

# Digital and Inclusive Talents Cultivation and Technology (AI)-Enabled Collaboration: TVET's Integrative Models of Skills and Trainings

Project Summary Report

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APEC Human Resources Development Working Group

January 2024



Asia-Pacific  
Economic Cooperation





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# **Digital and Inclusive Talents Cultivation and Technology (AI)- Enabled Collaboration: TVET's Integrative Models of Skills and Trainings**

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**APEC Human Resources Development Working Group**

**January 2024**

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Note:

The term “national” and names of public or private institutions used in the text are for purposes of this report and do not imply the political status of any APEC Member Economy.

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## **INTRODUCTION**

### **1. BACKGROUND**

Chinese Taipei held a two-day physical event “APEC Industry-Academia Collaboration Workshop on Inclusive Digital Talent Development and Technology (AI)-enabled Sustainability: Policies and Exemplars of Industry-Academia Partnership” from 31 August to 1 September 2023.

The proposed project aimed to integrate resources and multiple talents to move toward a reciprocating model to facilitate further digital and inclusive development. The outputs delivered include a more interactive exchange of experiences and expertise through in-person Workshop, allocating existing resources to provide hands-on training programs which target in-school youth and women, continuing efforts to reshape the dynamics of the social milieu through digital applications. Different modules of operations and system frameworks were discussed and produced to support the APEC agenda. All participants were expected to obtain insights and substantive recommendations from the project to enhance their operative models.

The Workshop brought together policy makers responsible for educational spheres and industry-academia collaboration experts from many APEC member economies. It served as a platform for interactive exchange of experiences and expertise, fostering meaningful discussions and promoting effective strategies for inclusive digital talent development and sustainable technology adoption. The Workshop was first a full-day forum with in-person speakers/participants attending in Chinese Taipei, showcasing best practices for the industry-academia cooperative model that expands the scope of inclusive and innovative talent training, and then a field trip for on-site industry/school visits was arranged on the next day to demonstrate best practice and successful operative models in order to make sure of the exchange of experiences and also to allow in-person discussion on a practical level for all participants. The Workshop was open to participants from all APEC economies, target participants were policy makers responsible for educational spheres and industry-academia collaboration experts.

### **2. EXPECTED OUTCOMES**

Our objective was to develop a market-responsive program that enables education institutions and industries to engage with the modern digitalized world. The project accentuated government-industry-academia collaboration to harness the power of digital technology to further expand to the evolving AI-embedded talent training to entrench the APEC economies in shared and inclusive prosperity. Expected outcomes were as follows:

1. Reconsideration and improvement on existing Technological and Vocational Education and Training scheme will be stimulated and driven by the showcase of exemplary models of TVET programs in industry-academia collaboration.

2. Resources will be allocated and integrated within APEC region to be leveraged into successful industry-academia collaboration models in and preferably between APEC member economies.
3. Substantive experience will be successfully exchanged and transferred to all participating APEC member economies.
4. Key feedback on panel discussions during the Workshop will provide practical insight on curriculum panning for academia as well as for policy makers within the APEC region.
5. Network of academic and industry experts, policy makers and delegates from APEC member economies will be established for continuous drive in policy reform and improvement to promote collaboration between government, higher education and TVET institutions, business and education and training stakeholders.

## **METHODOLOGY**

### **1. RESEARCH METHOD**

The project hosted a Workshop in which included keynote speeches, best practice case studies, panel discussions and field visits. In order to achieve gender equality, female participants from APEC economies were invited, including experts and speakers of APEC delegations, policy makers, economic representatives, regional development agencies, SME participants, academia, research institutions, and private company representatives to share information and provide opinions.

Participants were required to complete and return a post-event survey after the Workshop. In this survey, each participant was encouraged to share their views and advice on the Workshop's impact and efficiency as well as possible suggestions and policy implications for future APEC related cooperation programs and activities.

### **2. RESEARCH TARGET (BENEFICIARIES)**

Primary beneficiaries were the Workshop participants which included high or mid-level government officials working in the TVET areas, such as educational agencies in APEC economies and Ministry of Education in Chinese Taipei, and University president/dean/representatives working in industry-academia cooperation in the fields of AI-embedded and digital talent training. These policy makers were expected to obtain insights and substantive recommendations from the project to enhance their operative models. Industry partners were also provided with the chance to collaborate with academia on the inclusive talent cultivation in order to connect with suitable employees.

Secondary beneficiaries were in-school youth and women for the project's focus on inclusive education accessibility in digital and AI technology skill training when the policy makers incorporate their experience from the Workshop to catalyse

adjustments in the design of technological education to include collaboration between academia and industries and realize how to amend courses to provide better education for a smooth transition from education to work.

## **RESULTS**

### **1. EVENT SUMMARY**

To support APEC's mission on regional human resource development and educational cooperation, Chinese Taipei hosted the "APEC Industry-Academia Collaboration Workshop on Inclusive Digital Talent Development and Technology (AI)-enabled Sustainability: Policies and Exemplars of Industry-Academia Partnership" from 31 August to 1 September 2023. The Workshop aimed to demonstrate how to narrow the skills gap and cultivate digital and AI talents through technological vocational education, providing an in-depth introduction to the collaborative model between the academia sector and industry sector within the region. The Workshop attracted twenty-one representatives from eleven APEC member economies and over a hundred domestic participants.

