**RUIJIE**

A Conversation with Visionary University Leaders

# BUILDING SMART, SUSTAINABLE, & CONNECTED CAMPUSES
## for the Future of Education

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**Ruijie Networks**

# Building the Future of Education

## A Conversation with Visionary University Leaders

The report "**Building Smart, Sustainable, & Connected Campuses for the Future of Education**" presents a visionary perspective on the integral role technology plays in shaping the next generation of learning environments. We are honored to have Steven Ong, Chief Technology Officer at Ruijie Global Enterprise, as our Strategic Advisor. His insights, rooted in nearly two decades of experience at the forefront of ICT innovation, form the backbone of this exploration.

Through meticulously gathered case studies, we aim to provide a **blueprint for developing learning spaces** that are not only technologically sophisticated but also sustainable, equitable, and responsive to the evolving demands of students and educators alike. **With the expertise of industry leaders in universities worldwide** guiding us, we are set to illuminate the path towards a future where technology enables a more promising and inclusive educational landscape.

This report transcends being a mere technical manual; it serves as a dialogue. We delve into the real-world implications of constructing smart campuses, drawing on the experiences and visions of universities committed to this mission. By investigating their **specific needs** for campus network enhancements, the **challenges** they encounter, and the **strategies** they implement, we paint a comprehensive picture of building smart, sustainable, and connected educational environments.

# Universiti Putra Malaysia (UPM) Bintulu
## *Leading the Way in Digital Education Transformation*



*Universiti Putra Malaysia (UPM) Bintulu, a leading institution in Sarawak (QS 148), has embraced digital transformation to enhance its students' learning experience and align with the goals of the digitalisation blueprint. We spoke with key figures at UPM Bintulu to understand their journey.*



Ts. Syemsul Bahrim Abdul
Deputy Director (ICT Services),
Information and Communication Development, UPM

**Q *Why was digital transformation a priority for UPM Bintulu?***

Ts. Syemsul Bahrim Abdul, Deputy Director (ICT Services): At UPM, our digitalization blueprint aligns with our **green sustainability** goals, ensuring that every initiative supports both **high-quality education and environmental stewardship**. This transformation is not just about technology; it's about creating a future-proof learning environment for our students, fully aligned with UPM's vision for sustainability and excellence.

**Q *What challenges did you face before the transformation?***

Ts. Syemsul Bahrim Abdul: Since 2021, we started exploring ways to build a future-ready network infrastructure that equips students, faculty, and staff with the tools to thrive in a rapidly digitalizing world. **Our old network, deployed eight years ago, couldn't meet today's demands.** Students faced slow speeds, and our IT team dealt with constant maintenance issues.

**Q *How did you address these challenges?***

Sayid Mohamad Nazari Bin Sayid Ismail, Head of ICT Network Section: With Ruijie's Simplified Optical Ethernet (SOE) solution utilizing Coarse Wavelength Division Multiplexing (CWDM) technology, we implemented **Fibre to The Room (FTTR)**. This advanced approach provides students with consistent, high-speed internet access essential for remote learning and digital collaboration, allowing them to engage critically with their studies.



Sayid Mohamad Nazari Bin Sayid Ismail
Head, ICT Network Section,
Information and Communication Development, UPM

**Q** *Can you explain the advantages of the new network design, particularly the use of a fully passive optical solution, in terms of energy efficiency and reliability?*

Sayid Mohamad Nazari Bin Sayid Ismail: The new network design incorporates a fully **passive optical solution**, eliminating the need for power supplies, electricity for cooling, and other energy-intensive components. This approach not only significantly reduces energy costs but also enhances reliability, perfectly aligning with our sustainability goals.

Additionally, the technology ensures **end-to-end high bandwidth**, from the data center to the hostel rooms, providing seamless connectivity for all users.

**Q** *Can you share a student's perspective on this improvement?*

Muhammad Syahmi Alif Bin Zaidi, Student of UPM Bintulu: I often had to search for specific spots in the hostel just to get a stable connection for my online classes and access notes online. I frequently experienced slow network speeds. If I wanted faster internet, I needed to walk to the KK2 Dining Hall to find a dedicated high-speed internet spot.

