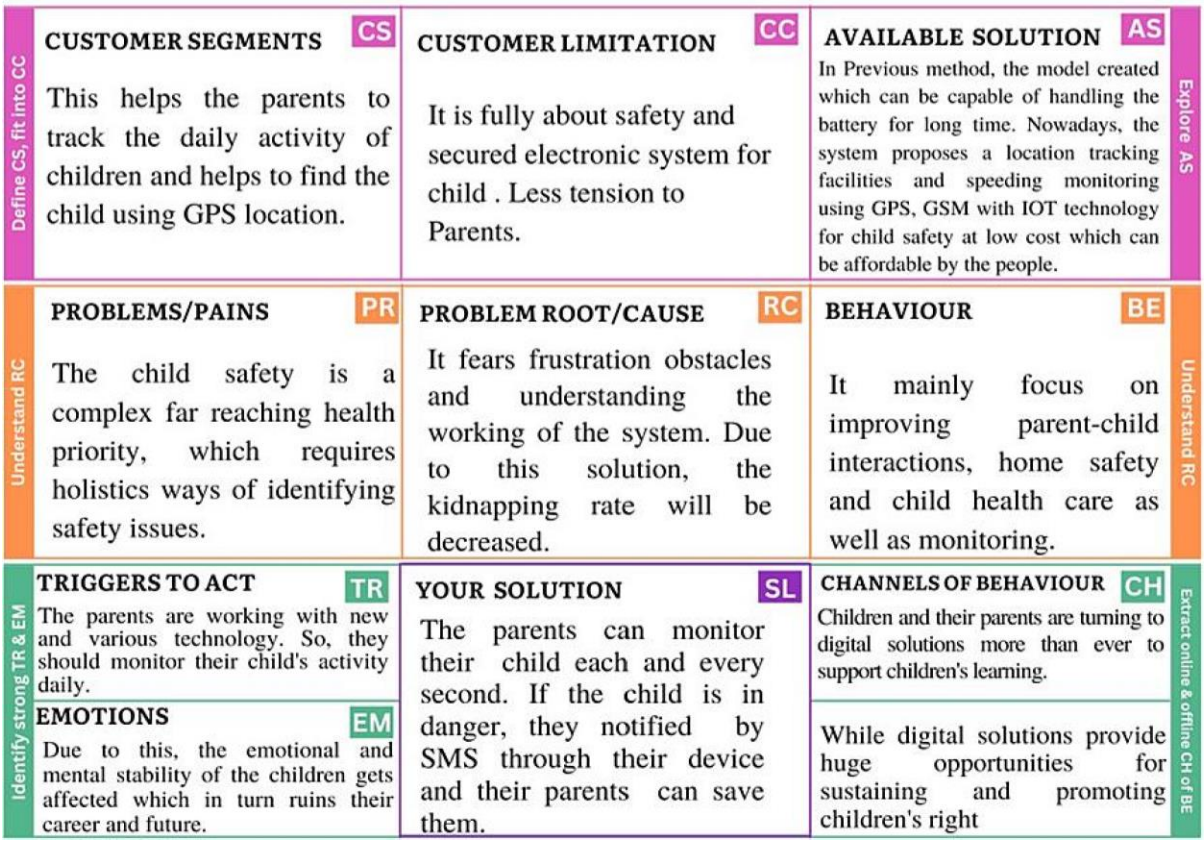
Proposed Solution Template:

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

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Kids are the heartbeat of parents. Today, there is an increased concern for their safety especially when crimes against children are increasing rapidly. Primarily special children require continuous monitoring from their parents thus restricting their freedom. With the lack of availability of affordable child monitoring systems, it is hard to monitor the whereabouts of children. The safety of children is very critical since they cannot protect themselves.
2.	Idea / Solution description	This project proposes a smart IoT Based device that can help reduce parents' insecurity with regards to their children's whereabouts in real-time. Our project assists the parents to continuously monitor their child's location. A geofence also called a "circle of safety" is created around the child within a particular location. This guarantees that the parent can leave their child within the geofence and the child's location is continuously monitored. If the child crosses the geofence by any chance notification will be generated. These notifications will be sent according to the child's location to their parents or caretakers.
3.	Novelty / Uniqueness	The novelty of this project is that immediate notifications would be sent to the parent or caretakers as soon as the child crosses the geofence. This can ensure that the required actions can be taken by the parent. Through this, child safety can be ensured and the crime rates can be reduced. Through this project, the location of the child can be stored in a database as well.

