

## Why SMART?

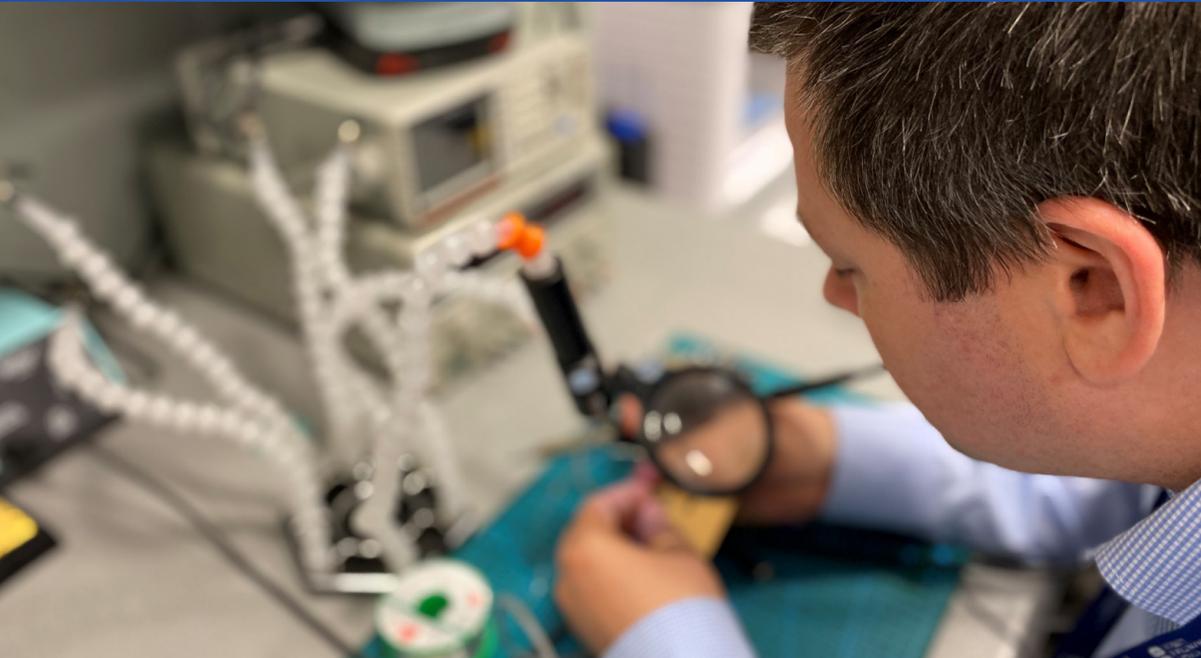
SMART Infrastructure Facility brings together leading academics, industry experts and professional staff from fields such as transport, water, energy, economics and modelling and simulation to address the infrastructure challenges of the future.

### WHAT'S THE VISION?

To be internationally recognised as a leading provider of research and learning for smart infrastructure solutions.

- Developing digital innovations for people-centric and sustainable infrastructure solutions.
- Contributing to cost-effective design and management of resilient infrastructure assets and networks.
- Informing the integrated planning of urban and regional infrastructure for more productive and adaptive development.
- Educating the next generation of infrastructure leaders, engineers and practitioners to foster innovation and progress.

In this time of unprecedented change, universities have an obligation to lead and contribute to society.



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#### SMART Infrastructure Facility

<https://smart.uow.edu.au>

Digital Living Lab

<http://digitallivinglab.uow.edu.au/>

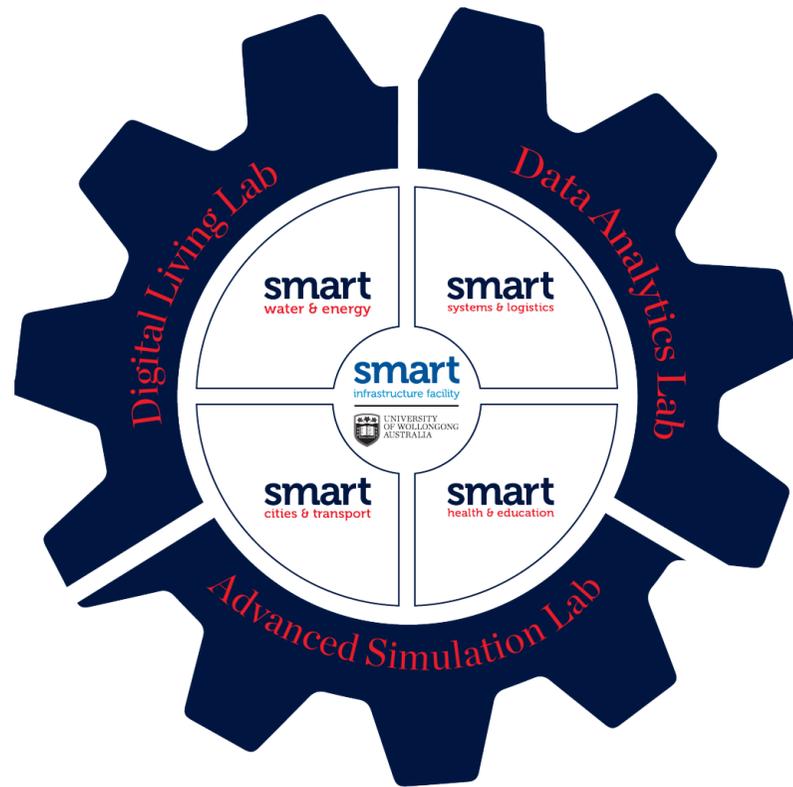
## Smart Cities by SMART

An international leader in applied infrastructure research.

