

Exploring Ways to Enhance the Cross-Border Development of Skilled Professionals across the APEC Region

APEC Human Resources Development Working Group

January 2024



**Asia-Pacific
Economic Cooperation**



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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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1 Introduction

The pace of innovation across industrial and business sectors has increased rapidly in recent years, particularly with regard to digital technologies. Some are even referring to our current era as a new phase of the Industrial Revolution (Industry 4.0), one that is centered on digital transformation. Given these conditions, having skilled professionals with high-level training and expertise in digital technologies is more critical than ever when it comes to maintaining growth and innovation. Across the APEC region, the demand for skilled professionals is expected to grow even more as the region continues to recover from the economic and social impacts of the COVID-19 pandemic.

Already there are a wide range of new skills development initiatives in place in economies across the APEC region, and many of them focus not just on skills development and capacity building at the economy level, but also on cooperating across borders to achieve these goals. And some of the economic challenges that arose during the pandemic—including logistical challenges such as supply chain disruption as well as human resources challenges such as the lack of sufficient numbers of workers with specific skills training—have generated policy responses across APEC economies. These include new measures for cross-border training and workforce development in fields like digitalization.

This project aims to highlight and promote the efforts already being made to spur the development of skilled professionals across APEC, and to encourage the work of enhancing and building upon those efforts as we look to a future with ever greater need for skilled professionals. In this report, findings are presented both from 1) a series of case study profiles on initiatives from around the APEC region that foster the development of skilled professionals; and 2) an online workshop that explored best practices among training programs for skilled professionals and the impact of such programs.

The case study profiles were designed to facilitate further discussion among APEC economies and stakeholders, both in the online workshop and beyond. The five initiatives that were selected for profiling include notable examples of policies for developing skilled professionals and good practices for creating an environment that promotes job opportunities for skilled professionals across borders. They were also selected on the basis of geographical and economic diversity (Australia; Malaysia; Singapore; the United States, and ASEAN), period of implantation, scale and impact, private sector involvement, digital industry focus, and representing a novel approach.

The online workshop was intended to promote the further development of cross-border initiatives to develop skilled professionals across the APEC region. With two expert panel sessions comprised of a number of scholars and public sector practitioners, the workshop allowed for the collaborative sharing of good practices on training initiatives and measures instituted by public and the private sector. The expert presenters came from a wide range of institutional backgrounds and represented the economies of Japan; Malaysia; the Philippines; Cambodia; and Viet Nam.

This report summarizes both components of this project. The larger goal is to inspire innovative new cross-border means of developing skilled professionals through education, training, and the creation of new job opportunities.

2 Project Background

2.1 Context

It is particularly important at the present moment for APEC member economies to collaborate with each other across borders to develop skilled professionals. By doing so, they can 1) seize opportunities and 2) address challenges that have risen in recent years.

As opportunities, there is growing demand for skilled workers in general as economies recover from the COVID-19 pandemic. There is a particular need for workers in fields that are growing in importance due to digitalization and new technology advancements. For example, the ILO estimates that a shift to a greener economy could create 24 million new jobs globally by 2030¹. New skills development programs also provide an opportunity to prioritize underserved populations such as women and minorities.

Challenges that can be addressed by training more skilled workers include declines in the number of new graduates with STEM backgrounds. Some APEC member economies are struggling to maintain a skilled workforce due to aging populations, and skilled workers trained in other parts of the region may be able to fill in the gap. Another challenge that deserves support from skilled professionals is the vulnerability of the supply chain to disruptions, which was exposed during recent crises such as the COVID-19 pandemic and economic recovery that follows. Skills training can also help economies to better address the growing demand for action on global challenges such as climate change.

Developing skilled professionals benefit not only individual economies but also the APEC region as a whole. In addition to their contribution to economic growth and competitiveness, increasing the number of skilled workers could also create more inclusive economic growth, especially if it is accessible to people facing structural barriers to economic participation. Skills programs can also help to address wage pressures in certain high-skill fields, helping to address the rise in wage pressures in many APEC economies in recent years².

Many efforts were made by various entities to encourage and accelerate cross-border cooperation to develop skilled professionals. For example, APEC Human Resources Development Working Group (HRDWG)'s Capacity Building Network (CBN) prioritizes cultivating a new mindset towards capacity building, such as exploring cross-border cooperation in this area, and efforts to reskill and upskill workers in response to the post-pandemic economic recovery, as laid out in its 2022-2025 Roadmap as four Strategic Directions³. At economy level, for instance, Japan and member economies of ASEAN strengthened their already strong ties to make the entire supply chain resilient. Under the newly introduced initiative, the ASIA-Japan Investing for the Future Initiative (AJIF)⁴, over the next 5 years, Japan is extending support to provide opportunities for ambitious 50,000 highly-skilled Asian professionals to seek jobs in Japanese companies in Asia as well as Japan.

With this context, the current project sought to promote the further development and employment of skilled professionals across APEC economies through identifying and analyzing relevant policies and initiatives, presented in the current report, while providing a venue for interested stakeholders to discuss the matter in a form of an online workshop.