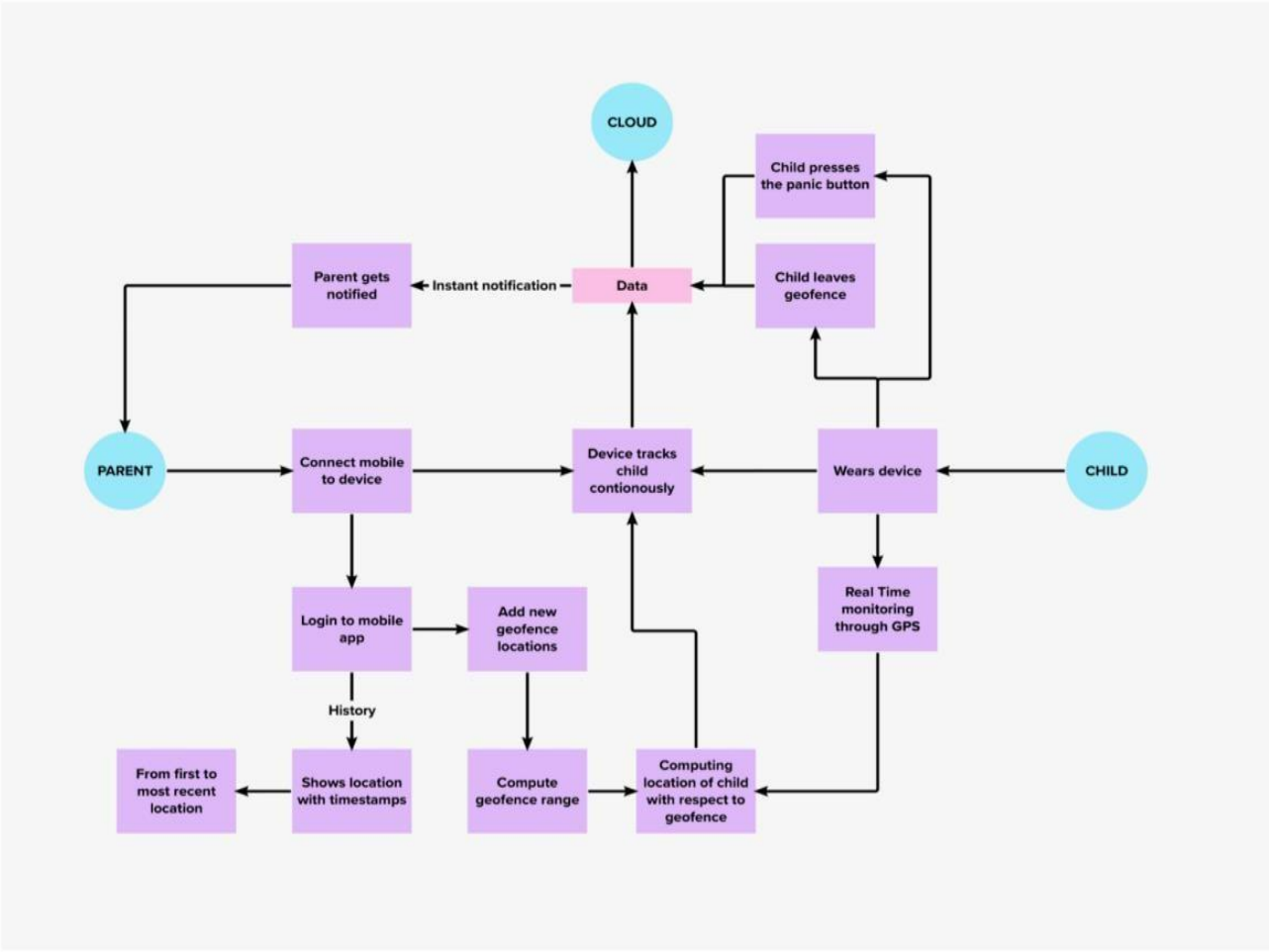
4.	Social Impact / Customer Satisfaction	According to parents, children with special needs requires to be in their sight while enjoying their own freedom. This project improves the safety index of places. The location of the child is being continuously monitored thus child safety can be ensured and the crime rates can be reduced. By this system, it is comparatively easier to keep a track of a child's current location.
5.	Business Model (Revenue Model)	This project can be sold to parents having special children on a monthly subscription basis. This project also has higher scope when sold to children's centres. As this project is very cost-efficient and affordable it can be easily purchased by people.
6.	Scalability of the Solution	In our system, we automatically monitor the child in real-time using the Internet of Things, and GPS. This project can be further improvised by including a panic button using which the child can alert the parent at the time of trouble. A heartbeat and temperature sensor can also be integrated with this project to monitor the child's health.