The Workshop covered topics such as AI applications in education, sustainable technological advancement and talent development, and AI technology in sustainable development. Best practices of the industry-academia cooperative model in the region were shared during the Workshop, including the intelligent robotic technology program, AI technology development, and digital and AI talent cultivation. The second day of the event featured a field visit to a cross-disciplinary research and development laboratory.

- Keynote Speech Topics
  - ✓ Artificial Intelligence in Inclusive Talent Cultivation
  - ✓ Sustainable Technological Advancement and Talent Development
- Best Practice Case Studies
  - ✓ Microprogram in Smart Robotics Digital Technology Application – AI Talent Cultivation and Industrial-Academia Collaboration
  - ✓ Digital and AI Talent Development in Malaysian Higher Education Institutions
- Panel Discussion
  - ✓ The Application of AI Technology in Sustainable Development



## 2. KEYNOTES

### 2.1 Artificial Intelligence in Inclusive Talent Cultivation

**Dr. Eugene Rex L. Jalao** is a Professor of AI and Industrial Engineering in the University of the Philippines Diliman, Department of Industrial Engineering and Operations Research. He is also the Program Coordinator of the Artificial Intelligence Department. He specializes in Decision Support Systems, Business Analytics Solutions, Data Mining, Optimization and Systems Simulation.

His fifteen years of work and research experience are in the fields of business analytics both in the Philippines and in the United States, specifically in the Banking, FMCG, Manufacturing, Real Estate, Healthcare, Telecommunications and Information Technology industries.

The given speech focused on Artificial Intelligence in Inclusive Talent Cultivation. AI plays a significant role in transforming and enhancing talent cultivation practices within organizations. It offers innovative solutions to attract, develop, and retain talent in a more efficient and inclusive manner. The speech discussed numerous advantages and benefits of the integration of AI in talent cultivation. Furthermore, AI Ethics and principles were reviewed in the context of human resource system recommendations.

## AI in Inclusive Talent Cultivation

- Efficient Recruitment and Sourcing
- Unbiased Candidate Screening
- Predictive Hiring
- Personalized Learning and Development
- Skill Gap Analysis
- Performance Evaluation and Feedback
- Bias Mitigation and Fairness
- Workforce Analytics



# The Role of Government and Industry

- Government's Role
  - a. Setting Legal Frameworks
  - b. Defining Ethical Guidelines
  - c. Enforcing Compliance
  - d. Research and Innovation
  - e. International Collaboration
- Industry's Role:
  - a. Responsible AI Development
  - b. Self-Regulation
  - c. Proactive Risk Assessment
  - d. Consumer Education
  - e. Collaboration with Governments



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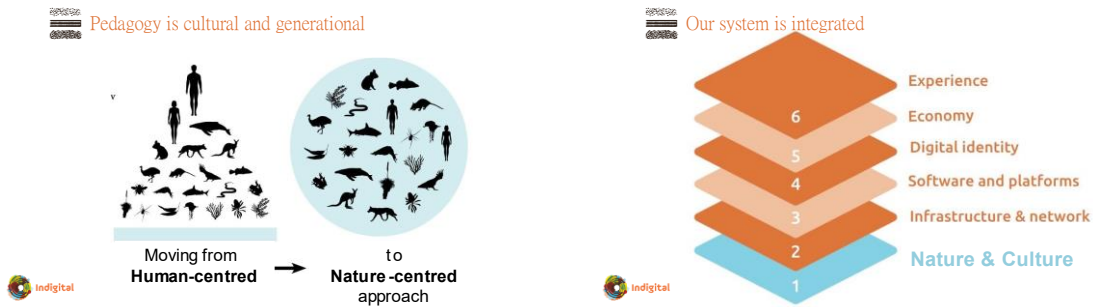
Dr. Eugene Rex L. Jalao mentioned AI should be for common good and benefit the humanity in general by fostering inclusive economic growth, social equity, sustainable development, enhancement of human capital, political empowerment, enrichment of culture, elevation of education, and enhancement of human well-being, while protecting the environment as the final principle of responsible AI system for talent cultivation.

## 2.2 Sustainable Technological Advancement and Talent Development

In the second session, **Mikaela Jade** shared her view on AI sustainability from a minority culture perspective. Mikaela Jade is the CEO and Founder of Indigital, Australia's first Indigenous EdTech company, a women-led and 90% female company. She is also an expert in First Nations cybernetics. This field seeks to create a symbiotic relationship between Indigenous knowledge and modern technology. It aims to empower Indigenous communities to use technology as a tool for self-determination, cultural preservation, interdisciplinary collaboration, and holistic well-being. First Nations people refers to people who have identified themselves, or have been identified by a representative (for example, their parent or guardian), as being of Aboriginal and/or Torres Strait Islander origin. They are not one group, but rather comprise hundreds of groups that have their own distinct set of languages, histories and cultural traditions.

Another core principle of First Nations cybernetics is sustainable technological development. Mikaela explored how involving First Nations insights from the outset

and putting nature first can create technologies that have minimal negative impact on the environment, while also promoting ecological preservation and responsible resource management. Bridging ancient wisdom and modern innovation is key to solving today's complex challenges and First Nations knowledge offers timeless solutions to sustainability. This approach honours the past while embracing the opportunities of the future.