2.2 Project Components

This project has three major components:

1. A **collection of cases** assembled through literature research:
The research team was tasked to collect examples of economy-level policies and initiatives that:
 - 1) develop skilled professionals in APEC economies and;
 - 2) create an environment that promotes job opportunities for skilled professionals across borders in the APEC region.This activity resulted in the list of 22 cases that were presented to the Project Overseer.
2. A **case study of exemplary cases** with deeper analysis
The research team then, while consulting the Project Overseer, selected five exemplary cases and conducted deeper analysis for each of them. The case profiles can be read in the latter chapters in this report.
3. A **virtual workshop** on cross-border development of skilled professionals
The research team simultaneously prepared for and hosted an online workshop in late January 2023, just before the SOM1 meetings to be held in the United States. The workshop convened APEC member economies and expert speakers, and invited guests to discuss development of skilled professionals and job-creation for them and to provide key insights that were later incorporated into this final report. The materials from the symposium, including a symposium report, the agenda, an audience survey and the speaker biographies, are appended to this report in the Annex.

2.3 Methodologies

2.3.1 Collection of Cases

From November through December 2022, the project team conducted a thorough review of available global literature on skilled professional development to assemble cases. The team focused its search on skills and knowledge that is needed today or will be needed in the near future in the APEC region, as economies recover from COVID-19. The team also focused on industry sectors where skilled workers are highly demanded, including but not limited to information and communications technologies (ICTs), advanced manufacturing, and supply chain management. Further, the team also tried to include initiatives that are designed and implemented through collaboration between the public and private sectors.

All 21 APEC economies were included in the scope of this preliminary research, and efforts were made to identify cases that involve as many member economies as possible. Researchers collected information through official reports and other publications by public sector agencies that oversees collected policies and initiatives, as well as private media coverage and analytical reports issued by international organizations, such as the Asian Development Bank (ADB).

2.3.2 Case Study of Exemplary Cases

After completion of the preliminary research to collect cases, the research team narrowed down the list to identify policies and initiatives to be studied as exemplary cases. Policies and initiatives were selected using the following criteria.

- **Geographical and economic diversity.** In order to accurately capture the diversity within the APEC region, policies/initiatives from economies in various geographical locations & at varying levels of economic development were selected.

- **Period of implementation.** In order to understand the most recent trends, ongoing policies/initiatives, or policies/initiatives implemented within the past 5 years (2017-) were selected.
- **Scale and impact.** Policies/initiatives that have been recognized for their scale and/or impact (e.g., funding level, no. of workers trained, no. of job opportunities created) were selected.
- **Private sector involvement.** Where possible, workforce initiatives in which public and private sector actors worked together to find solutions to common challenges were included.
- **Digital industry focus.** Where possible, policies/initiatives with a digital industry focus were included.
- **Novel approach.** Where possible, policies/initiatives recognized by the public (i.e.; reported by the media) for their innovative approach in solving workforce-related challenges were included.

Researchers then put together a profile for each selected cases, based on their literature research. The organizations that oversee or operate each studied policy or initiative were also contacted for interviews, the list of such organizations who provided information for this report are as follows:

Economy	Program	Organization
Malaysia	MyDigitalWorkforce Work in Tech (MYWiT) initiative	Malaysia Digital Economy Corporation (MDEC)
ASEAN Members and the United States	Go Digital ASEAN public-private partnership initiative	The Asia Foundation

2.3.3 Virtual Workshop

On 27 January 2023, a workshop “**Enhancing the cross-border development of skilled professionals across the APEC region**” was held online.

The purpose of the workshop was to promote the further development and utilization of skilled professionals across the APEC region. The event shared best practices on cross-border initiatives and measures by the public sector and private sector to develop skilled professionals through education, training and the creation of new job opportunities. The workshop had twin focus on developing skilled professionals and creating job opportunities.

3 Results of Each Activities

3.1 Collection of Cases

Through the comprehensive literature review, the research team identified the total of 22 policies and initiatives implemented by APEC member economies. These cases were compiled into a spreadsheet with each case's brief explanation and presented to the Project Overseer.

Table 1 shows the breakdown of 22 identified cases by 21 APEC member economies. As the table shows, 13 member economies were covered by at least one of the 22 cases. Moreover, the identified cases were distributed to all five regions where APEC member economies belong; North America, South America, East Asia, Southeast Asia, and Oceania.

By categories, the research team was able to assemble 15 cases under the category 1: policies for developing skilled professionals in APEC economies. They were concentrated in the Southeast Asia region, although the researchers identified at least one from every region. For the category 2, good practices for creating an environment that promotes job opportunities for skilled professionals across borders, seven cases were identified. Four of them were concentrated in the East Asia region, while the remaining three were identified in Southeast Asia.

3.2 Case Study of Exemplary Cases

The research team selected five notable examples out of the 22 identified cases for its case study (For more details on how the exemplary cases were selected, please see 2.3.2 under the chapter 2.3 Methodologies).

As one can see in the Table 1, four cases were under the category 1 and another case was under the category 2. It must be noted, however, some of these classifications overlap, and some cases under category 1 may also include elements that fall under the category 2, and vice versa.

The following pages list case profiles for each of these five exemplary cases.