Problem Solution fit:

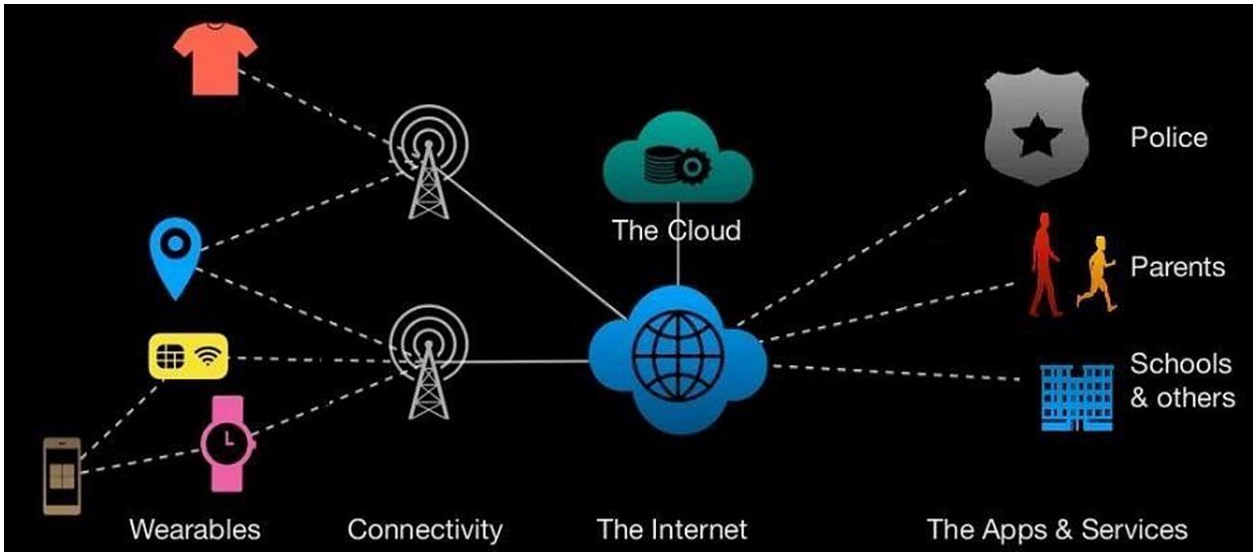


PROJECT DESIGN:

Data Flow Diagram:



Solution & Technical Architecture:



PROJECT PLANNING & SCHEDULING:

Sprint Planning & Estimation:

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Create 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 my email, password, and confirming my password.	7	High	Akshaya J Deepika G Dharani K Ezhilarasi S
Sprint-1	Confirmation	USN-2	As a user, I will receive confirmation email once I have registered for the application	7	High	Akshaya J Deepika G Dharani K Ezhilarasi S
Sprint-1	Login	USN-3	As a user, I can log into the application by entering email & password	6	Medium	Akshaya J Deepika G Dharani K Ezhilarasi S
Sprint	**Functional Requirement (Epic)**	**User Story Number**	**User Story / Task**	**Story Points**	**Priority**	**Team Members**
Sprint-2	Dashboard	USN-4	As a user, I can monitor the child's location 24/7 and view the functions	7	High	Akshaya J Deepika G Dharani K Ezhilarasi S
Sprint-2	Notification	USN-5	As a user, I should be able to notify my parent and guardian in emergency situations	7	High	Akshaya J Deepika G Dharani K Ezhilarasi S
Sprint-2	Login	USN-3	As a user, I can register for the application through my Google Account	6	Low	Akshaya J Deepika G Dharani K Ezhilarasi S
Sprint-3	Application	USN-6	The App should get inputs from the user	5	High	Akshaya J Deepika G Dharani K Ezhilarasi S
Sprint-3	IOT Device – Watson Communication	USN-7	The device should be integrated with IBM Watson	5	High	Akshaya J Deepika G Dharani K Ezhilarasi S

Sprint-3	Watson – Node RED Communication	USN-8	The data from IBM Watson is sent to Node RED	5	High	Akshaya J Deepika G Dharani K Ezhilarasi S
Sprint	**Functional Requirement (Epic)**	**User Story Number**	**User Story / Task**	**Story Points**	**Priority**	**Team Members**
Sprint-3	Node RED- Cloudant DB communication	USN-9	The data from Node-RED should be properly integrated with Cloudant DB	5	High	Akshaya J Deepika G Dharani K Ezhilarasi S
Sprint-4	Geofencing	USN-10	The geofencing of the child should be done based on the geographicalcoordinates	10	High	Akshaya J Deepika G Dharani K Ezhilarasi S
Sprint-4	Data Security	USN-11	Maintaining and making sure the database containing the locations are secure and accurate and is updated constantly.	10	High	Akshaya J Deepika G Dharani K Ezhilarasi S

