

# Idea de proyecto

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**Project: Height / capacity monitor**

## 1 Context and general description of the device

Our project focuses on the measurement of containers holding some kind of liquid. Based on the volume of these containers alarms can be sent to the users to notify them about the amount. To accomplish this, sensors will be used, that can determine if the height of the volume is above or below a certain threshold.

### 1.1 Hardware scheme

The basic scheme of system hardware is described as follows: the main components are the micro-controller as central server, the sensors and a web-page. The sensors must be able to connect to the servers by a WiFi-connection and for this we assume that the connection is robust and will be available in the given environment.

### 1.2 Sensor

We will use an ultrasonic sensor to measure the level of the liquid. A good example could be the sensor *Ultrasonic Sensor Module HC-SR-04* by *Robokart*. We chose this approach because it is one of the best ways to sense proximity and detect levels with high reliability.

Every sensor is connected to a micro-controller that collects the data and sends them to the central server via WiFi.

Every container will have a micro-controller connected to one or more sensors. Certain specified heights of minimal and maximal volumes will be set, depending on various factors, like the position of the container, the probability of it to be used, the type of liquid filled in and others.

### 1.3 Central server

We suppose the existence of a LAN network to which controllers and central server are connected. This lets the micro-controllers communicate with the central server, sending it continuously the measurements of the liquid heights.

The central server will perform control on the thresholds and, in case of need, will send an alert to the user.

The central server could also host a web-page (for example developed with Node-RED framework) in which all the data are visualized in diagrams in a user-friendly interface, to let it be usable also by non-technical people.

## 2 Steps of the project

The first steps of the project will be to research about similar projects and identifying platforms, programming languages and frameworks. So we can choose the suitable ones for our case. Furthermore the connection between these devices plays a crucial role, so we need to know what kind of protocols are needed. Also when the central server is to be connected to the web-page.

Possible extensions are to also give specific numbers of the height of the containers, how much volume they contain. It is also possible to set up LED. These LED lights could also specify different outputs.