Welcome Yarn	Indigital Masterclass	Indigital Educator Professional Development (PD)				Indigital Classrooms
<p><b>Waramii!</b></p> <p><b>Welcome Yarn</b></p> <p><b>Welcome to Indigital Schools!</b></p> <p>Join us around the virtual campfire for a friendly welcome call to kickstart your Indigital Schools learning journey.</p> <p>In this 30 minute session, you'll become familiar with the course content, what to expect and meet the Indigital team and other educators participating in the course.</p>	<p><b>Let's Connect!</b></p> <p><b>Indigital Masterclass</b></p> <p>Enhance your knowledge of cutting-edge technologies and join us for a unique learning experience integrating Indigenous ways of being, doing and knowing.</p> <p>Our professional development one day event offers something for everyone, from hearing engaging talks by guest speakers and industry experts to getting hands-on with the tech - like discovering what exactly is the Metaverse?</p> <p>Learn why it's important that we teach critical technologies in our classrooms and walk away with the tools to begin to embed your learnings in the classroom.</p> <p>We can't wait to connect with you in person!</p>	<p><b>Module 1 Reconciliation</b></p> <p><b>Indigenous Knowledge in the Metaverse: Engaging Students and Preserving Culture</b></p> <p><b>Duration: 4.8 hours</b></p> <p>This module will cover the potential of the Metaverse in sharing and preserving Indigenous knowledge. Participants will gain an understanding of Indigenous cultures, societies, and the significance of preserving their knowledge and stories. Additionally, participants will learn how to build a supportive community by engaging the appropriate people in your First Nations Metaverse project. The course will cover the identification of different Aboriginal and Torres Strait Islander communities in your area, understanding who to engage in your project, and respectful practices when working with Indigenous groups in your project.</p>	<p><b>Module 2 Collaboration</b></p> <p><b>Indigenous Cultural and Intellectual Property in your First Nations Metaverse Program</b></p> <p><b>Duration: 3.5 hours</b></p> <p>This module is designed to help educators understand and respect the ICIP (Indigenous Cultural and Intellectual Property) rights of First Nations peoples in the context of the metaverse. Participants will learn about the importance of ICIP rights, explore key issues related to ICIP in the metaverse, and develop strategies for supporting these rights in their classrooms and schools.</p>	<p><b>Module 3 Pathways</b></p> <p><b>Building a First Nations Metaverse Project: Design, Ethics and Tools for the Classroom</b></p> <p><b>Duration: 4 hours</b></p> <p>This module focuses on providing participants with the knowledge and skills required to create an Indigenous Metaverse project in their classroom. Participants will learn about the various jobs of the future that require these skills and the different tools, platforms, and resources available for creating First Nations metaverse experiences. Additionally, they will apply best practices for creating these experiences, including user experience design, cultural sensitivity, and ethical considerations. By the end of this module, participants will be equipped to design and create immersive digital spaces that reflect unique cultural values.</p>	<p><b>Module 4 Confidence</b></p> <p><b>A deep dive into Indigital Classrooms</b></p> <p><b>Duration: 2.5 hours</b></p> <p>In this module, participants will explore Indigital Classrooms, a program designed to provide young learners with access to digital skills training. Participants will take a student journey through the program, meeting Mading and learning about the program's goals and objectives. This module will model the Indigital Classrooms lessons, which include using digital tools to share and tell stories, creating digital art, and learning about Indigenous culture and language.</p>	<p><b>Your in-class toolkit</b></p> <p><b>Indigital Classrooms</b></p> <p>With Indigital Classrooms, young learners can embark on an incredible learning journey! Comprised of eight easily-navigated lessons and a friendly guide - Mading - the program provides comprehensive resources that will help unlock every student's potential. Through this engaging experience, students gain invaluable skills for their future success! And as their educator you have everything you need at your fingertips in our easy to navigate learning platform.</p> <p><b>"Get ready to join me on an educational journey! Together, with your students we'll explore this course and have a ton of fun along the way."</b></p>

### 3. BEST PRACTICE CASE STUDIES

#### 3.1 Microprogram in Smart Robotics Digital Technology Application – AI Talent Cultivation and Industrial-Academia Collaboration

This case study brought by **Dr. Kuen Ting** provided the descriptions of the operation and outcomes of the "Microprogram in Smart Robotics Digital Technology Application." The microprogram integrates various applications of robots (industrial and collaborative robots) with digital technology and hands-on training. It connects a series of courses, including "Robotics Programming and Implementation" (pre-

