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Smart Water Networks

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Water needed for the IIIT-B campus is sourced in three ways

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

Currently there is no insight into how water is being used and about whether its use is optimal or not. Informal estimates term the per-capita water consumption within the campus as excessive.

There is a proposal to make the water distribution network of the IIIT-B 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.

The smart water network consists of network assets like storages, pipes and outlets. Each of these assets may have sensors deployed in them which provide with useful metrics like flow data, data about the quantity and quality of water etc. Our system has a representation of this smart water network as a part of its application backend.

We also have a monitoring system which continuously monitors the data produced by sensors all over the network. It then produces notifications when it detects anomalous events. Apart from these anomalous events, the monitoring system also runs algorithms to predict water requirement and to detect leaks.

In all our system provides API's to accomplish the following.

- Get notifications about issues detected by the monitoring system.
- Discover the structure of the water network.
- Get water usage breakup across the network and water usage trends over time.

We have build an android application which consumes the above API's to provide the following features

- Notifications about threshold breaches, leaks, water requirement prediction for next day and watering garden suggestions.
- Reports on water usage across network aggregations in the specified time frame. Roll up and drill down possible.
- Hierarchical view of the network to get an overview of the health in terms of issues .