Table 1: Break Down of Identified Cases by Economy and Region

Region	Economy	cases	category*		case study subjects	category*		multiple econ. Initiative	ASEAN member**
			1	2		1	2		
Oceania	Australia	2	2	0	1	1	0		
Asia, SE	Brunei Darussalam	0	0	0	0	0	0	Yes	Yes
Ame, N	Canada	0	0	0	0	0	0		
Ame, S	Chile	2	2	0	0	0	0		
Asia, E	People's Republic of China	0	0	0	0	0	0		
Asia, E	Hong Kong, China	0	0	0	0	0	0		
Asia, SE	Indonesia	1	1	0	0	0	0	Yes	Yes
Asia, E	Japan	3	0	3	0	0	0		
Asia, E	Republic of Korea	0	0	0	0	0	0		
Asia, SE	Malaysia	2	2	0	1	1	0	Yes	Yes
Ame, N	Mexico	0	0	0	0	0	0		
Oceania	New Zealand	1	1	0	0	0	0		
Oceania	Papua New Guinea	0	0	0	0	0	0		
Ame, S	Peru	0	0	0	0	0	0		
Asia, SE	The Philippines	0	0	0	0	0	0	Yes	Yes
Asia, E	Russia	0	0	0	0	0	0		
Asia, SE	Singapore	3	3	0	1	1	0		Yes
Asia, E	Chinese Taipei	2	1	1	0	0	0		
Asia, SE	Thailand	0	0	0	0	0	0	Yes	Yes
Ame, N	United States	3	3	0	1	1	0		
Asia, SE	Viet Nam	0	0	0	0	0	0	Yes	Yes
Asia, SE	multiple (ASEAN)	2	0	2	1	0	1		
Asia, SE	multiple (ASEAN - Singapore + several other non-APEC economies)	1	0	1	0	0	0		
Ame, N		3	3	0	1	1	0		
Ame, S		2	2	0	0	0	0		
Asia, E		5	1	4	0	0	0		
Asia, SE		9	6	3	3	2	1		
Oceania		3	3	0	1	1	0		

* initiatives are classified into the following two categories: 1) Policies for developing skilled professionals in APEC economies; 2) Good practices for creating an environment that promotes job opportunities for skilled professionals across borders.

** ASEAN members not listed in this table are Cambodia, Lao PDR, and Myanmar.

3.2.1 Australia – Digital Skills Organisation (DSO) Pilot

Category	1) develop skilled professionals in APEC economies
Implementation period	June 2020 – June 2023
Scale	n/a – would be useful to obtain this info via interviews
Overview	The Digital Skills Organisation (DSO) is one of three industry-led Skills Organisation pilots designed to inform broader improvements to the training system in Australia. It was incorporated as a company limited by guarantee in June 2020 and is funded by the Australian Department of Employment and Workplace Relations through the Delivering Skills for Today and Tomorrow package. The DSO will test innovative approaches to digital skills training to ensure that programs meet the skills needs of employers and help grow Australia’s digitally skilled workforce. It will focus on identifying skills needs, developing agile qualifications, and improving the quality of training delivery and assessment, aiming to "develop sustainable employer-led approaches that create a digitally upskilled, job ready workforce."

3.2.1.1 Background, Goals and Objectives

A shortage of workers skilled in digital technology has been a growing problem in Australia in recent years, and it was only exacerbated by a growth in digital demands with the onset of the COVID-19 pandemic. In 2015, Deloitte began publishing an annual report on the state of Australia’s technology sector, and in every report since then, it has stressed the ongoing need for growth in the technology workforce. While Deloitte’s 2022 report noted the largest growth in the tech workforce in 2021 since reporting began in 2015—with a new total of 870,300 tech workers, up from 805,525 in 2020—significant growth is still needed to reach the Australia targets of 1.2 million workers by 2030.⁵ Recent research from Salesforce also indicates that Australia faces a shortage of digital skills and digital readiness within its current workforce. Salesforce’s Global Digital Skills Index 2022 (based on surveys of workers’ thoughts on digital skills) reveals that while the average global score for digital readiness is 33 out of 100, Australia’s score is just 21.⁶

Given this critical shortage in digitally skilled workers, the Australia has made growing its digitally skilled workforce a key priority. Indeed, within five years some 90% of Australian workers are expected to need to apply digital skills in their work, and as the DSO notes on its website, “every worker is now, or will be, one who needs digital skills.”⁷ In response to these workforce shortages and forecasts for the increasing centrality of digital skills, Australia’s Department of Employment and Workplace Relations (DEWR) in 2020 established the Digital Skills Organisation (DSO) pilot program as a central component of its effort to grow its economy’s digitally skilled workforce.⁸ The goal of the DSO is to help Australia reach its goal of becoming a leading digital economy by 2030, with an appropriately skilled workforce to support this achievement. More specifically, the DSO is tasked with developing a more efficient and effective means of digitally upskilling its workforce, which includes training new people to bring into the workforce as well as providing digital skills training for those already in the workforce. As a pilot program, it operates in conjunction with employers, trainers, and employees to develop and test training protocols that will simplify the digital skills sector and ensure that training meets the needs of employers.

3.2.1.2 Strategies and Methodologies

The DSO has undertaken a number of strategies in order to reshape Australia’s digital skills training sector. First, it has worked collaboratively with the three main stakeholders—employers, trainers, and employees—in addition to involvement from public sector, peak bodies⁹, unions, and other tertiary institutions. It has also placed an emphasis on simplifying training models, creating a more user-friendly experience for trainees and for employers. And lastly, it has highlighted the significance of developing digital equality, making it easier for all Australians to gain the skills that will keep them employable in the future.

