NTT

IoT innovation in higher education
benefits society

Why the university needs an integrated IoT platform

A technology-focused university had established a reputation for developing innovative education and research projects focusing on creating universal well-being and prosperity. To provide an innovative learning environment for students to research and develop new technologies, the university wanted to implement an integrated IoT platform. The platform needed to be scalable to handle research projects of the future.

How an IoT platform was created to facilitate innovative research and development

The university's data and information residing on siloed platforms and situated in multiple laboratories had to be connected to an IoT platform. The aim is to allow students with full visibility into any research project from a central point. NTT Ltd. also held a smart city demonstration for students with reference models of how to utilize the IoT platform to create solutions that benefit the local communities.

What an integrated IoT platform provides for the university

The flexible IoT platform allows the university to create a training center for educational research and learning, where students convert a myriad of innovative ideas into research projects. The university is now developing intelligent solutions for the public and private sectors. The Malaysian government is benefitting from the university's projects which drive innovation in various sectors.

'The IoT platform supports our vision of creating an environment of innovative learning, and research and development. Our university now nurtures talent that creates advanced IoT technologies benefiting humankind.'

University spokesperson

Challenge

Why the university needs an integrated IoT platform

Well known for its expertise in engineering, science and technology, the Malaysian research university has almost 14,000 undergraduate and just over 11,000 postgraduate students. The university aims to lead globally in the development of innovative technology solutions that focus on people's well-being and prosperity.

The university's engineering faculty focuses on intensive research and development activities in digital transformation and they identified a need for an integrated IoT platform.

The university's data and information existed on siloed platforms, which made it difficult for students to proceed with their research and studies. The management and monitoring of all platforms were also a major challenge. Maintenance of each platform required different skill sets and tools that were expensive, time-consuming to master, and required major financial investment to sustain.

The university realized that an integrated IoT platform would create an environment conducive for innovative research and development where students could develop innovative technology solutions. The IoT platform needed to connect multiple laboratories with various machines and equipment, providing full visibility of all the research projects.

Solution

How an IoT platform was created to facilitate innovative research and development

The project to create an innovative research and development environment started by connecting the university's multi-vendor, siloed environment (which all worked independently) to the gateway. With all of the machines and equipment utilizing different communications protocols, an API had to be developed to connect them. The university now controls and views the output from all of the equipment in their laboratories from a central point.

Students now analyse all the information generated by the equipment, allowing them to leverage the power of big data as part of their research into creating smart industries and smart cities. Some of the legacy, analogue equipment which could not connect digitally were retired.

The second part of the collaboration between the university and NTT Ltd. was the creation of a live model of smart city technologies. With reference models of how to implement IoT solutions to leverage green energy, fire and haze prediction, and water management. The proof of concept design will help Malaysian cities use technology to tackle issues in a way that addresses specific local issues. For example, the green energy project aids in turning a city's energy supply automatically into power saving mode when the power supplied drops below a set threshold.

Outcome

What an integrated IoT platform provides for the university

The IoT platform is utilized as a base for future education and learning. Students work in an environment geared for advanced research and development. The IoT platform is scalable, more sensors and machines can be added, which means that it could easily expand for future AI and big data analysis. Students have an opportunity to create any advanced technology solutions to make global breakthroughs in IoT development.

Projects in Smart Agriculture and Intelligent Manufacturing have already kicked-off aiming to convert these into commercial solutions. For example, the university has partnered with NTT Ltd. to build a laboratory hosting an IoT based digital manufacturing system. NTT Ltd. provides extensive advice to students and the laboratory is utilized as a training center for educational research, as well as a learning platform. Students now create intelligent manufacturing solutions for local companies.

Our collaboration with the university allows them to pioneer the use of smart technologies, explore new solutions and nurture talent, by converting research projects into commercial opportunities. This positions Malaysia at the forefront of the fourth Industrial Revolution, enabling their businesses to take a leading position with regards to agriculture and manufacturing and assist their cities to take advantage of the benefits that smart cities bring.

Which technologies?
- IoT Application Enablement Platform
- Microsoft Power BI
- IoT Gateway

Which services?
- ICT Infrastructure Services