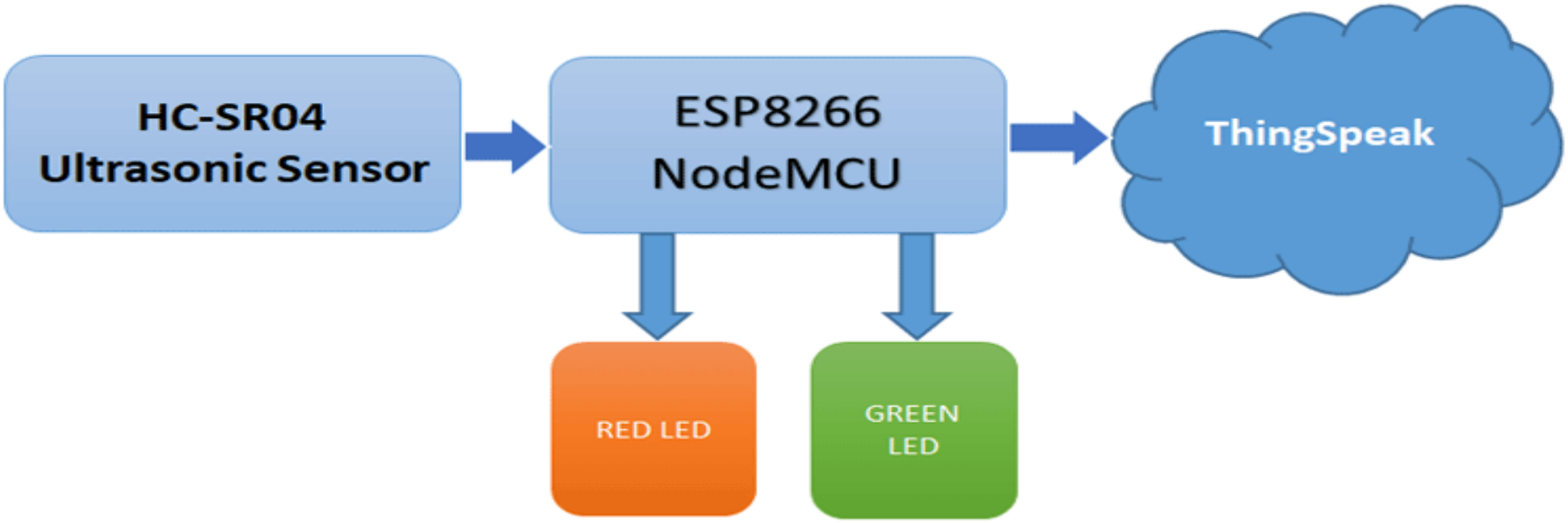
Phase2: Innovation

- This paper gives the main objective that are implemented in a system, which covers both the IOT based system and the sensor network interfaced with both ESP8266MCU and Arduino Uno
- After thorough research and analysis we arrived at a innovative solution to solve he above problem as detailed in phase-1 of our project.
- We will be using the ESP8266MCU micro controller as well as Arduino sensor.
- ESP8266MCU gives any microcontroller access to internet.

- In this project, the objective is to sense the water levels at river beds and check whether they are at a normal condition or not.
- If they reach beyond the limit, then it alerts the people through LED indications as well as through internet application. Here we are using an ultrasonic sensor to sense the river levels and a Node MCU ESP8266 to process these data.
- The data will be uploaded to Thing Speak IoT cloud, using which the river levels can be graphically monitored from anywhere in the world.



SENSOR:

To detect a flood the system observes various natural factors, which includes humidity, temperature, water level and flow level. To collect data of mentioned natural factors the system consist of different sensors which collects data for individual parameters.

HUMDITTY AND TEMPERATURE SENSOR

- The DHT11 (also known as temperature and humidity sensor) are used to monitor temperature and humidity around the dam.
- A temperature and humidity sensor are low cost-sensitive electronic devices that detects, measures and reports both dampness and air temperature. The proportion of moisture noticeable all around to the highest amount of moisture at a specific air temperature.

WATER FLOW SENSOR OR ULTRASONIC SENSOR

- The ultrasonic sensor can work effectively in measure the moving water surface conditions. Meanwhile, the measurement of water flow sensor can be used as additional information, changes in water flow velocity in early warning system of flood disaster.
- With ultrasonic sensors, we can find the water depth calculation by finding the distance between the transceiver and the surface of the water. The sensor will transmit a short ultrasonic pulse, and we can measure the travel time of that pulse (the echo) to the liquid and back.

WATER LEVEL SENSOR

- The model determines the water level using float switch sensors, then it analyzes the collected data and determine the type of danger present.

CONNECTIVITY

WIFI

- IOT_helps make less expensive to manufacture and deliver goods and offers transparency into transaction.
- In our project using the WIFI module because the data are used to share between cloud and equipment(also intermediates).
- All the sensors are connected to Arduino uno, which processes and saves data. The system has WIFI feature, which is useful to access the system and its data over IOT.
- The Arduino uno WIFI allow you to communicate via wi-fi with your sensors or actuators mounted on your board to create easily and quickly your IOT system. You can use your Arduino UNO WIFI as a client of your wi-fi network, as a server to connect other client devices or you can create an Ad'hoc wi-fi connection.

CLOUD

Thing speak cloud

- Thing speak is IoT Cloud platform where you can send sensor data to the cloud. You can also analyze and visualize your data with MATLAB or other software.
- Thing speak is an open source IoT application and API that allows you to aggregate, visualization and analyze live data streams in the could. Thing speak utilizes HTTP Convention to communicate.
- We can send data to Thing speak from your devices and also we can use the graphs as well as numerical display to monitor the data which is updated from sensor via internet.
- It also create instant visualization of live data and send alerts using web services like twitter and Twilio. The main advantage of the Thing Speak is triggering the certain link if certain conditions are meeting.

Protocol

- In our project we are using MQTT protocol.
- The MQTT (message queuing telemetry transport) protocol serves several purposes in the context of IOT(internet of things) and messaging systems.
- MQTT is well-suited for real-time applications where data needs to be transmitted quickly and reliably. It provides low-latency communication, making it suitable for scenarios like remote monitoring and control.
- The MQTT protocol is to provide efficient, reliable, and flexible messaging for IOT and various other applications, allowing devices to communicate seamlessly while conserving resources and accommodating different network conditions.