Project Design Phase-II
Technology Stack (Architecture & Stack)

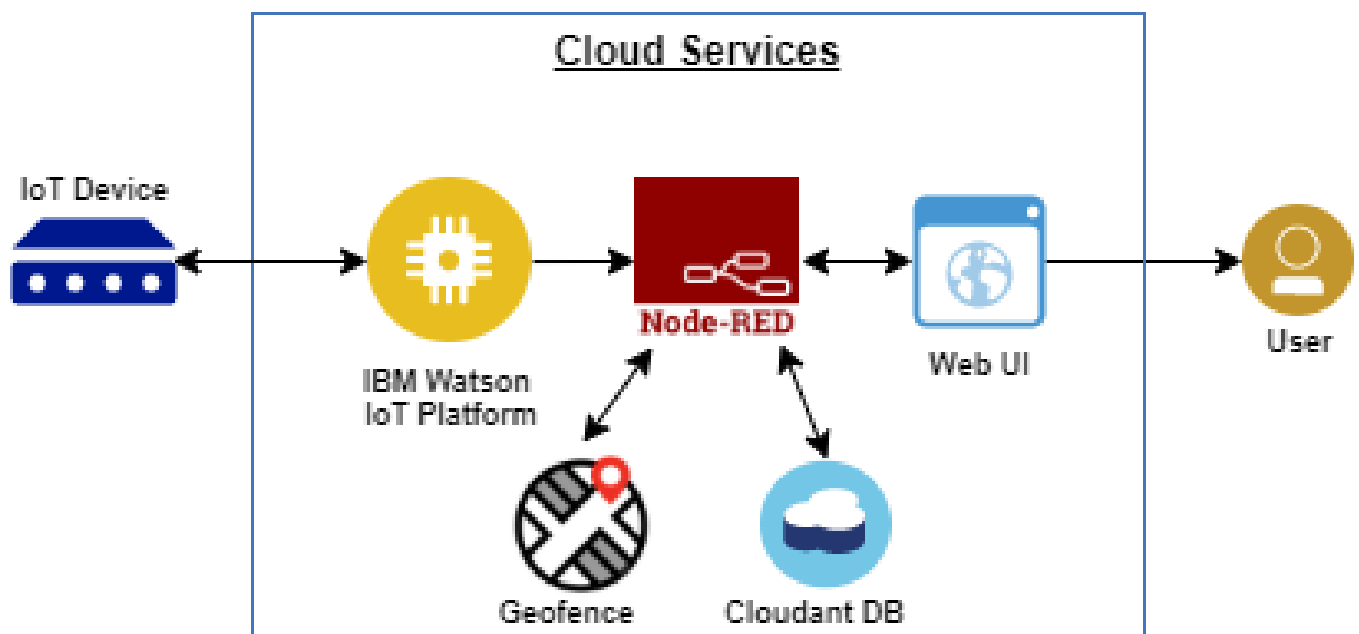| Project Name	Project - IoT Based Safety Gadget for Child Safety Monitoring and Notification

Technical Architecture:

Table-1: Components & Technologies:

S.No	Components	Description	Technology
1.	User Interface	Users had to register and outlook the other device's location e.g.Web UI, Mobile App, etc.	HTML, CSS, JavaScript / Angular Js / React Js, etc.
2.	Application Logic-1	Registration of child's and parent's device in each other device.	Python
3.	Application Logic-2	The child's GPS should be in ON condition, Parent's device should always be correlated to Child's appliance.	IBM Watson STT service IBM Watson Assistant
4.	Application Logic-3	The information is to be collected and dispatched to the authenticator via GSM equipping the GPS coordinates to efficiently locate access and monitor the child.	IBM Watson Assistant IBM Watson STT Service
5.	Database	Data Type can be any configuration such as arbitrary binary data, or text. Location history is stored in the cloud and the values include distance, latitude, and longitude. A user-defined blob of data transmitter from Cloud IoT Core to a device etc.	MySQL, NoSQL, etc. SQLite, InFluxDB
6.	Cloud Database	Users install tracking software on a cloud infrastructure to perpetrate the database.	IBM DB2, IBM Cloudant, etc
7.	File Storage	Files will be labelled with what they encompass and how long they should be kept.	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	The purpose of the external API employed in the device is to exploit the internet for communicating and executing allotted operations efficiently.	IBM Weather API, Aadhar API, etc.
9.	External API-2	External API laboured in the device to unveil the data that permits those gadgets to disseminate data to your device/mobile, functioning as a data interface.	Aadhar API, City Geo-Location Lookup API, etc.
10.	Machine Learning Model	IoT and machine learning deliver insights otherwise hidden in data for prompt, automated retorts and enhanced governing.	Object Recognition Model, Danger Prediction Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server chassis: Wearable high-tech mechanism. Cloud Server Configuration: a tremendous network that reinforces IoT devices and applications.	Local, Cloud Foundry, Kubernetes, Underlying Infrastructure, etc.

Table 2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	The framework is exemplified for child safety utilizing a Sensor network and IoT. The Key attribute of the system is the deployment of a smart detector for the collection of Data, cloud-based analysis, and decision-based on Monitoring for children's Safety. The framed solution is in the form of an android application furnishing the end user leisure surveillance of their children.	Mainflux, Thinger.io, and Zetta for non-stop streaming of child condition Open remote
2	Security Implementations	To activate the alarm and facilitate video recording whenever the emergency button is pressed. We can use the cloud to accumulate the surveillance data of the children. The wifi modules are of assistance in sending the monitoring particulars, the user will be notified with an update if any errors are found, for the efficient functioning of the device.	e.g. SHA-256, Encryption of data regarding child condition, Firewalls, Antivirus, and Data Loss Prevention
3.	Scalable Architecture	This methodology can be further enhanced by the installation of the mini camera inside a smart gadget for exemplary security and protection so that a glimpse can be caught on the live footage on the parental phone during panic circumstances. If an intricacy arises parents can see some of the attributes like the location, temperature, and heartbeat of the child along with living perspective around the children without deterrence.	Multiple Data Storage Technologies, Reliable Microservices, Automated Bootstrapping
4.	Availability	The device is used to keep tabs on your child even in a horde. It also provides the current location along with travel details. This system is advanced using a board programmed in embedded C and python. It is a site that is available online.	Temperature, Pulse sensor, GPS, GSM, Web camera, Raspberry pi microprocessor
5.	Performance	The web Page's load time should be no more than one second for the user's elevated performance concerning simple aidance and security. The originality of the system is that it spontaneously alerts the parents/caretaker by sending an SMS when instant attention is indispensable for the child during a crisis. The complete data of the children's location will be stocked in the repository and the execution of the device diminishes in a less network area.	GSM tracker, High Durable Device Battery