**smart**  
infrastructure facility



## Research Areas



## How is it achieved?



**The Data Analytics Lab** develops novel approaches for decision-making problems, based on machine learning and optimisation methods. It also applies advanced analytics and optimisation to infrastructure systems, logistics and supply chains, healthcare, and emergency response management.



**The Advanced Simulation Lab** aims to improve processes, methods and tools for decision making in complex and uncertain domains where stakeholders have differing perspectives, or no optimal solution is available.



**The Digital Living Lab** is a technology-agnostic innovation hub providing a testbed for a wide range of end-to-end Internet of Things projects.

## Smart Cities

The SMART Infrastructure Facility contributes to infrastructure planning in Australia through truly independent research coupled with deep academic rigour to ensure policy-makers and industry receives high quality and timely advice on major projects.

## Smart Outcomes

### LIVERPOOL CITY COUNCIL SMART PEDESTRIAN PROJECT

The Liverpool City Council Smart Pedestrian Project was a research collaboration with Liverpool City Council and industry partners, supported by the Federal Smart Cities and Suburbs Program. The project was part of the Digital Living Lab. There was no data on pedestrian movements or behaviour to provide a baseline to design the future management of movement within Liverpool. This project used technology to monitor pedestrian and vehicle movement without any compromise to the privacy of the people of Liverpool. In creating this picture we were able to gather evidence for an urban transformation that will enhance the lives of the residents and visitors of Liverpool.

Through the cutting-edge development and implementation of smart technology we were able to build a collaborative, connected and responsive city. In redesigning the relationship between pedestrians and traffic and creating a model for partnership, community engagement and a more liveable urban environment, SMART and Liverpool City Council are now closer to a more walkable Liverpool.



### SMART WATER MANAGEMENT

Over the past 50 years the Illawarra-Shoalhaven region has experienced 30 floods classified as serious, severe or very severe and three classified as extreme, so it is hoped that technology will transform the ability to predict and mitigate increased flooding. The Illawarra-Shoalhaven Smart Water Management project uses smart technology solutions and data analytics to respond to stormwater management challenges affecting our communities. The project will provide solutions to help improve stormwater management, water quality, flood mitigation and information accessibility to ensure community safety in flash flood events. This is a regional collaboration between Federal Government, Wollongong City Council, Kiama Municipal Council, Shoalhaven City Council, Shellharbour City Council, and Lendlease. Outcomes from the project will be scalable and immediately transferable to communities and industries across Australia.

SMART will also extend and augment the coverage offered by UOW-hosted Digital Living Lab Internet of Things (IoT) radio communication network. Currently servicing the Wollongong and Shoalhaven local government areas, this open-source platform provides a 'hacking space' for citizens, entrepreneurs, researchers and students to apply smart technologies in novel applications to resolve real-world challenges.

### SMARTER SCHOOLS FOR A SMARTER PLANET PROGRAM

As part of the Smart Water Management program, SMART is delivering Smarter Schools for a Smarter Planet, aimed at enabling regional high school students studying science, technology, engineering and mathematics to gain skills in the construction and use of smart technologies to monitor water issues relevant to their school environment. Ten regional high schools will participate in the construction and uses of smart technologies by building and providing the sensors used in this project. The students will learn about the Internet of Things (IoT) technologies and the water management issues being analysed by these technologies.

### WESTERN SYDNEY PARKLAND CITY SENSOR NETWORK PROJECT

The Western Sydney Parkland City Sensor Network Project deploys a shared, scalable sensing network across the eight local government council partners in the Western Sydney City Deal, known as Western Parkland City. These councils include Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith, and Wollondilly. The network will connect to the internet of things, enabling data sharing to enhance place-based planning and communication with citizens of the Western Parkland City. It will use public domain and environmental sensors to establish the network spine, enhancing development of tools for data sharing and data analytics, and digital governance protocols. SMART has a unique (in academia) set of skills that allows us to help the project partners at each stage of the deployment of smart solutions for the Western Sydney Parklands City Sensor Network Project. SMART researchers will help with the testing and prototyping of fit-for-purpose sensors, the Western Sydney Parklands City optimisation of data processing and transfer, as well as, the data analytics and visualisation, through an end-to-end process.

### NAVABILITY

The Navability project is a partnership between the University's SMART Infrastructure Facility, Wollongong City Council and Briometrix, an Australian company who equip and train local wheelchair users to survey the cities footpath networks with their wheelchair mounted footpath assessment technology. It is funded with a FundAbility grant from Northcott, a not-for-profit disability service provider.

Associate Professor Robert Gorkin leads the project with his team at SMART, and wants to now create a nationwide accessibility map. Data for the map was collected by four wheelchair pilots equipped with sensors from Briometrix traversing areas of Wollongong over several weeks. During the project the team also investigated how additional IOT sensors could potentially aid in future mapping via the Digital Living Lab, using the free LoRaWAN network provided by the SMART Infrastructure Facility.

"The free map includes accessibility effort mapping of over 50km of the CBD, along with locations of accessible toilets, parking, local transport, nearest convenience stores and points of interest," Professor Gorkin said.