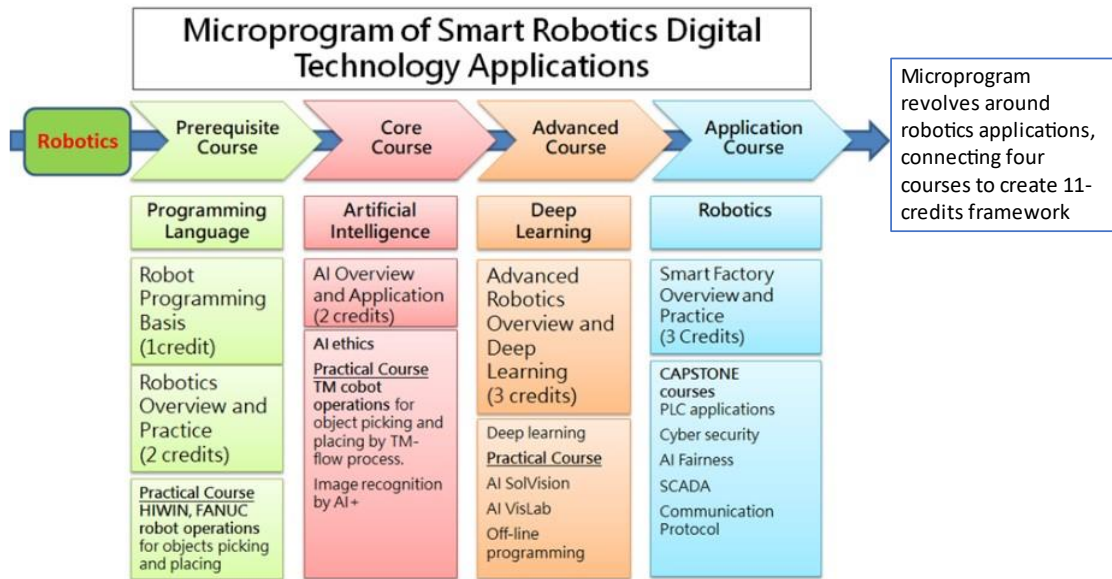
requisite), "Introduction to AI and Applications" (core), "Deep Learning" (advanced), and "Robotics Smart Factory" (application).

Dr. Kuen Ting presented the challenges and benefits of Vocational and Technical students in studying AI and digital technologies as follows:

- Challenges
  - ✓ Vocational and technical students tend to emphasize practical applications and operations in their studies.
  - ✓ They generally have weaker foundations in mathematics and programming compared to students in traditional universities.
  - ✓ They may experience inherent fear and difficulty in breaking through the entry barriers of AI and digital technologies.
- Benefits
  - ✓ Students will gain the skills they need to succeed in today's job market.
  - ✓ They will be prepared for the future of work.
  - ✓ They will be able to bridge the gap between their practical skills and theoretical knowledge.
  - ✓ They will be more confident in their ability to learn new technologies.
  - ✓ They will be more attractive to employers

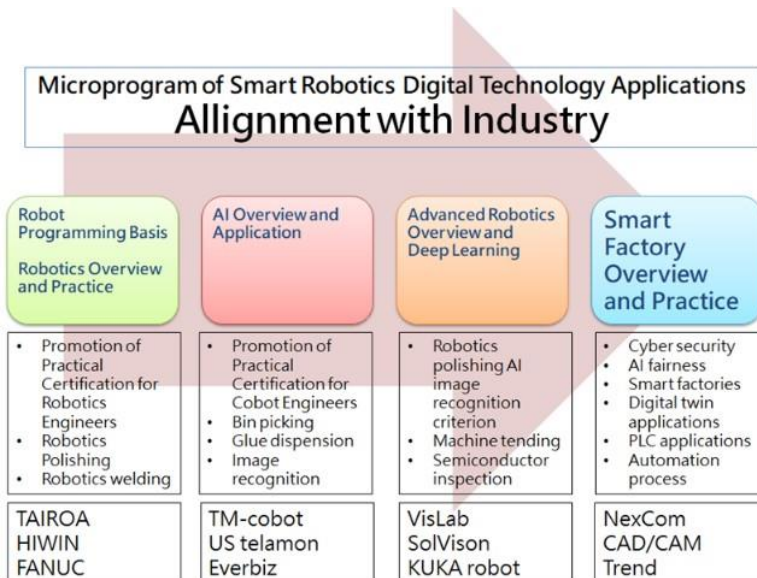
Through Project-Based Learning (PBL) and Capstone Course implementation, students are trained in understanding robotics and artificial intelligence. The series of courses incorporate industry practices and internships to align with the industry. Moreover, the microprogram addresses ethics, fairness, and robustness related to robotics and artificial intelligence, introducing these issues into the curriculum of the diverse robot network and smart factory courses, enhancing students' awareness of network security.

## The Planning Strategies of the Series of AI Courses



The microprogram will collaborate with the industry to develop robotics digital technology courses, achieving an integration of theory and practice. Students can obtain the Practical Certification of Robotics Engineers, driving practical and innovative applications that integrate their expertise. Participation in internships enables students to transition smoothly into the industry after graduation.

## Microprogram Alignment with Industries





### 3.2 Digital and AI Talent Development in Malaysian Higher Education Institutions

**Ts. Dr. Mohd Najib Hamdan** is the deputy director of the Department of Polytechnic and Community College Education (DPPCE) at the Ministry of Higher Education Malaysia. He is currently heading the digital learning and emerging technologies development for 36 Polytechnics and 105 Community Colleges in Malaysia.

This presentation emphasized the significance of talent development among Malaysian high education institutions (HEI) in the fields of digitalization and AI. This is due to the fact that this field has had an impact on the local economy. The requirement for digitalization and AI skill development is inextricably linked.

Digital analytics and cloud computing are two of the most important talent requirements in this industry in Malaysia. This presentation thus discussed numerous aspects influencing graduates' employability in this profession, such as the need for curriculum review, micro credential courses, work-based program, and others.