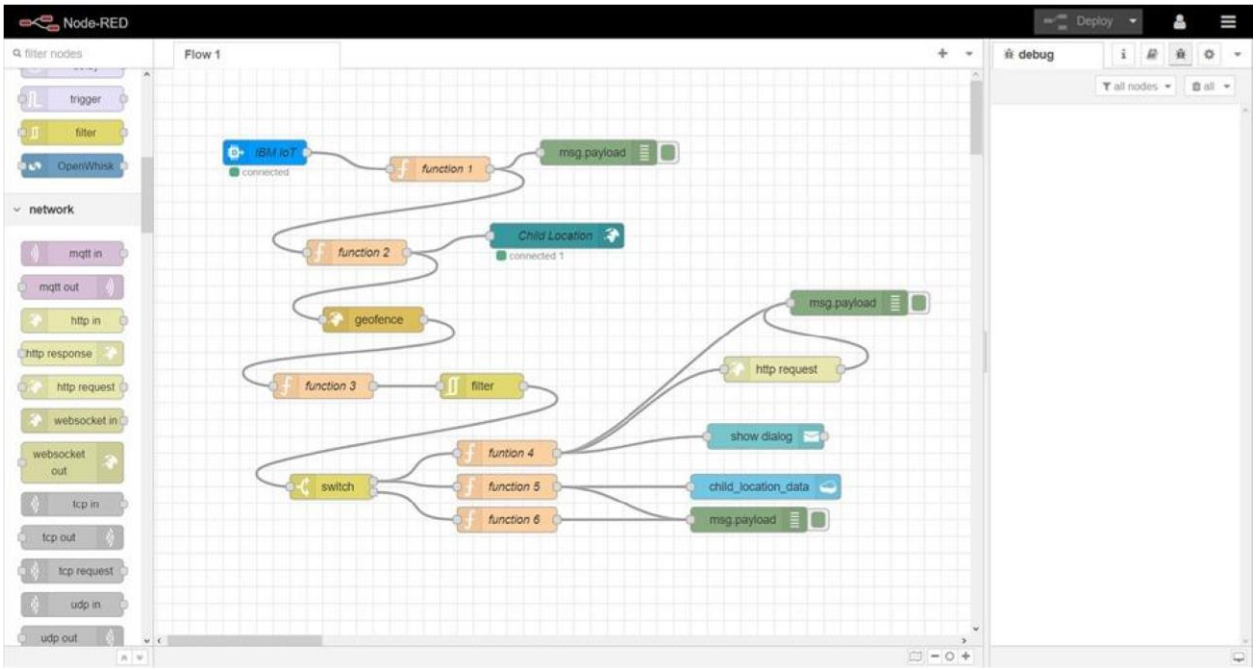
6.2 Sprint Delivery Schedule:

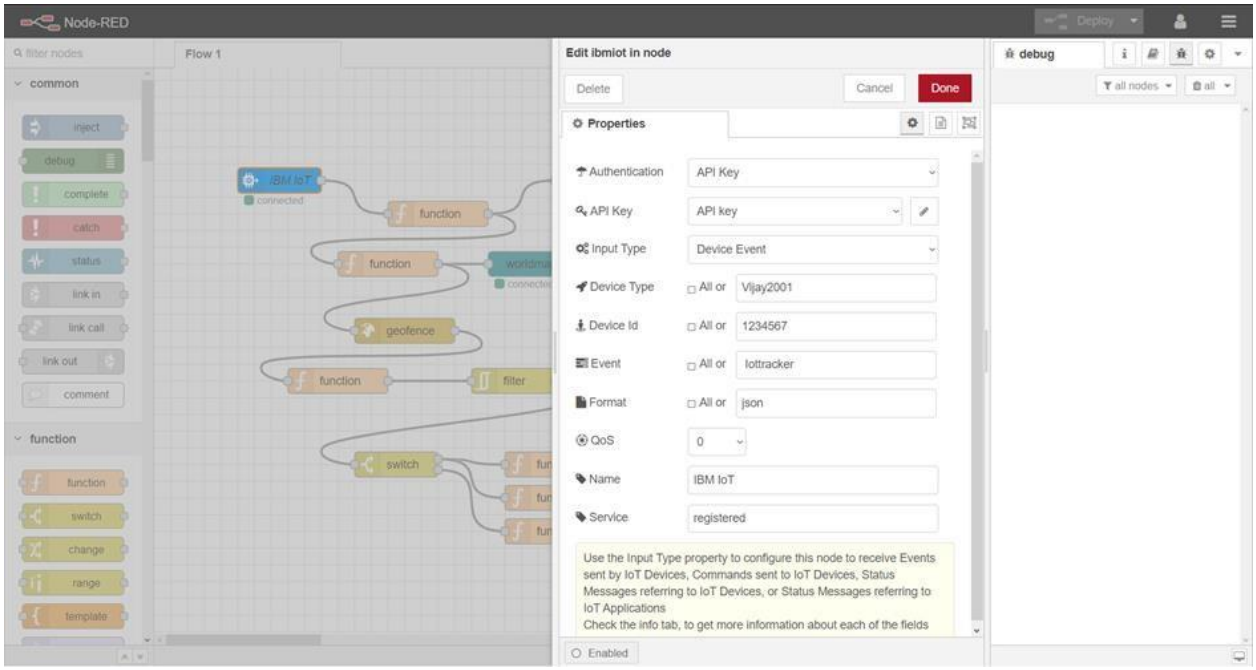
Project Tracker, Velocity &Burndown Chart: (4 Marks)

