

# Microsoft Azure Customer Solution Case Study



**Customer:** Laing O'Rourke  
**Website:** [www.laingorourke.com](http://www.laingorourke.com)  
**Customer Size:** 15,000 employees  
**Country:** Australia  
**Industry:** Engineering and Construction

#### Customer Profile

Laing O'Rourke is a privately owned, internationally focused engineering enterprise with world-class capabilities spanning the entire client value chain. The company operates an integrated business model comprising the full range of engineering, construction and asset management services delivering single-source solutions for some of the world's most prestigious public and private organisations.

#### Software and Services

- Microsoft Azure
- Microsoft Azure IoT Suite
- Microsoft Power BI
- Microsoft Azure Stream Analytics

**Microsoft Partner:** MOQdigital

**Website:** [www.moqdigital.com.au](http://www.moqdigital.com.au)

MOQdigital is a client-focused organisation providing innovative solutions across data, applications and systems to deliver a superior digital experience for its customers.

For more information about other Microsoft customer successes, please visit: [customers.microsoft.com](http://customers.microsoft.com)

## Internet of Things and Cloud creating a safer workplace on site for global construction giant

"The combination of Microsoft Azure and the Internet of Things gives us the capability of putting smarts where we would typically have to put people. This takes people out of harm's way ..."

Ryan Macnamee, Global CIO, Laing O'Rourke

The construction industry is an inherently dangerous business, often taking place in very remote or inhospitable locations around the world. As an industry leader, Laing O'Rourke is committed to health and safety of its workers, with a belief that everyone has a right to return home safely every day after work. As part of this commitment, the company is working with Microsoft Gold Partner MOQdigital in Australia to use innovative technology based on Microsoft Azure and the Internet of Things (IoT) to collect and analyse data to reduce work-related illness and workplace accidents.

In 2010 Laing O'Rourke launched 'Mission Zero', a campaign to eliminate all accidents from its operations, and prevent work-related illness.

Over the past year, the company has been undergoing an IT transformation, focusing on digital engineering and processes. This has led to the generation of massive amounts of data, providing the opportunity to leverage the Microsoft Azure platforms and applications that

Laing O'Rourke has been using to collect and analyse that data to create a safer working environment for staff on construction sites

"The safety of our staff is paramount at Laing O'Rourke; we want to make sure our people go home safely every single day," said Ryan Macnamee, the company's Global CIO. "And because of the climate in Australia, one of the issues we face is heatstroke; and the problem



with heatstroke is, by the time you feel the symptoms, you already have it, so you need to have been warned well before you are exhibiting symptoms.”

## The ‘Smart’ Hardhat

In 2015, Laing O’Rourke worked with Microsoft partner MOQdigital to design a hardhat with sensors to gather and transmit data from both its wearer and environmental conditions. Laing O’Rourke’s IoT focus and the hardhat technology is being driven by an internal innovation team, the Engineering Excellence Group (En.Ex.G), established five years ago to deliver disruptive innovation and explore emerging technologies – “and that’s not just new bits of tech; it’s a big process,” said Rod Shepherd, Device Engineering Lead at En.Ex.G.

The smart hardhat is based around a sweatband sensor array and data collection unit which can be retrofitted to an existing hardhat. It monitors the temperature and heart-rate of the wearer, plus the external temperature and humidity. It also contains a GPS module and an accelerometer for determination of orientation and the impact of vibration or shock.

The data collected is transmitted in real time over a low-power Zigbee radio protocol via a central gateway to the Microsoft Azure cloud platform. The system utilises the Azure IoT Suite, Power BI and Stream Analytics to analyse and report on the stored information. The system has been configured so that individual alerts in

the form of sounds and vibrations can be delivered back to each wearer, and alerts can be sent to site supervisors warning them of potential dangers facing individuals or entire teams.

“We can analyse the trends and find that a person is suffering from heatstroke, typically half an hour before they realise it,” said Macnamee.

## Rapid Development Cycle and Ability to Scale

Mcnamee highlights the speed of development as one of the key benefits of using the Microsoft Azure platform.

“Microsoft has far more R&D to spend on innovation than us,” he said. “The things that we can do in Azure now would have taken a large team, years to complete.

Mick Badran, MOQdigital’s CTO agrees. “The cloud services that are on offer through Azure are phenomenal. There’s a rate of change every two days with a new service coming out. So for the problems that we had yesterday there are now solutions for them today, and that’s been very beneficial for this project.”

Laing O’Rourke is in the final phase of pilot testing, with plans to expand the deployment of the smart hardhats during 2016. Thanks to the design of the Azure IoT Suite, Laing O’Rourke can be confident that its successful pilot can be readily deployed on a much larger scale.

“We can use Microsoft Azure to collect the messages from one device or ten

thousand devices, and the analytics engine on the platform can readily handle any increase in the volume of data – so we know that it scales,” explained Badran,.

“We typically have between five and six thousand staff at any point in time in Australia being deployed on a project. We would love to roll this out to all of them,” said Macnamee.

## Open to Unlimited Potential

Laing O’Rourke’s En.Ex.G is already examining ways to further expand the potential for the hardhat, including the possibility of licensing the technology, and is excited about the future with IoT. “The early focus for us has been in the health and safety space. But we are also keen to explore other areas where IoT can assist us in our goal to challenge and change the traditional methods of our industry,” said Shepherd.

Macnamee is also thinking laterally about other health and safety applications using Microsoft technology.

“In the future we’d like to leverage Microsoft Azure to capture data from drones so that we don’t have to have people climb on the side of a building to do inspections.”

“The combination of Microsoft Azure and the Internet of Things gives us the capability of putting smarts where we would typically have to put people. This takes people out of harm’s way and we are leveraging on technology to give us information and data.”