**Common Skill Requirements in Digital Job Vacancies**

**Malaysia**

1. Analytical Skills
2. Computer Science
3. Engineering
4. Software Development
5. SQL
6. Programming
7. Javascript
8. Cloud Computing
9. Information Technology
10. Java

**South East Asia**

1. Analytical Skills
2. Software Development
3. SQL
4. Engineering
5. Programming
6. Javascript
7. Java
8. Deslgn
9. Cloud Computing
10. Python

**Asia**

1. Analytical Skills
2. Java
3. Software Development
4. Engineering
5. Programming
6. SQL
7. Javascript
8. Cloud Computing
9. Python
10. Linux

**Analytical Skills** is the most commonly required skill for digital talents **across Malaysia, SEA and Asia**. **Programming** and **Cloud Computing** are commonly required as well.

It is also interesting to note that **digital marketing skills are not commonly required** considering their roles which are quite high in demand.

**Current and future AI talent needs**

Professionals	Current Total Headcount	Target Total Headcount (by 2025)	Percent change
Data Analyst	149	339	128%
Data Engineer	94	263	180%*
Software Engineer (for AI-related activities)	114	259	127%
Data Scientists (including Jr. and Sr.)	201	432	115%
Product Engineering (focus on AI applications)	70	205	193%**
AI Architect	40	171	328%***

Source: LinkedIn Talent Insight Report as of 1st of October 2021

APEC INDUSTRY - ACADEMIA COLLABORATION WORKSHOP ON INCLUSIVE DIGITAL TALENT DEVELOPMENT AND TECHNOLOGY (AI) - ENABLED SUSTAINABILITY: POLICIES AND EXAMPLES OF INDUSTRY - ACADEMIA PARTNERSHIP

**HIGHER EDUCATION INSTITUTION (HEI) IN MALAYSIA MUST WORK TOGETHER WITH INDUSTRY**

**EVERY PROGRAMME DESIGN MUST HAVE INDUSTRY PARTNER**

**EMPLOYERS AND HEI WORK TOGETHER TO ADDRESS TALENT POLICIES**

APEC INDUSTRY - ACADEMIA COLLABORATION WORKSHOP ON INCLUSIVE DIGITAL TALENT DEVELOPMENT AND TECHNOLOGY (AI) - ENABLED SUSTAINABILITY: POLICIES AND EXAMPLES OF INDUSTRY - ACADEMIA PARTNERSHIP

## Conclusion

- 1) INDUSTRY READY**  
Higher education institutions (HEI) produce industry -ready individuals by **offering relevant courses based on industry needs**. Even if the student is not in related the IT and AI programmed.  
HEI must have **sustainable collaboration initiatives with industry** .
- 2) GOVERNMENT , ACEDEMA AND INDUSTRY**  
**Government agency** acts as the **bridge** between industry, academia and the Government. Work together in developing AI and Digital Talent

APEC INDUSTRY - ACADEMIA COLLABORATION WORKSHOP ON INCLUSIVE DIGITAL TALENT DEVELOPMENT AND TECHNOLOGY (AI) - ENABLED SUSTAINABILITY: POLICIES AND EXAMPLES OF INDUSTRY - ACADEMIA PARTNERSHIP

## 4. PANEL DISCUSSION

Panelist			Moderator
			
<b>Dr. Methinee Wongwanich Rumpagaporn</b> Chairman Program, Department of Vocational Education, Faculty of Education, Kasetsart University	<b>Dr. Chuan-Yu Chang</b> Director Intelligent Recognition Industry Services Research Center, National Yunlin University of Science and Technology	<b>Dr. Yu-Min Wang</b> Distinguished Research Fellow General Research Service Center, National Pingtung University of Science and Technology	<b>Dr. Herlin Chien</b> Deputy CEO Office of Sustainable Development, National Pingtung University of Science and Technology

In this session, we invited 4 panellists to discuss the application of AI technology in sustainable development.

### **Smart ICT Precision Rice Cultivation -A Carbon Reduction Farming Method**

A water-saving based irrigation technique named as “Smart ICT rice paddy field servo system for precision rice cultivation” by employing environment and soil information and communication technologies will be introduced. The design considers the requirement on rice growth, pest development, and fieldwork management. The system is equipped with a solar power supply system and consists of sensors including illumination, air temperature, air humidity, water level, soil moisture content, soil electronic conductivity, and soil temperature. Internet of Things (IoT) is used for data transmission and a smartphone-based application (APP) has also been developed for users to monitor field environment and for the system decision making.

Moreover, system of probiotics rice intensification (SPRI) developed by the National Pingtung University of Science and Technology has been integrated into the system. The SPRI firstly introduced studied plant-growth-promoting rhizobacterias (PGPR) for rice cultivation through irrigation at tillering and panicle initiation stages for an effective way to maintain a reliable nutrients supply for rice growth.

This sustainable environmental farming technique could reduce water use by 30% compared with traditional cultivation, thus allowing for food production to be done in a way that protects the earth’s resources. As part of this method, the amendment of probiotics in the irrigation water that will help to diversify the microorganisms in the soil, make the environment healthier, and reduce fertilization frequency—and thereby reduce personnel costs. It not only saves water, fertilizer, chemicals, and manpower, a possible reduction of carbon emissions of 5.3 metric tons per hectare per growing season could be achieved.

