

# INNOVATION GATEWAY

Round 2, 2017 Challenge Brief



# Summary themes and challenges to progress

## Theme #1: Managing water use and quality

Challenges:

- Reducing water consumption of showers
- Reducing water consumption of toilets
- Logging and monitoring of water use
- Reducing the risk of legionella

## Theme #2: Improving waste recycling rates

Challenge:

- Improve waste segregation and use of recycling bins

## Theme #3: Facilities maintenance

Challenge:

- Automate maintenance of facilities

## Theme #4: Reducing building energy consumption

Challenges:

- Improving local comfort cooling in buildings
- Reduce energy used by signage and screens
- Rethinking ultra-low temperature storage

## Theme #5: Improving employee health and safety

Challenges:

- Reducing slips, trips, and falls
- Better management of disability access
- Improving safety for high risk/ critical jobs

# Managing water use and quality

# Challenge Brief:

## Reduce water consumption of showers

### The challenge

The Innovation Gateway Partners see water as a resource that needs to be better managed, particularly as some are operating in water-constrained areas. Showers use a significant amount of water and energy (water heating) and require significant maintenance effort to reduce the risk of bacteria and legionella.

### The solutions we are seeking

Innovative technologies, approaches, and products that can:

- Reduce water use by showers
- Reduce energy use in heating water for showers
- Reduce the maintenance effort required to manage legionella risk.

The partners are interested in solutions for use in both commercial and residential buildings.

### Further information

Showers with thermostatic valves are currently used by some partners. Some partners have mixer showers supplied by electric water tanks.

### Selection criteria

- Can be simply retrofitted to existing facilities.
- Has no impact or improves the user perception of the showering experience.
- Payback under 5 years.
- Can work across a portfolio of facilities, front of house and back of house.
- Meets relevant regulatory requirements.

# Challenge Brief:

## Reducing water use of toilets and washrooms

### The challenge

The Innovation Gateway Partners see water as a resource that needs to be better managed, particularly as some are operating in water-constrained areas. Toilets and washrooms form a significant part of overall water usage by the Innovation Gateway Partners.

### The solutions we are seeking

An innovative technology or approach that can help minimise the overall water consumption and increase water efficiency of the toilet and washroom facilities without impacting on user perception and quality scores.

The partners are interested in solutions for use in both commercial and residential buildings.

### Further information and criteria

Standard toilet cisterns, waterless urinals, and low flow 3.5 l/s tap adaptors are currently being used by some partners.

### Selection criteria

- Can be simply retrofitted to existing toilet facilities.
- Has no impact or improves the user perception of the facilities.
- Payback under 5 years.
- Can work across a portfolio of facilities, front of house and back of house.
- Meets relevant regulatory requirements.

# Challenge Brief:

## Logging and monitoring of water use

### The challenge

The Innovation Gateway Partners see water as a resource that needs to be better managed, particularly as some are operating in water-constrained areas. Traditionally, water meter data has been hard to access with data coming from manual meters readings feeding back to utility providers with the site consumption appearing on water bills. In addition, it is not always easy to physically access water meters to take readings for internal records.

### The solutions we are seeking

Innovative logging solutions that can be attached to existing water meters to provide accurate and up to date data about water consumption across the estate for bill validation, night time leak identification and benchmarking of building consumption.

These loggers should not impact the existing meters and should be fit and forget to send information on a daily basis at a cost less than the same service from a water supply company. They will remain on the property of the estate and should not be impacted by any future changes of suppliers.

### Further information

Water meters are supplied by the local water company, with many underground in flooded cabinets.

### Selection criteria

- Can work across building portfolios in demanding locations where water meters are normally found.
- Priced at a level that is sufficiently affordable to be rolled out to hundreds of buildings.
- Battery powered logging solution with mobile data uplink.
- Data stored in cloud.
- Can feed information into aM&T systems either directly or via a FTP link.