In terms of its methodologies, the DSO has created a model consisting of three main elements: digital skills pathways, digital skills standards, and networks of excellence.

- Digital skills pathways are areas of digital learning and specialization and are based on skills clusters as identified by industry. They are designed to help trainees or employees make informed decisions about employment or about changing careers, to assist employers in identifying which skills they need in their employees, and to help training providers align on priorities for developing training strategies. There are currently seven digital skills pathways, but a real-world digital career pathway might include elements from several pathways, in addition to non-digital skills. The seven skills pathways are digital fluency, digital design, digital intelligence, digital innovation, digital security, digital technology, and digital transformations.
- Digital skills standards refer to the skills and performance levels required by employers in the workplace, with the goal of aligning digital skills training with real-world workplace needs and responding quickly to fast-paced technological changes. The DSO has developed five industry-endorsed standards—digital literacy, digital fluency, cybersecurity, data analytics, and software development—but employers can also customize their own skills standards. These skills standards serve as the building blocks for training and assessment design.
- Networks of excellence refer to the collection of resources and tools used to support skills-based training. The DSO training approach is focused on outcomes, and this network provides tested methods by which employers and training providers have successfully worked together to help trainees/employees develop digital skills.

3.2.1.3 Results

Since the DSO has only been in existence for three years and has a goal of effecting long-term change, there is not yet a great deal of evidence available demonstrating results. Many of the trial projects are not yet to the phase of identifying and releasing findings. One that has begun to do so, however, is the Train 100 Data Analysts project. The goal of this pilot project was to train data analysts via more accessible and inclusive digital skills pathways. Significant findings include three of the four learning cohorts reaching a 92% completion rate, and 57% of participants securing employment in a data analytics role.¹⁰

Furthermore, the DSO has been recognized by the Australia through its selection to begin transitioning toward status as a Jobs and Skills Council, which would make its work more permanent. It has currently been selected for stage one of this transition process, and if selected for stage two, it will continue beyond the pilot’s June 2023 end date with a new name.¹¹

3.2.1.4 Success Factors and Lessons Learned

On 8 April 2021, the DSO held the “DSO Q1 showcase,” a virtual event in which a representative from the DSO shared updates on the DSO’s Q1 activity and then held a discussion with panelists who represented organizations that participated in the Train 100 Data Analysts project.

The following areas of success were highlighted by the panel participants:

- A representative from a training organization pointed out the critical importance of having an ongoing conversation with employers and breaking down barriers that could keep employers from becoming an active player in the skills training process. He discussed how the organization utilized benchmark assessments of digital skills of current employees in order to identify skills needs, set goals, and accurately understand the outcome of the trainings.
- A representative from a training organization that works with diverse populations noted that collaborative work with a variety of indigenous organizations (e.g.: indigenous chambers of commerce, groups such as Empowered Communities) has been crucial in reaching certain indigenous cohorts and assessing skill needs that are unique to each community.
- The same representative also pointed out that conducting a thorough training needs assessment of all participating students helped them compare student needs with the actual skill needs of companies.
- A representative from an employer pointed out that there are major benefits for the employer to participate in the pilot, such as getting insight into the talent pool and being able to shape the training with the skills that are relevant in industry today.

On the other hand, the following challenges/lessons identified from the activities so far were raised by the panel participants:

- A representative from a training organization that works with diverse populations pointed out that things that people in urban areas take for granted (e.g.: access to technology and strong internet connection) can pose unique challenges when working with indigenous communities.
- The same representative also pointed out that there is often a huge discrepancy among one group of students in their level of prior knowledge and experience, which requires the training organization to manage the participants' learning carefully, and sometimes even divide them into smaller groups.¹²

3.2.2 Malaysia – MyDigitalWorkforce Work in Tech (MYWiT) initiative

Category	1) develop skilled professionals in APEC economies
implementation period	2021 - ongoing
scale	USD24 million in training and salary incentives, benefiting more than 300 companies
overview	MyDigitalWorkforce Work in Tech (MYWiT) is a training and hiring incentive program that is aimed at "boosting the digital business services sector as well as developing quality tech talent in Malaysia" while simultaneously reducing unemployment. Funded by the Government of Malaysia via the Malaysia Digital Economy Corporation (MDEC), it incentivizes employers to hire Malaysians for digital tech and services jobs via salary and training subsidies. The initiative offers qualified employers, for each employee undergoing training, a 40% salary subsidy for 6 months and training incentives for in-house or external/3rd party training. MYWiT offers these salary and training incentives in the areas of Digital Tech and Digital Business Services, with training available for these roles within any industry sector.