## Value 1

### Reducing greenhouse gas emissions

- **Toward Sustainable Environment**
- **Net Zero Emissions**

## Value 2

### Lowering the use of agricultural inputs

- **Less Labor, Water, Energy**
- **Less Chemical Fertilizers**
- **Less Pesticide and Fungicide**



### Intelligent Recognition Industry Service Research center

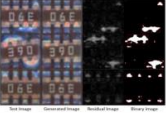
The Intelligent Recognition Industry Service (IRIS) Research Center has been dedicated to developing intelligent identification technology for a long time. In 2018, the center received support and funding from the Ministry of Education's Higher Education Sprout Project and has been selected as a Featured Areas Research Center. The IRIS Center contributes to industries such as industrial inspection, smart healthcare, and intelligent living, driving the transformation of Chinese Taipei's sustainable development through AI applications.

## R & D Results


**Intelligent Detection**

**Smart Healthcare**

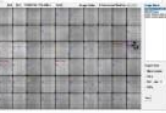
**Intelligent Living**




Solder Joints Defect Detection in DRAM Modules




Tire Bubble Defect Detection




Solar Module Defect Detection




Facial Heart Rate and Respiration Detection System




Infant Crying Recognition




Gait Analysis System



Smart Baby Monitor



Cultural Relics and Artwork Intelligent Recognition Design



Coffee Bean Classification

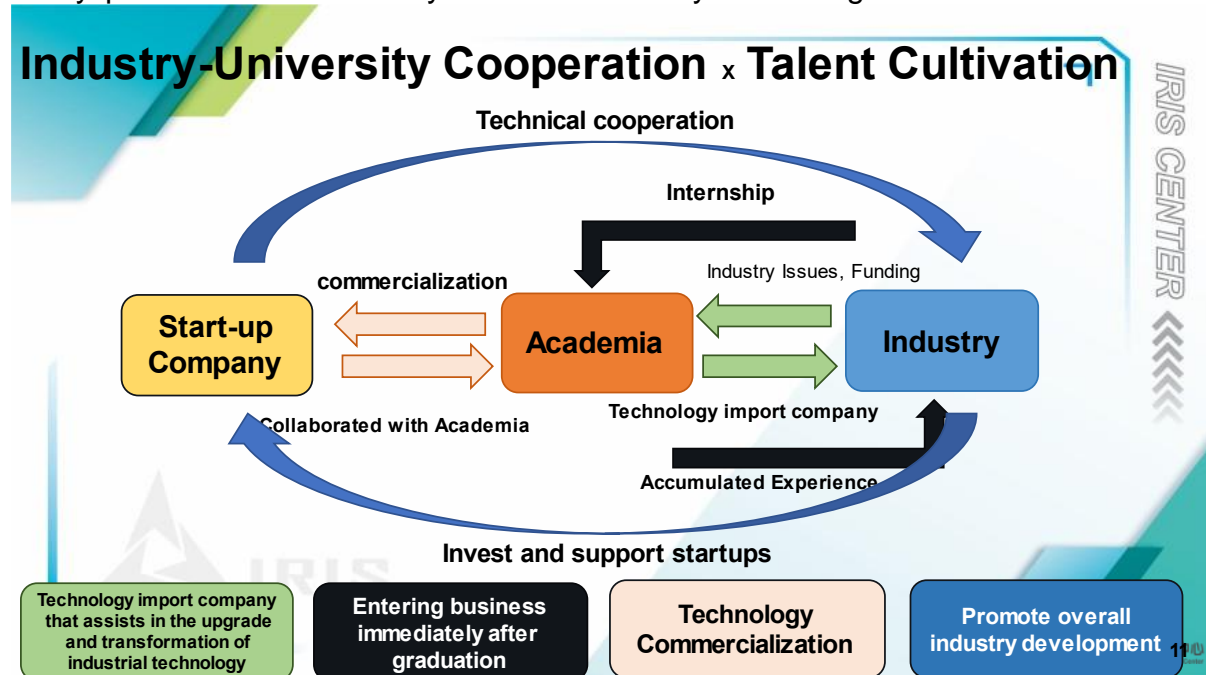
IRIS CENTER

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14



Since its establishment, the center has developed close to a hundred new technologies and counseled over 300 enterprises. Moreover, 90% of the developed technologies have been practically applied to related fields. IRIS is committed to being a key partner in sustainability transformation by cultivating scientific and AI talent.



### SMEs Potential with Sustainable Development in Thailand under Biotech Industries and Medial Instrument Industries among BCG Economy Model

Associate Professor **Methinee Wongwanich Rumpagaporn**, Chairman of Entrepreneurship Education Program, Kasetsart University shared with us the strategy and success cases on SMEs Potential with Sustainable Development in Thailand under Biotech Industries and Medial Instrument Industries during this panel discussion.

**Researches and User’s Need and Problems:** In Thailand's Biotech and Medical Instrument industries, thorough research and understanding of user needs and prevailing issues are imperative. This phase involves identifying challenges faced by stakeholders and leveraging AI technology to ascertain sustainable development solutions. AI-driven analytics aid in comprehending user requirements, enabling targeted innovation to address specific problems in these sectors.