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 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	On Process
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	On Process

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)

$$AV = \frac{\text{Sprint Duration}}{\text{Velocity}} = \frac{20}{6} = 3.33$$


Node-RED
Deploy
filter nodes
Flow 1
debug
all nodes
all
trigger
filter
OpenWhisk
network
mqtt in
mqtt out
http in
http response
http request
websocket in
websocket out
tcp in
tcp out
tcp request
udp in
udp out
IBM IoT
connected
function 1
msg.payload
function 2
Child Location
connected 1
geofence
msg.payload
http request
function 3
filter
show dialog
funtion 4
switch
function 5
child_location_data
function 6
msg.payload


Node-RED
Deploy
filter nodes
Flow 1
debug
all nodes
all
common
inject
debug
complete
catch
status
link in
link call
link out
comment
function
function
switch
change
range
template
IBM IoT
connected
function
function
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function
filter
switch
Edit ibmiot in node
Delete
Cancel
Done
Properties
Authentication
API Key
API Key
API key
Input Type
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Device Type
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1234567
Event
All or
Iottracker
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0
Name
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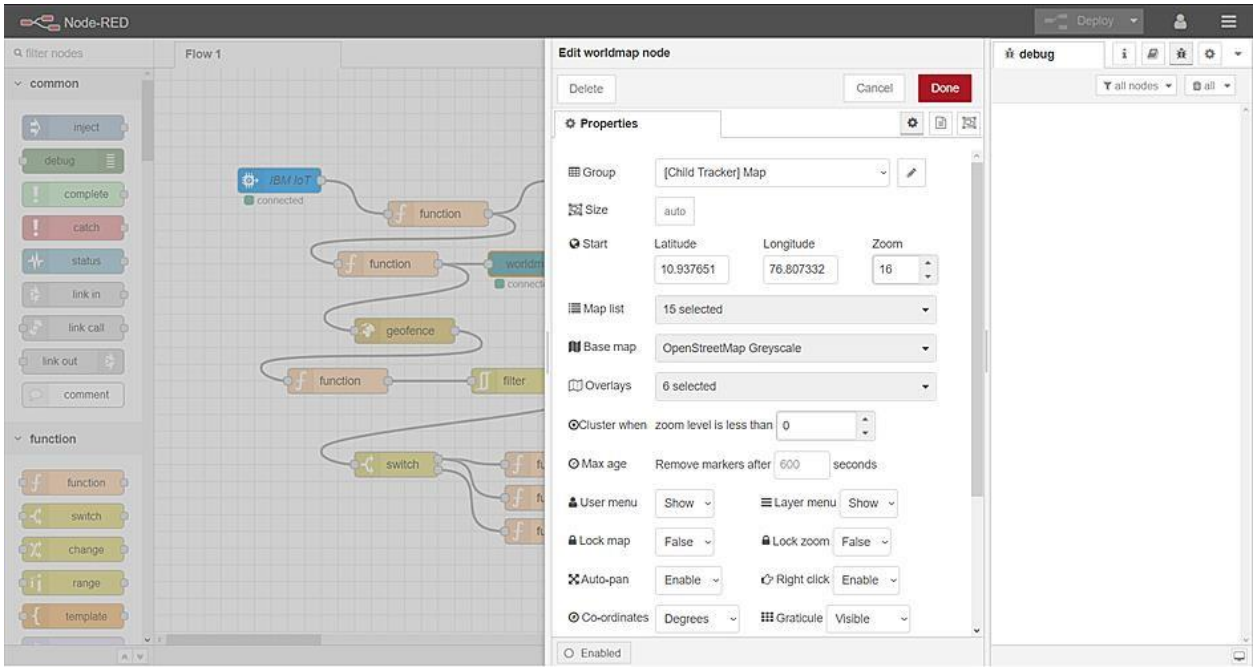
registered
Use the Input Type property to configure this node to receive Events sent by IoT Devices, Commands sent to IoT Devices, Status Messages referring to IoT Devices, or Status Messages referring to IoT Applications
Check the info tab, to get more information about each of the fields
Enabled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range
template
IBM IoT
connected
function
function
geofence
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switch
Edit worldmap node
