

Piloting the smart bathroom of the future

Can smart bathroom technologies redefine how water use is understood in a commercial building?



Innovative digital technologies are integral to smart cities and will play an increasing role in achieving sustainable and thriving communities. Water utilities are increasingly including digital technologies into their networks, but on the customer-side of the meter much less has been done to explore the potential of digital fixtures and digital plumbing.

Emerging digital bathroom technologies and high resolution smart meters targeting 'end-uses' and 'end-users' may disrupt the provision of water supply and wastewater services while leading to improved user experiences and sustainable outcomes.

This project is a trial of a commercial 'bathroom of the future' in the Rhodes business precinct in Sydney, NSW. Smart bathrooms fixtures are being tested in the building to understand their capacity to reduce overall water and energy use. The types of technologies that are being trialled include smart command taps, toilets, urinals, and showers as well as digitally connected meters and valves.

Opportunities provided by digital devices:

- Water savings**
- Building management and security improvement**
- Energy savings**
- Improvements towards occupants' health and wellbeing**
- Intelligent monitoring and control**
- Improved hygiene outcomes during a pandemic**

Research approach explained

The Institute for Sustainable Futures (ISF) partnered with Sydney Water and Caroma to pilot a suite of smart devices and meters.

This project is focused on:

- Understanding how water is used in a commercial setting including how water use is shared between fixtures and bathrooms.
- Identifying new water saving opportunities that arise from the implementation of smart devices.
- Exploring ways of reducing water and energy use arising from a reduction in hot water use.
- Testing and reviewing water saving smart technologies.

“What could these disruptive new digital plumbing technologies in buildings and homes mean for Sydney Water, its customers, the community, and the environment?”

Dr Simon Fane 2022



What we discovered:

Smart devices provide useful and usable data: An initial literature review highlighted large gaps in how water use is understood in non-residential spaces. Prior to this pilot study, the chosen site was already a significantly sub-metered site. Despite this, the data was not useful for interpreting water use and wasn't used to enhance water savings.

Towards user interventions: The next steps for this project are to undertake assessment of the anticipated mechanisms for behavioural water savings and hygiene interventions based on the data from these digital devices.



Patterns are emerging: the installed smart meters and devices have already enabled an analysis into patterns of water usage and a refinement of previous estimations on water use. We have been able to gather more insights into the proportions of water use by end use in each bathroom across the building as well as ensured a high level of accurate leak detection.

Research impact: The findings of this project will enable a deep dive into the implications of disruptive digital water technologies.



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More information: Find out more about the type of work that our team does at www.uts.edu.au/isf/explore-research/water

