

# Smart Water Watch Using IOT

## Submitted By

Devashish Badlani ([devashish.badlani@sjsu.edu](mailto:devashish.badlani@sjsu.edu))

Karanbir Singh ([karanbir.singh@sjsu.edu](mailto:karanbir.singh@sjsu.edu))

Mahitha Byreddy ([mahitha.byreddy@sjsu.edu](mailto:mahitha.byreddy@sjsu.edu))

Sumit Rana ([sumit.rana@sjsu.edu](mailto:sumit.rana@sjsu.edu))

**Date:** Oct 30, 2015

**Advisor:** Prof. Rakesh Ranjan

## **Abstract:**

As we know, California is under severe drought condition and California State is enforcing strict laws to make efficient use of water. At the moment, end user is struggling to manage water usage. They often have to pay fine as they used water beyond the limit. Therefore, to address this problem, we are proposing a simple, efficient and feasible solution in the form of an application named as '**SMART WATER WATCH**'. With the help of revolutionaries like 'Internet of Things' and Sensor Technology, we can achieve it.

The main idea is to monitor the water usage using a sensor integrated to a water meter, then push the data to the cloud servers to analyse it and generate weekly reports of water usage to show it to the user using any medium. These weekly reports contain a graph based upon the daily usage and also tells the user about his/her average water consumption through a certain period of time. These reports can help the user to manage water consumption up to a great extent. A user can also set up an alarming level, so that the sensor can send him/her a notification to reduce water consumption.

## **Competitive landscape:**

There are very few software applications available to analyse the water usage at household and industrial levels. Most of the available systems are basically hardwares which manage the water flow by applying various laws of physics (Air Compression, Fluid Dynamics etc). For example:

[Smart Valve](#): The SMART VALVE™ takes long established principles of fluid dynamics and applies them in a new and financially rewarding application.

## **Differentiator:**

Our Solution will provide the benefits of both hardware and software technologies present in the modern world.

The existing solutions are just hardware water flow meters which are applying physics laws to reduce the water usage. Our Application will take water usage data from the water meters and then provide analysis to the user. The user after reviewing this data can ponder on how he should use water wisely in order to reduce the water wastage in his daily usage.

## **Project Hills:**

### **First Hill:**

Joe, the head of the family who pays the water bill will use the utility application to track his family's water usage in different sections like bathroom, kitchen, garden etc using the app generated monthly graphical reports and to set the alarm limits.

### **Second Hill:**

Tom, the manager who manages the water usage will use our utility application to track the water usage in different sections like bathroom, kitchen, garden etc, using the app generated monthly graphical reports and set the alarm limits.

### **User stories:**

**User Story 1:** As a head of the family, I can set the alarm so that I can limit my water usage.

**User Story 2:** As a head of the family, I can see the current usage and plan to reduce water u .

**User Story 3:** As a head of the family, I can track my water usage so that I can analyse the water bill.

**User Story 4:** As a head of the family, I can compare the present water bill with the previous ones so that I can use water effectively.

**User Story 5:** As a manager, I can set the alarm so that I can limit my water usage.

**User Story 6:** As a manager, I can see the current usage and plan to reduce water usage.

**User Story 7:** As a manager, I can track my water usage so that I can analyse the water bill.

**User Story 8:** As a manager, I can compare the present water bill with the previous ones so that I can use water effectively.

## **Current Tasks:**

**Karanbir Singh:** (User Story 2,6) Create Main Virtual Sensor

**Mahitha Byreddy:**(User stories 1,5) Integrating the main virtual sensor with the sub sensors using API's.

**Devashish Badlani:** (User stories 3,7) Creating the sub sensors

**Sumit Rana:** (User stories 4,8) Create an Output of Virtual Sensors to SaaS Application on Bluemix

## **Github Link:**

<https://github.com/SinghKaranbir/SmartWaterWatch>

## **Technology:**

**Programming Languages:** Python, Javascript

**Cloud Technologies:** IBM Bluemix, Salesforce Analytics Cloud

**Database:** NoSql, Relational Database

**Framework:** Express.js

## **Project Plan:**

Sprint 1:

- Configuring the virtual sensors
- Understanding the analysis engine
- Understanding the virtual sensor
- Inline tcp session tracking mode
- Virtual sensor pane

Sprint 2:

- Create a SaaS Application in Node.js on Bluemix
- Attach Virtual Sensors feed to SaaS Application
- Create Database ( both Relational and NoSql) on Bluemix

#### Sprint 3:

- Create a client application that gets the feed from SaaS Application.
- Implement user-admin authentication panel.
- Application presents a feature of setting alarms based on the usage of water.
- Application presents a feature to analyze the water bill in a graphical manner.
- Application presents a feature to analyze water consumption of each month.

#### Sprint 4:

- Integrating Physical Sensors to SaaS Application on Bluemix