Delete
Cancel
Done
Properties
Group
[Child Tracker] Map
Size
auto
Start
Latitude
Longitude
Zoom
10.937651
76.807332
16
Map list
15 selected
Base map
OpenStreetMap Greyscale
Overlays
6 selected
Cluster when
zoom level is less than
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Max age
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600
seconds
User menu
Show
Layer menu
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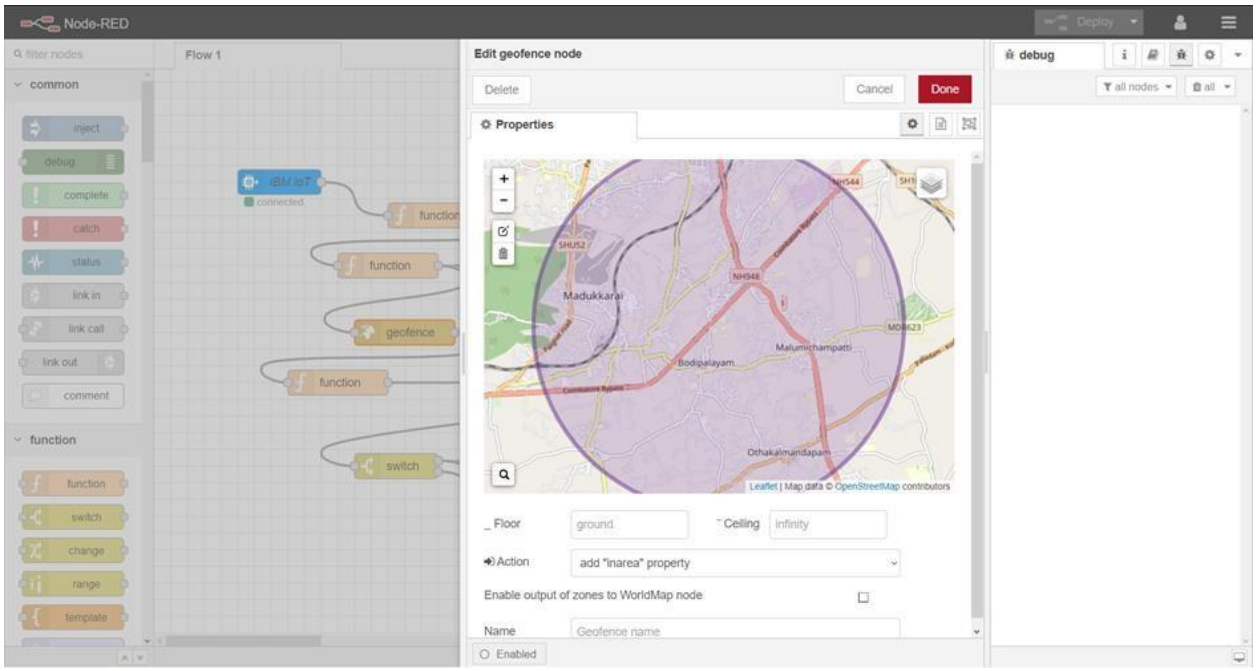
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Malumichampatti
Bodipalayam
Othakalmandapam
Leaflet | Map data © OpenStreetMap contributors
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Ceiling
infinity
Action
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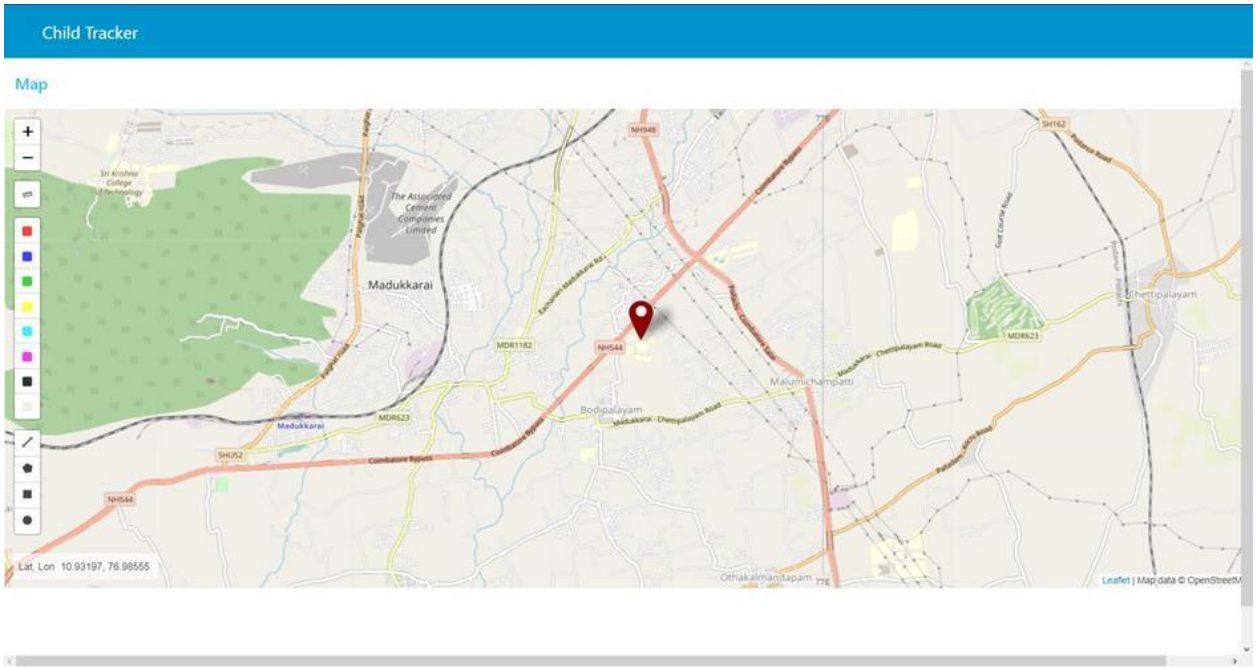
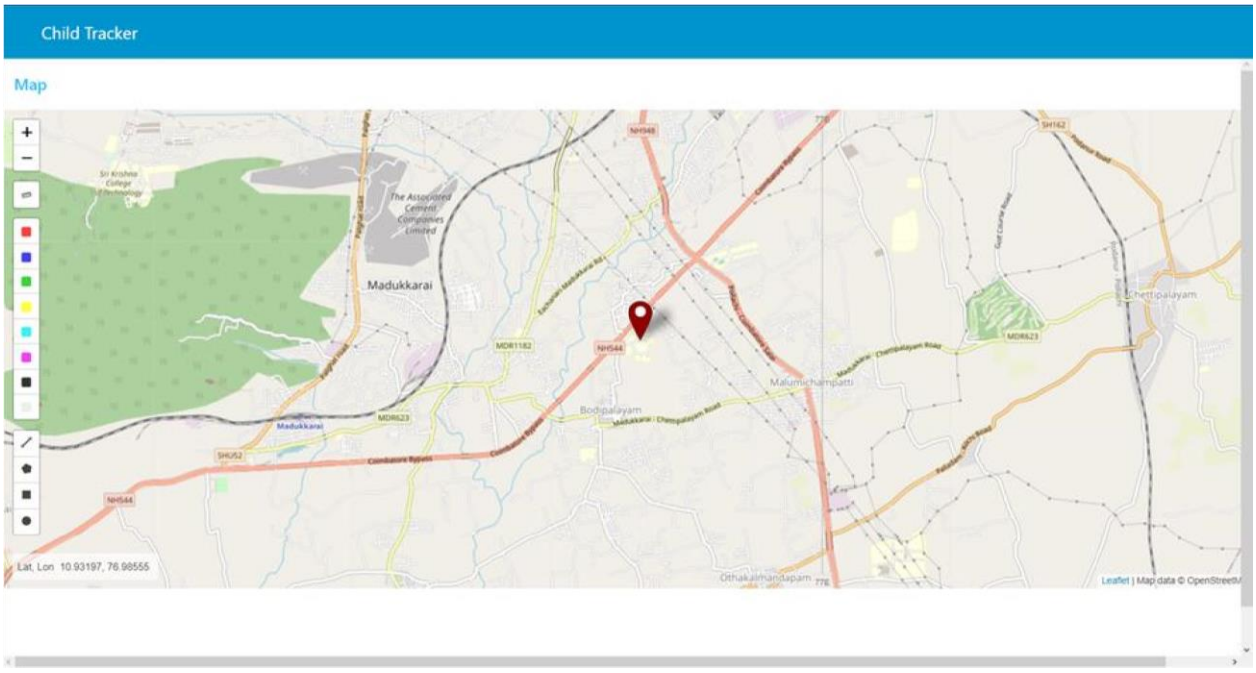
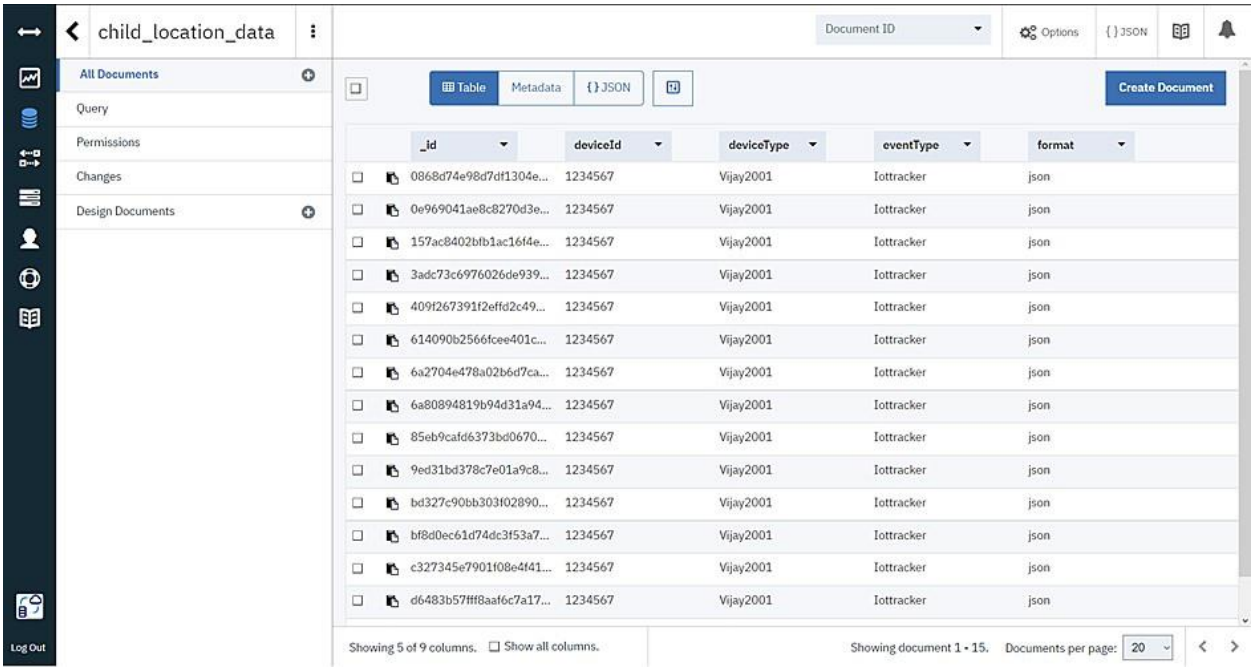
Enable output of zones to WorldMap node
Name
Geofence name
Enabled
debug
all nodes
all



