



A degree in IoT engineering with Cumulocity IoT at James Cook University

Customer success story



“Cumulocity IoT is a very powerful and versatile IoT platform, which is capable of managing a large number of IoT sensors as well as facilitating big IoT data analytics.”

– Wei Xiang | Professor and researcher in the areas of wireless technology and IoT



Customer Profile

James Cook University (JCU) is the second oldest university in North Queensland, Australia. It is a teaching and research institution and is ranked as one of the top universities in the world. Its main campuses are located in the tropical cities of Cairns and Townsville, North Queensland—and one is in the city state of Singapore.

New challenges

- Starting and running an Engineering IoT degree program
- Providing students who create IoT projects the hands-on experience and advice they need
- Including entire IoT ecosystem as part of education experience

Software AG solutions

- Cumulocity IoT platform
- University Relations IoT Education Package

Key benefits

- Hands-on learning for IoT use cases—real sensors, real cases
- Tutorials from Software AG IoT experts
- New IoT course attracts new students to JCU

At James Cook University in Cairns, Australia, the first class of IoT Engineering students receives a bachelor's degree at the end of term. The degree course—officially called Electrical Systems and IoT Engineering—is the first program of its kind.

JCU senior managers saw the potential of the Internet of Things a few years ago and made the decision to design a degree program. They wanted to educate students thoroughly so that they could get jobs in the IoT industry.

They recruited Wei Xiang, a professor and researcher in the areas of wireless technology and IoT, to kick off the program.

Xiang said: “We wanted to teach students about the entire IoT ecosystem, from collection to communication to analysis.”

His first step was to gain accreditation for it from the Engineers Australia in November 2016. He is now Founding Professor and Head of Discipline of Electronics Systems and Internet of Things Engineering at James Cook University.

Then he organized the course, which takes a three-pronged approach to teaching IoT:

- First, electrical engineering courses give students the ability to understand the physical, sensor side of the Internet of Things
- Second, a hands-on IoT platform offers them the chance to design and test different IoT use case scenarios in the real world
- And, third, big data courses teach them how to apply analytics tools to their IoT data

To set up the program, JCU needed to partner with a technology provider that could not only provide the IoT platform, but also work with the university on IoT-related projects, as well as help to educate the students. JCU evaluated several vendors—both paid-for and for free—before deciding on Software AG's Cumulocity IoT, after testing signals and strength of connectivity.

With technology and course outline in hand, Xiang and the university now had to educate students and parents about the IoT and its potential for post-graduation employment. “It seems like a no-brainer now, but five years ago high school students and parents had no idea what the IoT was. It was not widely understood,” Xiang said.

The media, with many stories about widespread adoption of IoT and 5G in Australia, helped to convince them.

Coming to grips with IoT projects

The hands-on part of the course is run by Prithvi Moses, Solution Architect at Software AG. He runs Cumulocity IoT workshops three times during the final-year IoT capstone project. He holds meetings with groups of students to review how they are progressing and offers any advice needed.

Projects such as environmental and agricultural monitoring have been popular; Queensland is big farm country. One of his students has developed a commercial offering out of his project, one that he can resell to others.

“He is so excited,” said Moses. “Our students have been amazed at how easy it is to create IoT projects, using real sensors and applying them to real-world problems—taking weeks rather than the months they anticipated.”

This is because Cumulocity IoT is 80% preprogrammed with out-of-the-box vertical solutions, so students only need to customize 20%—after they decide upon their devices—to reach their goals.

“At JCU, we pride ourselves on offering Australia’s first accredited IoT Engineering course. Thanks to our educational and research partnership with Software AG, we are fortunate to have one of Software AG experts to deliver an IoT capstone subject to our fourth-year IoT undergraduates,” said Xiang.

JCU’s \$30M Cairns Innovation Center is a one-stop-shop entrepreneurial space designed to give business people, entrepreneurs, community organizations, researchers, educators and students a place to work and learn from each other. From this collaboration, JCU hopes to see real-world products developed that can benefit Queensland and beyond.

The university is also actively involved in IoT projects and innovation, many to benefit the local environment. JCU is working on environmental monitoring projects with the government to protect the wet tropical rainforest and the Great Barrier Reef—both UN Heritage sites.

Working with Cairns City Council, JCU is monitoring the quality of the city’s water discharge, especially in light of the 2019 Queensland flooding that caused polluted water to flow into the Great Barrier Reef.

Whether it is helping to improve agriculture or to save the planet, JCU’s IoT engineering students are excited about the future. There are about 12 students in their final year, and all have had at least one job offer so far.

“Our students are excited about working with industry IoT experts to solve real-world problems as part of the IoT course curriculum at JCU,” concluded Xiang.

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IoT Education Package

The IoT Education Package is a free of charge offer from Software AG's University Relations team to support faculty members in higher education institutions in both theoretical and hands-on teaching.

Students learn how to:

- Connect smart devices to the cloud
- Visualize sensor data from smart devices in clearly laid out dashboards
- Analyze sensor data to derive business scenarios
- Create thresholds and smart rules to automate solutions for business needs

The IoT Education Package runs on the Cumulocity IoT platform in the cloud and does not require any prior installations or setup. Students learn how to turn their smartphones into IoT devices within minutes using the simplistic and convenient functionalities of Cumulocity IoT. The IoT Education Package contains intuitive tutorials, comprehensive exercises and real-world case studies. A community forum and free certification completes the offer for teachers and students worldwide.

Find more information at: SoftwareAG.com/University-IoT



Take the next step

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customer_marketing@softwareag.com.
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