3.2.2.1 Background, Goals and Objectives

Like many economies globally, Malaysia found itself at the start of the COVID-19 pandemic in 2020 with a shortage of digitally skilled workers just as pandemic-fueled changes were spurring the need for more such workers. Furthermore, the pandemic also created economic disruptions that led to an increase in unemployment among Malaysians. Under the Malaysian government’s multi-faceted plan for addressing the challenges wrought by the pandemic, known as Kumpulan Wang COVID-19, one of its initiatives aimed to address the urgent need both for more digitally skilled workers and for an easing of unemployment. Known as the MyDigitalWorkforce Work in Tech initiative, or MYWiT, the initiative was intended to “spur job creation and reduce unemployment among Malaysians,” according to the official MYWiT website, and at the same time to “incentivize[s] employers to hire Malaysians for digital tech and services jobs via salary and training subsidies.”¹³ Through “upskilling” and “reskilling” via programs like MYWiT, government officials hoped to increase the resiliency among Malaysian workers to digital talent to be resilient in the ever-changing job market, while helping Malaysian technology-related businesses to compete in the global market¹⁴.

The program is managed by MDEC, which aims to build a digital society that is not only digitally literate but also agile and competent contributors to the economy¹⁵. MYWiT was officially launched in April 2021, but it grew out of an earlier MDEC initiative that launched in August 2020, known as the #MyDigitalWorkforce movement. MYWiT draws its name from this 2020 initiative, which aimed to help reskill and upskill Malaysians for digital economy jobs, just like MYWiT. Significantly, MYWiT also draws from the Malaysia Digital Economy Blueprint (MyDIGITAL), which was launched in February 2021 and lays the groundwork for the creation by 2025 of 500,000 new jobs, the investment of USD15 billion (MYR70 billion) in digitalization, and the extension of internet access to all Malaysian households.¹⁶ The chairman of MDEC, Dr. Rais Hussin, explained the objective of MYWiT in terms of MyDIGITAL’s vision of a digitally advanced future for Malaysia, explaining that “Skilling Malaysians digitally as facilitated by employer-incentivised programmes like MYWiT counters unemployment, progressing our nation along the Malaysia 5.0 journey.” More specifically, the program’s goals are to upskill and subsidize employees and businesses, benefiting some 300 companies, generating an estimated 6,000 new job opportunities, and producing at least 1000 “quality tech talents.”¹⁷

3.2.2.2 Strategies and Methodologies

One of the main strategies of the MYWiT initiative was to focus on simplicity and ease of use for both employers and employees. The eligibility criteria and structure for incentives have both been kept simple and straightforward in order to expedite the implementation of employee training. Also significant is MYWiT's targeting of companies that offer digital roles that are in high demand.

In terms of methodologies, as noted above some USD24 million in funds have been allocated to the program. That funding goes toward two types of incentives for employers looking to hire and train employees to be digitally skilled: a salary subsidy and a training subsidy. The salary subsidy amounts to 40% of the employee's monthly salary for six months (capped at MYR2,600 per individual per month). The training subsidy allows hiring companies to receive up to MYR5,000 for in-house training for each employee or up to MYR8,000 for training by third-party providers. Incentives are available for jobs in the areas of Digital Tech or Digital Business Services, including such specialties as data science, cybersecurity, software applications, Fintech, etc. The companies under consideration must also meet eligibility requirements: most significantly, they must be incorporated in Malaysia, they must be financially secure, and they must not be in the public sector. The employees under consideration must be Malaysian citizens; they must show that they have been unemployed for at least two months or are a recent graduate or a retrenched employee; and they must not have received funding under other recent government hiring initiatives.

3.2.2.3 Results

Since MYWiT is a relatively new program, there doesn't appear to be much data available yet as to the concrete results of its efforts. However, it has attracted positive attention from the Asian Development Bank; the July 2022 report entitled "Aid for Trade in Asia and the Pacific: Leveraging Trade and Digital Agreements for Sustainable Development" highlights MYWiT as an example of a "skills development program to address globalization challenges."¹⁸ Furthermore, the CEO of Daythree Business Services, Raymond Devadass, provided positive feedback on his experience with MYWiT in a February 2022 interview with *The Malaysian Reserve* newspaper. According to Devadass, as a program that focuses on "train[ing] for objectives" rather than on hiring those who have already acquired top-notch digital skills, MYWiT gives companies and employers more flexibility with their workforce. As explained in the article, "training for specific objectives allows companies to grow talent quickly and makes it harder for individuals to take their newly acquired skills to a competitor, Devadass opined." Further, according to Devadass, "Today we see organisations like MDEC working very closely with industry stakeholders to deliver the kind of training that is needed by employers to improve the digital talent network. I hope to see similar close collaborations across all other industries."¹⁹

3.2.2.4 Success Factors and Lessons Learned

As seen in testimonies of industry participants of the program, quoted in the previous section, one of the key factors for MYWiT's success is how it engaged various stakeholders, especially the industry players (employers). Officials at MDEC mentioned several strategies that helped them work closely with the industry players²⁰. First, "MDEC together with HRD Corp (under the the Ministry of Human Resources) has worked closely (with key industry players) in developing the Industrial Skills Framework (IndSF)" which is "a comprehensive guide for individuals, industry, institutions of higher learning, training providers and stakeholders to recognize knowledge, experiences, skill mastery and promote lifelong learning in the digital industry²¹". The framework has been referenced by MYWiT in aligning its digital skills trainings. Second, MYWiT also "leverages on the trainings listed in the Digital Skills Training Directory where all the courses listed there have been reviewed and endorsed by a panel of digital industry experts." By taking advantage of and continuously participating in these separate collaboration initiatives between Malaysian government and industry,

officials at MDEC succeeded in engaging and sustaining allies among employers, while keeping the talents developed by program relevant (employable) for the industry.