TESTING:

RESULTS:

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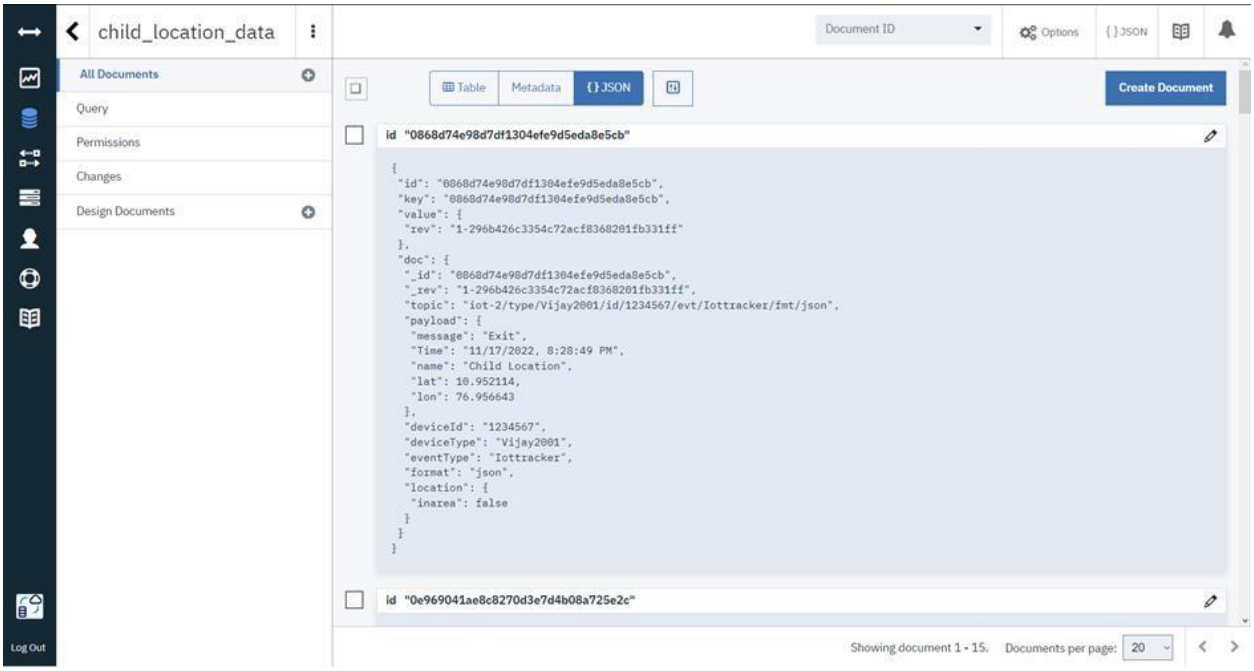
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Showing document 1 - 15.
Documents per page:
20
Log Out


Child Tracker
Searching...
Turn ON Location
Address
17.4225176
78.5458842
Track Location
+
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My Location
Hyderabad
Hyderabad