

Project Challenge:

Theme 5: Open Innovation for Internet-enabled Services

Project Objective:

5.1 – Open Innovation for future Internet-enabled Services in Smart Cities

Project Coordinator:

Elazig Municipality

Project Name:

Digital Control of the Urban Water Network

Subject:

Unquestionably, water is the most valuable natural resource. Hence, great care should be taken during its transmission and consumption phases. One of the major responsibilities of local governments and municipalities is providing clean water to residents for various purposes(drinking, washing etc...).

This project aims at transforming the current water network to digitally controlled urban water transmission and distribution network which will help:

- a) reduce energy consumption,
- b) monitor water in real-time for foreign substances
- c) check quality of water in real-time
- d) detect and reduce water leakage
- e) provide safety for water resources.

Project Description:

The Project aims at modernizing current water transmission and distribution network for obtaining various results such as:

1- Real-time measurement and analysis of the city drinking water.

Various chemical tests will be performed to check several values such as PH, blur, chlorine etc. The real-time analysis will also help to detect foreign substances, hazardous material and pollution in the water in a very short time. One potential significant outcome of this project is the health and safety of the urban population. The system will be able to detect the toxic materials and will automatically prevent

the mixing of the polluted water to the city network. Thus accidental pollution or intentional poisoning of the city drinking water will be prevented.

2- **Remote monitoring and control of the city water network.**

This will help to track the amount of water stored in reservoirs, amount of water being released to the network and store past measurement values. By integrating the water consumption values with these measurements the system will be able to identify the leakage, loss or potential misuse of the water. Therefore authorities will be able to concentrate on the certain sections of the city where the payment is significantly less than the amount of water consumption.

3- **Immediate intervention ability to the water network.**

Sensors, motorized valves and other digitally controlled equipment will help immediate suspension of the water distribution to certain sections of the city. Several reasons might arise which require temporarily suspending the water distribution. Sensors will report any abnormal pressure loss which might be caused from pipe breaks or other faults and the system will automatically suspend pumping water to that particular city section thus eliminate loss of precious water resources and energy.

4- **Building a remote surveillance and security infrastructure around water reservoirs.**

The Project will use security cameras and related technological equipment to build an economic and reliable surveillance system around the city water reservoirs. A security center will be established to watch the cameras and will record any activity around the reservoirs. This will help authorities to take immediate action in case of any attacks or problems.

5- **Use of Smart meters.**

Smart water meters and flow meters will be used in various levels of the network to reliably control the amount of water being distributed and being consumed by the city population. The Project will create a pilot section in the city to start use of smart water meters. The smart meters will be able to report usage information and any problem to the authorities which will help to reduce the revenue loss and reduce the time to solve the problems.

6- **Energy efficiency.**

The system will effectively help to reduce the energy costs of the water transmission and distribution network by identifying and helping the authorities to eliminate the water loss and leakage in various levels of the network as explained in aforementioned goals. Amount of energy consumed by the water pumps and other electrical equipments in the network is significantly high and the Project will reduce this cost by constantly monitoring the reservoirs, distribution valves, flow rates and leakage.

7- **Educational activities to increase public awareness about water usage.**

Meetings, seminars and other visibility activities such as school visits mass media ads will be organized by the Project team to introduce the Project to the public and

increase awareness about water consumption. This will help to create an environmentally conscious society and reduce the water consumption.

Looking for:

Technological firms for integrating the digital systems (smart meters, security cameras...) to the water network.

A municipality or local governments for applying the project in their region.

An association about environmental awareness or about the usage of water for organizing educations for the public about increasing awareness about water consumption.

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