

# Smart Water Networks - Project Scope

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## 1 PROBLEM

Water needed for the IIITB campus is sourced in three ways

1. IIITB has its own source of water in the form of 3 functional borewells. Water is pumped out of these borewells for almost twenty hours a day.
2. Water supply from the BWSSB for a limited amount of time each day.
3. Almost 20000-30000 liters of water per day is procured from commercial water tankers from outside.

Currently there is no insight into how water is being used, whether its use is optimal or not. Our proposed system offers insight into water usage patterns across the campus which will lead to better water management.

## 2 SOLUTION

There is a proposal to make the water distribution network of the campus a smart one with the installation of sensors in the network. Our system intends to plug into this smart network and work on the data that the sensors produce. Our aim is also to make the system generic so that it can be used for other installations.

Specifically the extent of our work will be as follows

## **2.1 SENSORS SIMULATOR**

1. Fill database with psuedo sensor data until real sensors are deployed in the network.

## **2.2 ANDROID APPLICATION FOR THE SUPERVISOR**

1. Gets Notifications
  - a) When there are leaks(Leak detection)...
  - b) When to water the garden...
  - c) When quality of water goes down below a certain level...
  - d) When level of water goes below a certain level in storage or sources...
  - e) When water consumption increases beyond a certain in level...
2. Can subscribe field staff to relevent alerts and notifications.
3. Can track notification/alert resolution by field staff.
4. Reports
  - a) Water consumption pattern with options to drill down w.r.t to buildings(Academic, Cafeteria, Hostels etc) and activities(Cooking, gardening, cleaning etc).
  - b) Water consumption vs time vs number of students.
5. Predictions
  - a) Water tanker requirement prediction.

## **2.3 ANDROID APPLICATION FOR FIELD STAFF**

1. Customized notifications and options to update status of resolution.

## **2.4 ANDROID APPLICATION FOR THE GENERAL POPULACE**

1. Report leaks and individual water usage pattern.

This is planned for the case where there aren't extensive sensors deployed throughout the network. This will be a mobile interface through which the actors are going to be submitting data about their normal usage. The submission of data need not be done on a daily basis. The actors can submit data detailing their regular activities and the typical water consumption for each activity, say, 2 buckets for bath daily and 5 buckets for washing clothes once in three days. They will be able to link their usage behaviour to specific time intervals(typically days, weeks or months)

## **2.5 WEB APPLICATION FOR THE SUPERVISOR**

Can create a representation of the whole water network for the system. This must then be maintained as and when the water network undergoes modification. The supervisor can then obtain relevant details for each network asset like the below with options to drill down w.r.t. time.

1. Quality of water
2. Storage levels
3. Consumption of water
4. Status information of pumps, i.e., whether they are switched on or switched off.
5. Electricity consumed to pump water.