As lessons learned, because the COVID-19 pandemic coincided with the implementation of MYWiT, officials at MDEC observed that there were variations in how companies and individuals coped with this economic crisis²². According to them, “companies which have retained/hired and reskilled/upskilled their staff through the pandemic were poised to recover faster and grab new opportunities to grow” which gave advantage to larger companies over SMEs. On the other hand, individuals with limited digital skills had the highest interest in learning new digital skills because they were the hardest hit. The officials also noted that the pandemic did not accelerate only digitalization but also proliferation of cross-border digital jobs and tasks.

When asked of advice to their colleagues in other economies that would like to start a program similar to MYWiT, officials at MDEC emphasized the importance of coordination amongst different government agencies both to maximize the effect of the program and to deliver it to those who need it²³. They also recommended controlling the quality of trainings by utilizing ones offered by trusted companies and consulting subject matter experts from the private sector (such as recruitment agencies & industries-certified training providers) to keep up with the latest trend in hiring and upskilling & reskilling in the ICT industry and digitalization. And, lastly but not least, the officials recommended focusing the training efforts on SMEs who lacks infrastructure, knowledge, and resources to keep up with ever changing digital landscape and are less capable than larger competitors in acquiring and retaining talents.

3.2.3 Singapore – SkillsFuture Singapore

Category	1) develop skilled professionals in APEC economies
implementation period	2015 - ongoing
scale	About 660,000 individuals upskilled themselves through SkillsFuture Singapore (SSG)-supported programmes in 2021. This was the highest number of SSG-supported individuals in a year since the launch of the program. 24,000 companies participated.
overview	SkillsFuture Singapore (SSG) is Singapore’s upskilling initiative introduced in 2015. The Future Economy Council (FEC), chaired by Deputy Prime Minister & Minister for Finance Mr Heng Swee Keat and comprised of members from government, industry, unions, and educational and training institutions, oversees the implementation of the initiative. SSG is comprised of a wide range of programs including the SkillsFuture Credit program, the SkillsFuture Career Transition Programme, and the National Centre of Excellence for Workplace (NACE). It also carries out research and analysis on workforce and skills trends, launching the inaugural Skills Demand for the Future Economy Report in 2022.

3.2.3.1 Background, Goals and Objectives

The foundation for the SkillsFuture Singapore (SSG) initiative lies in the 2003 establishment by the Singapore government of the Singapore Workforce Development Agency (WDA). This agency was tasked with promoting lifelong learning and making Singapore’s workforce resilient and competitive, thus laying the groundwork for future-oriented educational and professional training initiatives. The WDA was restructured in 2016, resulting in two new entities: SkillsFuture Singapore, which is focused on education and training, and Workforce Singapore (WSG), with greater focus on the needs of employers and enterprises. SSG is currently overseen by the Future Economy Council, which is chaired by the Minister of Finance and includes representatives from government, industry, trade unions, and educational and training institutions.

SSG itself was formally launched one year prior to the restructuring of the WDA in 2015, and very clearly grows out of the WDA’s focus on lifelong learning. It greatly expanded previous government initiatives on lifelong learning, training, and professionalization, however, “mark[ing] a major new phase of investment towards helping Singaporeans acquire and develop skills and mastery throughout life.”²⁴ Singapore has long had one of the most highly educated and professionalized workforces in the world, so SSG was implemented not to address a lack or shortage, but rather with an eye toward the changes of the future and the need to maintain and enhance the flexibility and adaptability of its citizenry and its workforce. Its four key objectives are as follows:

- 1) Help individuals make well-informed choices in education, training, and careers.
- 2) Develop an integrated high-quality system of education and training that responds to constantly evolving needs.
- 3) Promote employer recognition and career development based on skills and mastery.
- 4) Foster a culture that supports and celebrates lifelong learning.²⁵

3.2.3.2 Strategies and Methodologies

SSG is a wide-ranging, multi-faceted initiative involving many stakeholders across Singaporean society, so much so that it is described in the 2017 UNESCO report on lifelong learning practices in Southeast Asia as “a whole society movement.” Its core focus is on

individuals across all education and career stages and on providing them with access to relevant education and training at each of those stages. Employers are also involved through their facilitation of employee training, and along with companies, industry associations, and unions, they help identify skills gaps at the industry level and provide feedback to SSG. Training providers equip individuals in the workforce with relevant skills and work closely with industry partners.

The core component of SSG is the SkillsFuture Credit initiative. This allows all Singaporean adults over the age of 25 to receive a government credit worth SGD500 for the funding of skills-relevant courses that are supported by SSG. Other initiatives include SkillsFuture Work-Study Programmes designed for students, SkillsFuture Advice workshops designed for early-career professionals, and SkillsFuture Career Transition Programmes for mid-career professionals who are looking to reskill or upskill, among many others. There are also programs specifically designed for employers and for training providers, such as the SkillsFuture Leadership Development Initiative, SkillsFuture Employer Awards, and the National Centre of Excellence for Workplace Learning (NACE).