With the new network, I can **stream lectures without buffering**, and there's **no delay** during online group projects. It really enhances our learning environment; the network performance is not only **fast** but also very **stable**.

Mohammad Arriq Bin Anazim, Student of UPM Bintulu: The network **authentication system** is **seamless** and easy to use, allowing me to quickly log in and access Wi-Fi without any hassle.



Zulkernain Bin Zamawi
Deputy Director, Information and
Communication Development, UPM Bintulu Sarawak Campus

**Q** *What are the quantifiable results of this transformation?*

Zulkernain Bin Zamawi, Deputy Director of Information and Communication Dept: The upgrade to FTTR has revolutionized our campus connectivity, boosting speeds to 2.5 Gbps—a 25-fold improvement. This provides a much **more conducive environment** for active learning and collaboration.

Furthermore, this initiative demonstrates our commitment to **sustainability**, aligning with national goals for greener educational institutions. We've proven that technology and eco-conscious practices can work hand in hand.
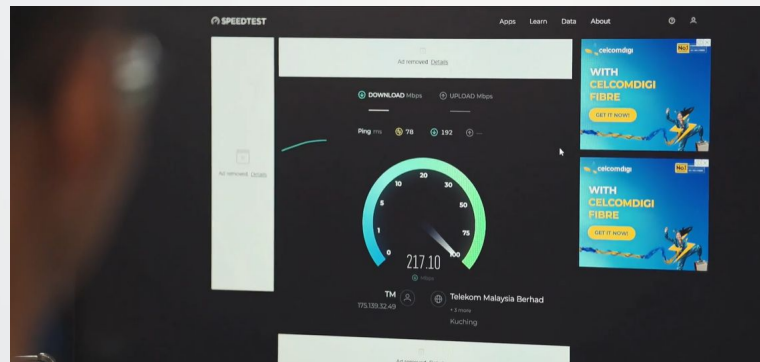


**Q** *How has this initiative positioned UPM Bintulu nationally?*

Zulkernain Bin Zamawi: As the **first FTTR-enabled public university in Malaysia**, we've set a new benchmark for digital readiness in higher education. This upgrade isn't just about faster internet; it's about better preparing our students for the future and showcasing a commitment to leading-edge technology.

*UPM Bintulu's proactive approach to digital transformation underscores the transformative potential of technology in higher education. By embracing innovation, they have created a more **connected**, student-centric campus—a model for educational excellence and **sustainable** practice in Malaysia and beyond.*

# Rajamangala University of Technology Lanna (RMUTL)

## Forging the Future with AI and a Smart Campus



*Rajamangala University of Technology Lanna (RMUTL) is a leading institution in vocational education in Thailand, dedicated to shaping a new generation of skilled professionals equipped for the challenges of the future. We spoke with* **Asst. Prof. Dr. Prasert Luekhong**, **the ARIT Director at RMUTL**, *to learn more about their innovative approach to education, which leverages AI and smart campus technology.*

Asst.Prof.Dr.Prasert Luekhong
ARIT Director of RMUTL

**Q** *Dr. Luekhong, you began exploring AI well before it became a buzzword in 2016. How do you view its role in Thai higher education?*

I have been studying AI for over a decade. Long before AI gained traction, my research focused on Thai-English-Chinese hierarchical phrase-based translation systems. In Thailand, where Thai is the dominant language, students often encounter language barriers that limit their access to a wealth of international knowledge. My work aims to **leverage AI to enhance translation effectiveness, making vital information more accessible** to students.

**Q** *At a recent Thai education conference, you presented EduShield, an AI application developed by RMUTL students. Can you explain what it is?*

**EduShield** is an innovative system designed to prevent and identify gambling-related content online. Utilizing artificial intelligence and natural language processing, it efficiently analyzes data to pinpoint websites harboring hidden gambling content. The system promptly notifies administrators through LINE Notify, enabling quick actions to **block access to inappropriate or illegal sites**.

**Q** *What motivated you to lead students in developing this project?*

At RMUTL, our mission extends beyond imparting basic knowledge. We strive to empower students to **apply technology in real-world settings across various sectors**, **ultimately benefiting society.** EduShield is just one of many research initiatives; we are also engaged in the healthcare sector, where we harness big data to train AI models for predictive insights and proactive interventions.

