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Self Healing Water Networks

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1 Assumptions

- Water level sensors in the borewell, quality sensors in the borewell, flow/pressure sensors at various points in the networks
- Scada like system with a ODMS(A historian)

2 Use Cases

Use Case 1	**Dashboard of water usage and related patterns**
Actors	Management, Admins

Activities	• Will be presented with a dashboard on water usage patterns across buildings(hostels, Academic block, cafeteria) and activities(Cooking, gardening, cleaning, etc) with options to drill down to specific granularity. • Reports on electricity consumption due to pumping. • Reports on water consumption vs number of students in campus. • Analysis of peaks and troughs in the usage of water. • Water usage in the campus w.r.t weather • Usage pattern of water throughout the day and hence pressure at which water needs to be pumped. • Water requirement prediction in the coming days vs predicted levels in the storage.

Use case 2	**Customizable Alerts and Notifications**
Actors	Admin/Estate manager
Activities	• Will be provided with alerts for – Probable leaks – Inefficient pumping – Water contamination or excessive chemical levels in water – Inefficient pressure or excessive pressure at outlet points

Use case 3	**Input usage data through mobile/web interface**

Actors	Student, Housekeeping incharge
Activities	• This is planned for the case where there aren't extensive usage collection sensors throughout the network. • This will be a web/mobile interface through which 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, say 2 buckets for bath daily, 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)

Use case 4	**Reporting leaks through mobile/web interface**
Actors	Student
Activities	• Students can report leaks in the respective washrooms.

Use case 5	**A geospatial representation of the water distribution system**
Actors	Admin/Estate Manager

Activities	• Graphical represtation of whole water network. • Key health or performance indicators to represent status of each asset. Example pressure or flow rate of water flowing through a section of the pipe. • Ability to access historical data for each asset. • Role based access: Different users have different privileges and access to data based on their role.

Use case 6	**Notifications for watering of plants**
Actors	Housekeeping Staff
Activities	• Based on data from soil sensor and weather forecast, send notifications for watering the plants.

Use case 7	**Issue Tracker**
Actors	Students, Admin, Staff
Activities	• Reporting and tracking of issues.