**Assumptions and Creating Ideas to Find Solutions:** Developing assumptions and generating innovative ideas to resolve identified challenges is crucial. AI technology plays a pivotal role here, facilitating data-driven insights to validate assumptions and ideate solutions. Leveraging AI algorithms assists in brainstorming, validating hypotheses, and generating innovative concepts aligned with sustainable development goals in Thailand's BCG Economy Model.

**Product Development with Prototype:** Following the ideation phase, the focus shifts to product development, leveraging AI-based simulations and modeling. AI assists in

streamlining the development process, optimizing resources, and ensuring eco-friendly practices. Prototyping involves using AI-powered tools for iterative improvements, aiming for sustainable product designs within the Biotech and Medical Instrument sectors.

**Testing and Launch in Relevant Industries:** AI technology supports rigorous testing methodologies to ensure product efficiency and sustainability. In Thailand's Biotech and Medical Instrument industries, AI-driven simulations and predictive analysis aid in evaluating prototypes, facilitating informed decisions before launch. It allows for preemptive adjustments, ensuring alignment with sustainable development objectives upon market introduction.

**Pilot and Commercial Sector:** Implementing AI-integrated solutions within the pilot and commercial sectors marks the final stage. Here, AI applications continue to monitor product performance, enabling adaptive improvements aligned with sustainable development goals. The technology facilitates data-driven insights, enabling swift responses to market demands while ensuring environmentally conscious practices within Thailand's BCG Economy Model.

The panel session aptly encapsulated the integration of AI technology into various sectors for sustainable development, resonating profoundly with our objective of creating a market-responsive program that aligns education institutions and industries with the digitalized world. These profound insights, such as the Smart ICT Precision Rice Cultivation, represent cutting-edge innovations merging environment and soil technologies, utilizing IoT and smartphone applications for precision farming. Similarly, the Intelligent Recognition Industry Service (IRIS) Research Center exemplifies the transformative potential of AI in industrial inspection, smart healthcare, and intelligent living. Furthermore, the emphasis on SMEs within Thailand's Biotech and Medical Instrument sectors unveils a comprehensive strategy leveraging AI-driven analytics, simulation, and product prototyping for sustainable solutions. The structured approach from research and ideation to product development and commercialization, all integrated with AI, demonstrates the potential of technology-enabled collaboration in transforming industries. These case studies underscore the crucial role of AI in cultivating digital and inclusive talents, fostering innovation, and driving sustainable growth. By harnessing AI's power to understand user needs, generate innovative ideas, and ensure eco-friendly practices, this session has laid the groundwork for fostering partnerships and initiatives that bridge education and industry towards a digitally progressive and environmentally conscious future.

## CONCLUSION

### 1. **Gender impact**

When reviewing the registration data, we found the number of female participants was only over 30% (40 out of 129). We had a total of 129 on-site participants in this event, of which 40 (31%) were female. We invited 38% female speakers (3 out of 8 speakers).

### 2. **Relevance to each participant's economy**

The post-event survey showed that 95.5% of participants found the project relevant to their economy. 95.6% of participants received substantial knowledge on industry-academia collaborations.

### 3. **Capacity Building for Target Beneficiaries**

Participants attended the Workshop with diverse objectives centred around enhancing their understanding and implementation of industry-academia collaboration, particularly focusing on the advancements in TVET practices. Goals encompassed learning best practices, understanding AI applications, promoting collaboration between industry and academia, gaining insights from various economies' experiences, and seeking knowledge on technology integration, policy development, and sustainable education. Attendees also aimed to exchange ideas, seek collaboration opportunities, and gather information on AI applications and educational cooperation across different economies. The overarching theme among their goals in participating in this project was to acquire insights, share experiences, and foster partnerships to advance education, technology, and collaboration between academia and industry in their respective economy.

The participants, consisting of high and mid-level government officials from educational agencies across APEC economies and esteemed figures in academia focusing on industry-academia collaboration, engaged in the Workshop to augment their capacity building initiatives. Through the event, a diverse spectrum of knowledge was acquired. Insights centred around emerging AI technologies and their widespread applications globally, industry-academia collaborations, and the advancements made by various economies in AI development were gained. In the post-event survey, the participants responded that they have broadened their understanding of AI's practical implications across multiple sectors and identified strategies for incorporating AI courses in contemporary education models. Moreover, they explored successful models of collaboration between government, industry, and academia, fostering their ability to implement effective policies and methods in their respective regions.

The event also facilitated the acquisition of practical skills and theoretical knowledge, including insights into digital literacy, cultural competence regarding AI, sustainable technology, talent development in AI and digitization, and the utilization of AI in various domains such as agrotech. Participants also delved into the intricacies of infrastructure required for educational-industry collaborations and gained exposure to new thinking paradigms for cross-region cooperation. Furthermore, they discovered AI applications in agriculture, enhanced their

teamwork and technological proficiency, and gained an understanding of educational program organization and AI's role in sustainable development.

In summary, the Workshop offered participants a comprehensive understanding of AI's multifaceted applications, effective strategies for collaboration between industry and academia, and practical approaches for integrating AI into education, policymaking, and sustainable development initiatives, thereby fortifying their capacity to implement substantive recommendations and operative models in their respective domains.