Significantly, SSG provided enhanced funding and support for many of its programs during 2020 and 2021 in light of the ongoing COVID-19 pandemic. The Enhanced Training Support Package (ETSP) provided enhanced absentee payroll for companies that sent their employees for eligible training programs, and allowed for even greater support of eight key sectors that were most affected by the pandemic. SSG also provided extended support in 2020 and 2021 via the SGUnited Jobs and Skills Package, aimed at alleviating unemployment and providing training in industry-relevant skills.²⁶

3.2.3.3 Results

Early on after SSG was established in 2015, evidence that Singaporeans were utilizing its offerings was already available. According to the Ministry of Education, the training participation rate of Singapore's resident workforce increased from 32% to 42% between 2007 and 2017. And between 2016 and 2017, the number of Singaporeans utilizing SSG programs increased by 8%.²⁷

More recently, statistics available in the 2021/2022 SSG Annual Report also demonstrated significant impact. The pandemic-specific ETSP program provided for 91,000 trainings in 2021, for example. And 660,000 individuals overall partook of SSG programs in 2021, the highest total number since SSG was launched. More than 247,000 Singaporeans used their SkillsFuture Credit in 2021 to offset their course fees, also representing an increase from 2020. And perhaps most strikingly, the number of companies making use of the National Centre of Excellence for Workplace Learning (NACE) increased fourfold between 2020 and 2021.²⁸ It is clear from this data that SSG benefits many Singaporeans, and also that it provided particularly crucial benefits during the COVID-19 pandemic.

3.2.3.4 Success Factors and Lessons Learned

In the 2017 UNESCO report cited above, the success of SSG and the quality of Singapore's workforce as a whole is attributed in part to the government's efforts to encourage the public to think of education as a lifelong process that consists of more than formal schooling, "with the aim of moving individuals away from a paper chase for qualifications towards skills-based training and progression."

In addition to this positive analysis of SSG, however, it should be noted that there has also been criticism of the program. A 2021 study published in the *Asian Journal of Political Science* investigates the SkillsFuture Credit program in particular and finds that the program's rhetoric does not always match its perceived benefits as reported by participants. It suggests that Singaporean policymakers should consider "recalibrating their approach through investing in more diverse, high-quality courses, ensuring the value of the course certificates for employability, and improving the outreach efforts."²⁹ Furthermore, a 2022 report by Ranstad draws from survey data of Singaporean workers, finding that 91% would like more learning and development opportunities and that only 22% received them in 2021.³⁰

3.2.4 United States – Manufacturing USA

Category	1) develop skilled professionals in APEC economies
implementation period	2014 - ongoing
scale	"In 2021, Manufacturing USA worked with over 2,300 member organizations, collaborated on over 700 major technology and workforce R&D projects, engaged over 90,000 people in advanced manufacturing training, and invested USD480 million in these activities from state, industry, and federal funds."
overview	"Manufacturing USA was created in 2014 to secure global leadership in advanced manufacturing by connecting people, ideas, and technology. The 16 Manufacturing USA institutes convene business competitors, academic institutions, and other stakeholders to test applications of new technology, create new products, reduce cost and risk, and enable the manufacturing workforce with the skills of the future." Each of the 16 institutes has ongoing workforce development initiatives. They work with industry and academia to increase interest in manufacturing careers and equip current workers with new skills needed to support the advanced manufacturing of the future. One of the institutes, the Digital Manufacturing & Cybersecurity Institute, focuses on equipping USA factories with next-generation digital tools, cybersecurity, and workforce expertise.

3.2.4.1 Background, Goals and Objectives

Manufacturing USA was begun in 2014 as a pilot program and was initially known as the National Network for Manufacturing Innovation. It grew out of a 2011 recommendation by the President’s Council of Advisors on Science and Technology that an advanced manufacturing partnership be formed. The objective of this partnership was to “identify[ing] collaborative opportunities between industry, academia, and government that would catalyze development and investment in emerging technologies, policies, and partnerships with the potential to transform and reinvigorate advanced manufacturing in the United States.”³¹ It was felt that a program dedicated to these efforts would help boost the United States’ global economic competitiveness by creating a truly cutting-edge manufacturing sector.

When the Revitalize American Manufacturing and Innovation Act was passed in 2014, this provided Congressional authorization for the Advanced Manufacturing National Program Office. This is the interagency office that now operates Manufacturing USA; it is headquartered in the National Institute of Standards and Technology (NIST), located in the Department of Commerce. Manufacturing USA also currently works in partnership with the Departments of Defense, Energy, Education, Agriculture, Health and Human Services, Labor, the National Aeronautics and Space Administration (NASA), and the National Science Foundation (NSF). Manufacturing USA exists today as a network of 16 manufacturing innovation institutes that engage in large-scale public-private collaboration on technology, supply chain, and education and workforce development. All sixteen of these institutes have ongoing workforce development initiatives aimed at defining new careers for automation, robotics, AI, and data analytics; retraining and upskilling the current workforce; and attracting STEM-trained talent for the future. One of the institutes, the Digital Manufacturing & Cybersecurity Institute (MxD), is specifically tasked with providing USA factories with next-generation digital tools, cybersecurity, and workforce expertise.³²

Significantly, it should also be noted that there is a semi-parallel NIST program that provides many of the same services on behalf of small- and medium-sized manufacturers, while Manufacturing USA focuses more on large-scale collaborations and initiatives. This other

program is known as the Manufacturing Extension Partnership (MEP), and dates back over 30 years.³³

3.2.4.2 Strategies and Methodologies

Of most significance in relation to digitally oriented training is the work of the Digital Manufacturing & Cybersecurity Institute (MxD). In the USA manufacturing workforce, there is currently both a skills gap and a perception gap. The skills gap has left some 500,000 industrial jobs currently unfilled, while the perception gap leaves most Americans with little idea of what a modern factory environment entails. MxD's workforce development program, known as MxD Learn, is working to shrink both of those gaps in the manufacturing workforce, with emphasis on advanced digital training.

