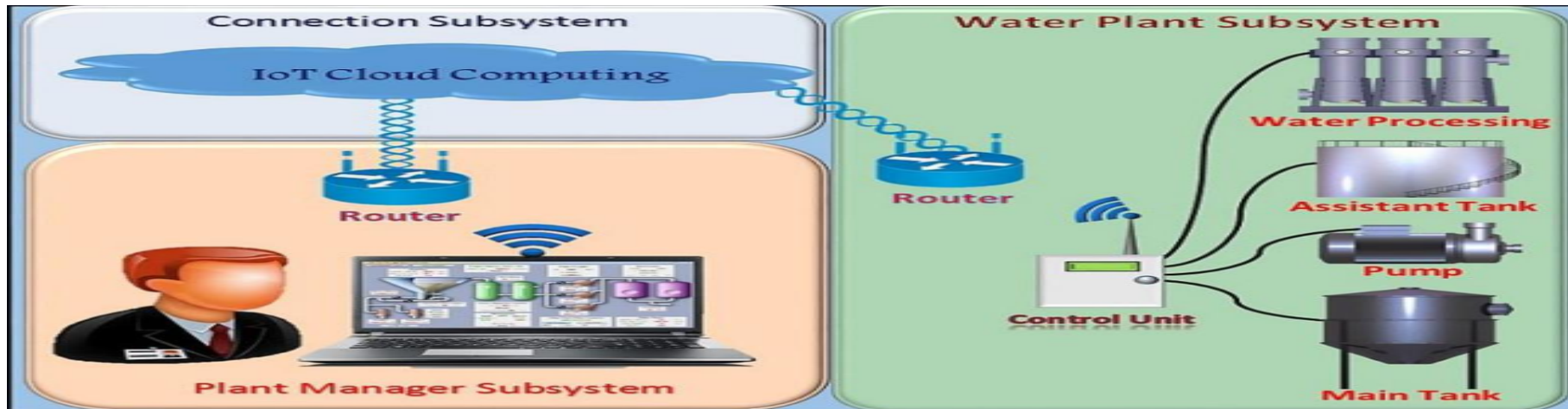


## Project Design Phase-II Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID30125
Project Name	Project - real time water quality monitoring system
Maximum Marks	4 Marks

### Technical Architecture



**Figure 1.1: Water monitoring using IoT**

**Table-1 : Components & Technologies:**

S.No	Component	Description	Technology
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1.	User Interface	The user interface is the point at which human users interact with a computer, website or application.	python raspberry javascript WIFI
2.	Application Logic-1	The application logic 1 used in iot basic type of application logic	IoT dashboards and alerts, you gain visibility into key performance indicators, statistics for mean time between failures, and other information.
3.	Application Logic-2	The application logic 2 used in iot next stage of application logic 2	IBM Watson Assistant
4.	Application Logic-3	the application logic 3 is used in next stage of application logic 3	IBM Watson STT service
5.	Database	Database service required on iot to used to store require database	PostgreSQL, and many noSQL databases like MongoDB, Cassandr
6.	Cloud Database	cloud database required service on iot	IBM DB2, IBM Cloudant etc.
7.	File Storage	the file storage requirements for used in store files	Flash, eMMC, UFS.
8.	External API-1	The external API is mainly used for in iot	Operating systems
9.	External API-2	The external api 2 is used to for check parameters	Libraries and Framework
10.	Machine Learning Model	the machine learning model allows the user to feed a computer algorithm an immense amount of data and have the computer analyze and make data-driven recommendations and decisions based on only the input data.	RFID, NFC, low-energy Bluetooth, low-energy wireless, low-energy radio protocols, LTE-A, and WiFi-Direct.
11.	Infrastructure (Server / Cloud)	Thus, the role of cloud computing in IoT is to work together to store IoT data, providing easy access when needed. It's important to note that cloud computing is an easy way to move large data packets across the Internet generated by the IoT	Microsoft Azure IoT Hub.IBM Watson IoT Cloud Platform.Google IoT Cloud Platform.Oracle IoT.

**Table-2: Application Characteristics:**

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	DeviceHive is an open-source IoT framework that is known to be feature-rich, licensed under Apache 2.0 for distribution, and can be used and modified for free. It lets you take the leverage of deployment options for Docker and Kubernetes, download them and use them via the private and public cloud.	ThingsBoard. DeviceHive Zetta .OpenRemote
2.	Security Implementations	Employ Device Discovery for Complete VisibilityApply Network Segmentation for Stronger DefenseAdopt Secure Password Practices. continue to Patch and Update Firmware When Available.Actively Monitor IoT Devices at All Time.	authentication, access control, confidentiality, integrity and non-repudiation.
3.	Scalable Architecture	Scalable IoT systems should use separate systems called web workers where the pool can dynamically grow for data storage and analysis. IoT infrastructures become more scalable if the communication stack from the end devices to the cloud are made asynchronous, so that load times are cut down.	Sensors and Actuators; Gateways and Data Acquisition Systems Edge IT Data Processing. Datacenter and Cloud;

S.No	Characteristics	Description	Technology
4.	Availability	This places new requirements on the reliability of the products, networks, and cloud services, such that the value created by the IoT system is available, when the end clients need it. Hence, availability is a key driver for the IoT.	Bluetooth and BLE (Bluetooth Low Energy WiFi LPWAN LPWAN (Cat-M1/NB-IoT).LoRaWAN
5.	Performance	The performance of the real time quality monitoring systemIoT devices / sensors are spread across the world and use different networks to connect to the IoT servers to send and receive the data. performance testing, there is need to simulate devices from different locations (to simulate latency)	j meter arduino raspberry these are technology used in iot