*Solution Supported by:* **Ruijie Networks**

**Q** *What preparations must the university make to equip students for success in this high-tech environment?*

Beyond academic knowledge, it is crucial to **provide robust data and an AI platform**. A substantial amount of data is necessary to train AI models, which demands a **high-bandwidth and reliable network**. We are focused on establishing a stable environment equipped with advanced tools that facilitate research and innovation.



**Q** *In addition to AI, you are also involved in transforming RMUTL into a smart campus. Could you elaborate on this concept?*

The **smart campus concept enhances the overall campus experience, boosts operational efficiency,** and democratizes education access. At RMUTL, IoT devices are integrated throughout the campus. For example, sensors monitor temperature and humidity, automatically adjusting conditions to optimal levels. Additionally, students can book collaborative rooms via an app, accessing them through QR codes and checking out with a palm vein scan. To ensure safety, we have installed CCTV systems to monitor campus security.
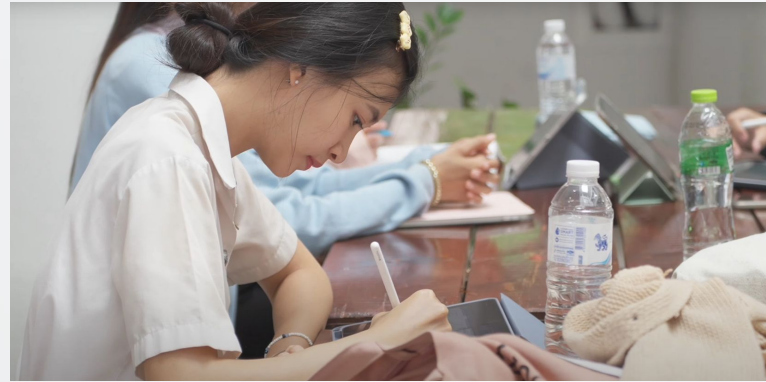
**Q** *What must the university consider for its network to support the smart campus initiative?*

For our connected campus to truly thrive, we **need a stable and future-proof connectivity solution** that spans the entire university, not just traditional areas like classrooms and computer labs. Previously, connectivity efforts were often limited to these spaces, neglecting common areas and outdoor zones where students gather. A genuinely **smart campus requires ubiquitous connectivity**, enhancing the student experience and promoting collaboration.

As the number of devices increases—including smart devices, IoT applications, and student laptops—we will need a more **robust core backbone** capable of handling higher bandwidth demands reliably. Traditional technologies may struggle to meet these future needs. Therefore, we are committed to exploring **sustainable solutions** that prioritize efficiency while considering environmental impacts. Our focus is on utilizing fewer resources more effectively and seeking innovative solutions that support high bandwidth requirements, ensuring a seamless experience for everyone on campus.

*RMUTL's commitment to* **AI** *and* **smart campus** *technology positions them as a leader in Thai higher education, preparing students for a future that demands innovation, adaptability, and a commitment to sustainable practices.*
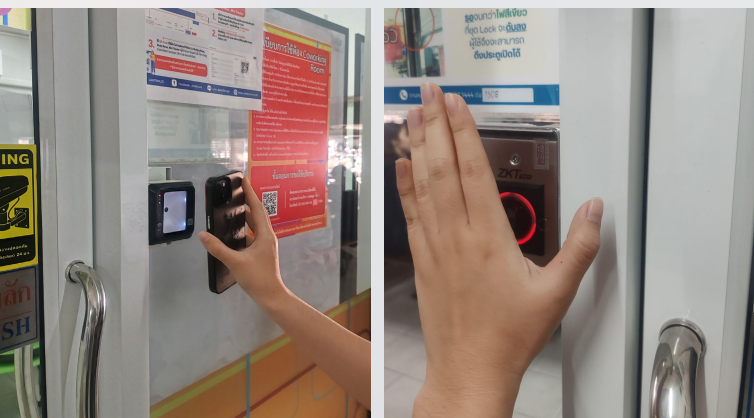
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