# Challenge Brief: Reducing the risk of Legionella

## The challenge

The Innovation Gateway Partners need to manage the risk of legionella in the water systems in order to safeguard the health of their buildings' occupants. In some circumstances, water systems can show elevated legionella counts that require management. Activities such as disinfecting take place which solves the problem for a short period. However, the elevated counts sometimes return quickly, probably as a result of biofilm attached to the internal walls of pipes.

## The solutions we are seeking

Innovative technology, solutions, and approaches that will reduce legionella risk to human health and the cost of effective legionella management regimes. Potential solutions include improved legionella detection techniques, non-destructive ways of reducing biofilm growth, identifying biofilm growth within closed pipework, legionella removal techniques and methods to prevent future growth.

## Selection criteria

- Demonstrable ability to reduce health risks associated with legionella in commercial buildings.
- Demonstrable ability to reduce costs of legionella management in commercial buildings.
- Works with potable water and keeps it free from risk to human health (i.e. no human toxicity).
- Meets relevant regulatory requirements.
- Ability to operate in closed systems.

# Improving waste recycling rates



# Challenge Brief: Improving waste segregation and use of recycling bins

## The challenge

The Innovation Gateway Partners have already made significant reductions in the waste that goes to landfill from their buildings. Waste recycling best works when the various waste streams are separated at source kept free from contaminants and kept dry. However, the introduction of contaminants into recycling bins and the placement of recyclable waste into the wrong bins are continuing issues. For some partners, the users of their buildings are members of the general public, and may not have English as their first language.

## The solutions we are seeking

Innovative technology or approaches that enables and encourages the separation of various recycling streams before disposal and eliminates the contamination of recycling streams with a common material such as water, coffee/tea, and coffee cups.

The partners are interested in solutions for use in both commercial and residential buildings.

## Selection criteria

- Improves recycling rates.
- Reduces contamination of recycling streams.
- Improves user perception.

# Facilities maintenance

# Challenge Brief:

## Automate maintenance of facilities

### The challenge

The Innovation Gateway partners currently carry out routine maintenance activities and safety inspections across large building portfolios. These are generally performed by a technician or an engineer. This entails un-necessary expense and travel, performing potentially high-risk tasks, and possible disruption to building users.

### The solutions we are seeking

Innovative solutions that automate maintenance operations so as to minimise on-site presence and monthly visits that ensure the safety, efficiency, and optimisation of buildings (including heating, cooling, lighting, or other equipment). Examples of periodic maintenance tasks include emergency lighting tests and testing for legionella safety compliance.

### Selection criteria

- Ability to measure water temperature & report against HSG274pt2 recommended code of practise (RCoP) for monitoring buildings' water distribution within domestic & commercial buildings.
- Automation of system flushing to guard against formation of legionella in stagnant water.
- Retrofit solutions to test emergency lighting remotely and provide a full report on functionality both for flick test & discharge testing.
- Automation of safety checks for High voltage risers/distribution boards.
- Any other significant opportunity to reduce periodic facilities maintenance tasks.
- Ability to generate test reports & storing in a secure server environment.

# Reducing building energy consumption

# Challenge Brief:

## Improving local comfort cooling in buildings

### The challenge

A number of Innovation Gateway partner buildings suffer from overheating in meeting rooms and offices for a significant proportion of the year, and this can affect the wellbeing of the occupants. In these instances, the current practice is to install traditional split unit air conditioning with localised controls. These units are associated with an undesirable level of emissions and energy use.

### The solutions we are seeking

Innovative cooling technologies and approaches that reduce the internal air temperature (relative to the external air temperature) and provide an alternative to traditional heat pump technologies. The solution should consume fewer resources (energy, water, fossil fuels) than an equivalent split unit.

### Selection criteria

- Ability to operate across a number of building types and uses (although most likely installed in cellular office spaces).
- Can integrate with existing BMS.
- Consumption of resources can be actively monitored.
- Compliant with all relevant legislation such as legionella etc.

