Project Design Phase-II

Technical Architecture

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

Technical Architecture
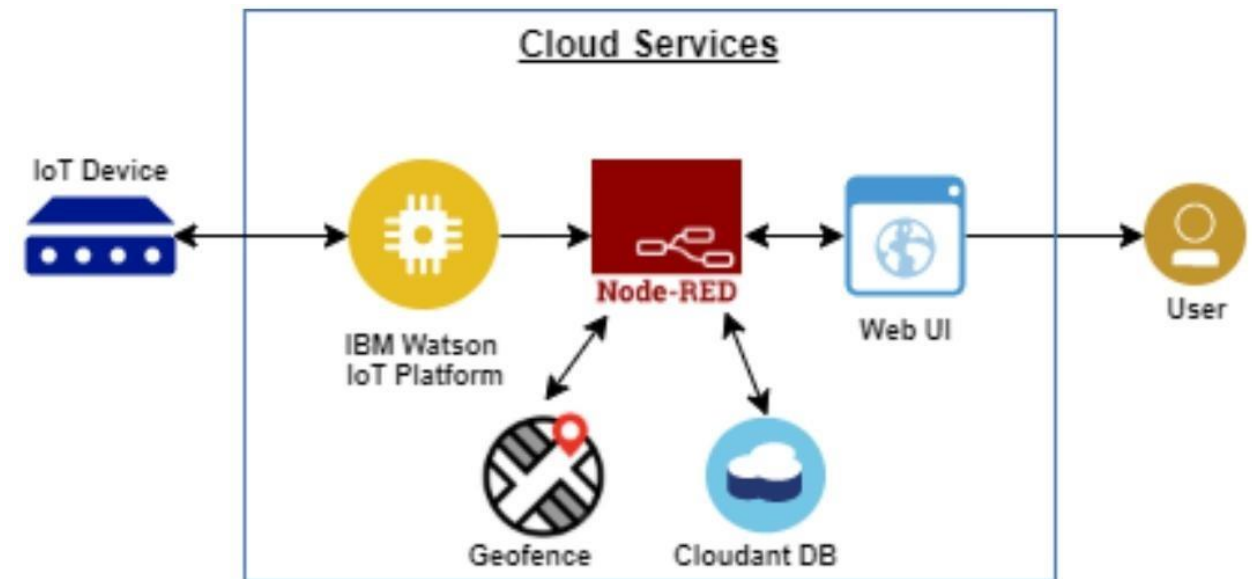
Overview of Technical Architecture:

An IoT system is interconnected with sensors, computing devices, and machines that are connected through a network to form one complete operation.an IoT solution architecture is a design of the step-by-step data flow from collecting raw data to obtaining predictions or results. There is no universal standard for an IoT solution architecture, but typically this technology requires four major components, consisting of, *Sensors, Gateways and Network, Cloud or Data Server, Applications Layer, Node-Red, Watson IOT platform, Geofence.*

GPS Satellite:

When a device uses GPS, it finds an exact location through what's called triangulation. That's how your smartwatch can know where you are at all times. Triangulation determines the difference between two signals. One is the signal that watch receives, and the other is the signal that was sent to your watch.

Programming Interface:

The most important in IoT devices is to connect the API application. Application Programming Interface (API) is an interfacing software platform that allows the exchange of any information or data and supports the interaction among different applications or any such intermediaries. There are such API's are used in this application is node API, data API and msg/voice API.

Cloud Service:

An IoT cloud is a massive network that supports IoT devices and applications. includes the underlying infrastructure, servers and storage, needed for real time operations and processing. The IBM cloud services are mainly used in the connection of device over the cloud. It is mainly used in the mediator between the gadget's information and the internet in the form of database.
DATABASE
End user:

The database is stored for the future use and the web application is for fetching the information, the user wants in the client side. It acts as a server client configuration through the API.

Node Red:

Node-RED is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways. It provides a browser-based editor that makes it easy to wire together flows using the wide range of nodes in the palette that can be deployed to its runtime in a single-click. Node-RED provides a browser-based flow editor that makes it easy to wire together flows using the wide range of nodes in the palette. Flows can be then deployed to the runtime in a single-click. Java functions can be created within the editor using a rich text editor. A built-in library allows you to save useful functions, templates or flows for re-use.

Watson IOT Platform:

In this platform is a managed, cloud-hosted service designed to make it simple to derive value from your Internet of Things devices. STMicroelectronics is an IBM Partner and provides development platforms allowing users to develop applications with direct connection to the Watson IoT platform. The cloud-based digital representation of your device is connected to Watson IoT Platform service. Once it is defined and instantiated, the device twin provides a consistent means of interacting with your device from the IoT hub. Within your Watson IoT Platform, select Devices tab and click on Add Device button.

Geofence:

Geo-fencing (geofencing) is a feature in a software program that uses the global positioning system (GPS) or radio frequency identification (RFID) to define geographical boundaries. It is a technology that uses GPS, RFID, or other location Tracking or object detection technology to define geographical boundaries. It allows administrators to set up triggers such as push notifications, email alerts, kill

switch when a device crosses a "geofence" and enters or exits an area.