

Water behaviour modelling for efficient ICT-based water management in urban environments.

Julia Terlet - Supervisors: Prof. Yacine Rezgui - Dr. Thomas H. Beach

Key Facts and Research Gap

- Growing water scarcity issues
- Information and education about water conservation needed.
- Behavioural changes necessary to encourage more sustainable uses of water resources.
- Use of smart meters and in-home displays

Research Aim:
Achieving behavioural changes in daily domestic water usage by implementing new technologies (smart meters/in-home displays) within households following appropriate behavioural strategies.

Overarching Research Questions

1. What are water users' current perceptions of their consumption and level of preparedness and motivation for behavioural change?
2. How effective is a near real-time user-oriented water feedback system (in-home display) in increasing people's awareness of their consumption?
3. What are the most effective behavioural strategies in encouraging sustainable water consuming habits?

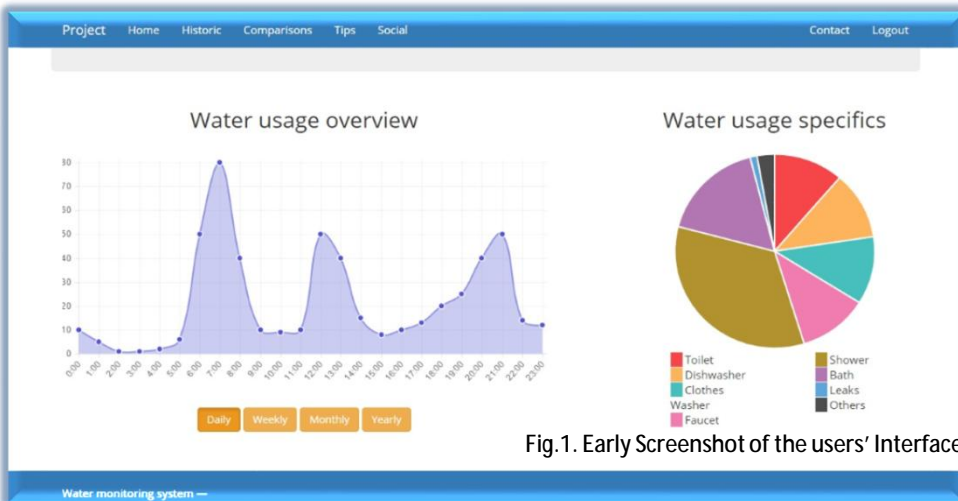


Fig.1. Early Screenshot of the users' Interface

Outputs

Current results: Questionnaires Concerns about water conservation issues but economic limits preventing participants from achieving appropriate water savings.

Future actions : Trial Phase Determining the most effective behavioural strategies :

- Ø Social strategies?
- Ø Economic measures?
- Ø Environmental features?
- Ø Water game?

Evaluating the impact of an informative in-home display on people's awareness of their water consumption

Comparing households' water usage before and after the trial

J. Froehlich, S., et al. "The design and evaluation of prototype eco-feedback displays for fixture-level water usage data," 2012
V. Seyranian, et al., "Comparing communication strategies for reducing residential water consumption," 2015.

Methodology

- Two online questionnaires:
- Ø (1) 10 questions (part of the "Ask Cardiff" survey). About 2000 responses obtained.
 - Ø (2) 40 questions (Part of the WISDOM Project). About 180 responses collected.

Implementation of smart meters and displays:

- Ø Interviews conducted within selected households before and after.
- Ø Questionnaire sent mid-phase to reengage participants.
- Ø Statistical analysis using SPSS.

Trial Phase Groups