# Challenge Brief:

## Reduce energy used by signage and screens

### The challenge

Innovation Gateway Partners have large amounts of external signage and digital information screens. At present, these remain switched on at times when they are not required. External signage is sometimes illuminated in full daylight, and digital information screens are operating out of hours.

### The solutions we are seeking

Innovative technology, solutions, and approaches which can help reduce the energy consumption of external signage and digital information screens within publicly accessible buildings.

### Further information and criteria

LED retrofit has already been performed for much of the external signage

In some cases, network access to the digital information screens is not available.

### Criteria

- Easy to retrofit to existing installations.
- Payback period of 5 years.

# Challenge Brief:

## Rethinking ultra-low temperature storage

### The challenge

Some of the Innovation Gateway partners use a large number of Ultra Low Temperature freezers for archiving samples in their university buildings. These units take up a significant amount of floor space, use significant amounts of energy, and eject heat into the building space that subsequently needs to be dispersed.

### The solutions we are seeking

An alternative solution is sought to remove the need for these units in the working space to a more appropriate storage space off-site or in other under-used space.

The innovative solution should not look to alter existing ULT freezer units (either through control change, additives to the refrigerant or changing the electrical supply) but should rather be a rethinking of the whole process of archiving samples.

### Further information and criteria

The current provision is through the industry standard ULT units of which there are limited global suppliers.

### Criteria

- Removal of archived samples from day to day working space to save energy, release office space and reduce heat inputs into the working space.
- Genuine new solutions not retrospectively altering existing equipment.
- Reduced energy consumption.
- Easy maintenance.
- Very reliable control of sample conditions and alarming if conditions change.

# Improving employee health and safety



# Challenge Brief:

## Reduce slips, trips, and falls

### The challenge

Slips, trips, and falls are the second highest single cause of workplace injuries. As responsible employers, the Partners in the Innovation Gateway strive to continually reduce the incidence of slips, trips, and falls and are looking for new solutions to help them do so.

### The solutions we are seeking

Innovative technology, solutions that can reduce the incidence of slips, trips and falls in the workplace. The partners are interested in alternative approaches including reducing the risk at source, alerts or guidance to building users and facilities managers, or risk prediction through analysis of near misses.

### Selection criteria

- Reduction in risk of injury through prevention of slips and falls.
- Ability to warn building users and managers of high risk areas that likely to cause slips and falls.
- Ability to warn building/site managers of working practices that could lead to slips, trips or falls.

# Challenge Brief: Better disability access ramps

## The challenge

Innovation Gateway Partners currently use metal ramps to provide disability access to their buildings. These ramps can be heavy to move, and difficult to store.

## The solutions we are seeking

Alternative disability access ramp solutions that are easier to store, carry and deploy than existing metal ramp solutions. In most cases, the ramps are used for allowing disabled access to buildings where there is a single step

## Selection criteria

- Easy storage
- Easy deployment
- Lightweight and manoeuvrable
- Durable
- High safety
- Suitability for scooter access.

# Challenge Brief:

## Improving safety for high risk / critical jobs

### The challenge

In demanding working conditions employees can get mentally tired. This can lead to an increase in human error and accidents where health & wellbeing procedures are not followed.

### The solutions we are seeking

Innovative technology and approaches that aim to reduce the number of accidents in the workplace, ensure that workers are alert and that all health and safety procedures are being followed. The Innovation Gateway partners are open to a variety of solutions including wearables that analyse brain activity, eye movement, biological rhythms, etc.), or smartphone apps that ensure proper procedures are being followed, or monitor and analyse near misses to prevent future accident risks.

### Selection criteria

- Ability to notify employees and facility managers and ensure they are in the best possible physical condition prior to executing a manual handling job.
- Ability to ensure that proper safety procedures and practices are being followed.
- Ability to improve safety when working at height.

## Contact details

Should you have any questions about your involvement in the Innovation Gateway, please feel free to get in touch with Niccolò Roveda, Innovation Sourcing Manager.

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