#### 4. **Possible examples for utilizing the knowledge they gained from the forum**

The participants gained substantial insights and skills during the event, providing a foundation for transformative actions upon returning to their home economies. Examples of how they could utilize this knowledge include:

1. **Policy Reforms and Program Development:** Implementing new policy initiatives or regulations in digital education, vocational colleges, or professional technical higher education. This could include drafting policies integrating AI into curriculums, designing new programs, or establishing initiatives promoting AI in various fields like agriculture or healthcare.
2. **Training and Workshops:** Organizing training sessions, workshops, or study tours to share gained knowledge with stakeholders, faculty members, or students. Collaboration with other APEC economies could lead to the development of training regulations, strategies, and work plans for AI education.
3. **Collaboration Initiatives:** Creating partnerships or memorandums with APEC economies to facilitate knowledge exchange, potentially enabling student or faculty exchanges and joint research projects.
4. **Curriculum Development:** Incorporating AI concepts into educational curriculums, developing micro-courses, and introducing AI education to the community or vocational colleges, emphasizing hands-on learning and practical applications.
5. **Infrastructure and Collaboration Enhancement:** Evaluating existing AI laboratories, fostering multidisciplinary networks between academia and industries, and engaging in collaboration and engagement initiatives with relevant stakeholders.
6. **Application and Research Integration:** Integrating AI concepts into teaching practices, clinical trials, or day-to-day life, focusing on practical applications and assessing performance using AI tools.
7. **Healthcare and Industry-Specific Initiatives:** Developing work plans or strategies specifically for AI applications in healthcare or industry, redefining school development strategies, and introducing AI education to expand expertise in these domains.
8. **Consultation and Exchange Programs:** Organizing training or workshops with APEC project participants as consultants or facilitators, fostering

collaborations, and enabling students to pursue further training in Taipei, involving industries and universities.

9. **Observation and Adjustment:** Studying, observing, and planning the integration of AI concepts in education and daily life, subsequently adjusting teaching practices, research directions, and curriculum development.

10. **Recommendations and Planning:** Making recommendations to institutions for immediate cooperation related to research, student exchanges, or further studies in Taipei, promoting integration and collaboration in the APEC region.

Overall, these initiatives aim to leverage the knowledge gained from the Workshop to enact significant changes in education, policy-making, industry collaboration, and curriculum development, thereby advancing AI education and application within their respective economies.

# 2023 APEC Industry-Academia Collaboration Workshop

Thank you all for your participation and great addition to our 2023 APEC Industry-Academia Collaboration Workshop in Taipei!

We greatly value your comments on our workshop.  
Please help us improve our future events by completing this survey.

[lochung@mail.ntut.edu.tw](mailto:lochung@mail.ntut.edu.tw) [切换帳戶](#)



未共用的項目

\* 表示必填問題

## Basic Information

**Full Name \***

您的回答

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**Email Address \***

您的回答

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**Gender \***

Female

Male

其他:

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**Which economy are you representing? \***

- AUS Australia
- BD Brunei Darussalam
- CDA Canada
- CHL Chile
- PRC People's Republic of China
- HKC Hong Kong, China
- INA Indonesia
- JPN Japan
- ROK Republic of Korea
- MAS Malaysia
- MEX Mexico
- NZ New Zealand
- PNG Papua New Guinea
- PE Peru
- PHL The Republic of the Philippines
- RUS The Russian Federation
- SGP Singapore
- CT Chinese Taipei
- THA Thailand
- USA United States
- VN Viet Nam

**How did you know about this event? \***

- APEC nomination
- TECO nomination
- 其他: \_\_\_\_\_

**What was your primary goal in attending this workshop? \***

您的回答 \_\_\_\_\_

**Please indicate your satisfaction with the following aspects of the event.**

**Quality of Event Venue \***

	1	2	3	4	5	
Not satisfied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very satisfied

**Quality of Speakers \***

	1	2	3	4	5	
Not satisfied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very satisfied

**Quality of Sessions \***

	1	2	3	4	5	
Not satisfied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very satisfied



**Was the content well-organized and easy to follow? \***

	1	2	3	4	5	
Not satisfied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very satisfied

**Substantial knowledge increase on industry-academic collaborations shared within APEC region \***

	1	2	3	4	5	
Not satisfied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very satisfied

**Relevance to your representing economy \***

	1	2	3	4	5	
Not relevant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very relevant

**How satisfied were you with the networking opportunities provided? \***

	1	2	3	4	5	
Not satisfied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very satisfied

**Capacity Building on promoting academic-industry collaboration \***

	1	2	3	4	5	
Not satisfied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very satisfied

**What did you most enjoy about our Workshop? \***

您的回答

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**What new skills or knowledge did you gain from this event? \***

您的回答

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**How will you utilize the skills and knowledge gained from this event after your return to your home economy? \***

**Please provide examples (e.g. develop new policy initiatives, organize training, develop workplans/strategies, draft regulations, develop new curriculums/programs/tools etc.).**

您的回答

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**What topics would you like to see more of at our next event? \***

您的回答

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**Do you have a friend or colleague who would enjoy speaking at our future events? \***

您的回答

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**Is there anything else you would like us to know? \***

您的回答

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