As part of a partnership with other Manufacturing USA institutes, MxD Learn is currently testing a three-year digital manufacturing curriculum. It is also creating a four-week program introducing high school students to digital manufacturing, and it has partnered with the City of Chicago to launch a manufacturing apprenticeship program for high school graduates. Furthermore, in 2017 it released a digital workforce taxonomy, "a groundbreaking analysis that identified 165 new data-centric manufacturing jobs—roles like 'collaborative robotics technician' and 'predictive maintenance systems specialist.'"³⁴ Similarly, MxD Learn recently released *The Hiring Guide: Cybersecurity in Manufacturing*, which describes nearly 250 cybersecurity job roles in the manufacturing sector and provides training and upskilling recommendations for preparing workers for these positions.³⁵ Both the Jobs Taxonomy and the Hiring Guide were created in partnership with ManpowerGroup, a Fortune 500 workforce solutions company headquartered in Milwaukee, Wisconsin.

In addition to MxD, several other Manufacturing USA institutes are also launching digitally oriented training initiatives. The Smart Manufacturing Institute recently developed a Factory 4.0 Educational Toolkit, providing modules on key aspects of Industry 4.0 such as sensing, data acquisition, and machine learning and prediction. And the Cybersecurity Manufacturing Innovation Institute recently introduced the Texas Manufacturing x Transformation Hub (with funding from the state of Texas), which will offer cybersecurity education, training, and certifications for the nation's manufacturers.³⁶

3.2.4.3 Results

In FY2021, the sixteen Manufacturing USA institutes collaborated with over 2,300 member organizations on more than 700 applied research and development projects. They also attracted some USD354 million in state, federal, and private funds in addition to USD127 million in base funding; this represents a 2.8 to 1 investment match and exceeds the original 1-to-1 match program design. Lastly, some 90,000 workers, students, and educators participated in advanced manufacturing training through workforce initiatives.³⁷

Since the advent of Manufacturing USA, its network has grown from just a handful of institutes to the sixteen of today. Further, its institutes have moved some 270 new technologies toward commercialization, helping the USA secure global leadership for emerging technologies across a range of critical sectors.³⁸

With regard to MxD, results of its work include the awarding of over USD120 million to more than 85 R&D projects across 35 states.

3.2.4.4 Success Factors and Lessons Learned

A recent assessment of Manufacturing USA by Deloitte praised the program overall, calling it "a true interagency program" that "help[s] spur R&D innovation and commercialization and prepare the 21st century workforce." And in terms of workforce training, it notes that Manufacturing USA has helped the manufacturing sector address the skills and talent gap "by coordinating workforce activities conducted by members and external stakeholders." In its list of key recommendations for the program, however, Deloitte also notes that

Manufacturing USA could improve its workforce efforts “by placing activities into a framework that truly aligns actions, emphasizes high-impact efforts, coordinates inter-Institute activities across the national Program, and integrates with cross-governmental initiatives on federal, state, and local levels.”³⁹

A 2019 report by Indiana University’s Manufacturing Policy Initiative also provided positive feedback on Manufacturing USA. However, the report also noted that measurable metrics of progress are needed in order to accurately assess the program’s impact.⁴⁰

3.2.5 The Asia Foundation – Go Digital ASEAN initiative

Category	2) create job opportunities for skilled professionals across borders
implementation period	2020 - ongoing
scale	Phase one of the USD330 thousand initiative exceeded its target, with 225,778 individuals equipped with digital skills across the region—60% of them women. Through a new USD4 million grant, phase two of the program will expand training impact to provide more advanced and fit-for-purpose training for up to 200,000 underserved MSMEs across ASEAN, including green skills, cybersecurity and financial planning
overview	The initiative was spearheaded by international development nonprofit, The Asia Foundation, implemented in partnership with the ACCMSME, and supported by Google.org, Google’s philanthropic arm. The project was "designed to broaden digital participation to more than 200,000 people from rural regions and underserved communities— including women-led small- and micro-businesses, underemployed youth, ethnic minorities, and people with disabilities—across ASEAN. The in-economy curricula delivered content and digital skill trainings through a network of local partners."

3.2.5.1 Background, Goals and Objectives

Go Digital ASEAN is a regional initiative launched in June 2020 by The Asia Foundation, with support from [Google.org](#), which is Google’s philanthropic arm. It was approved in 2019 by the ASEAN Coordinating Committee on Micro, Small, and Medium Enterprises (ACCMSME), with the aim of increasing digital access and digital skills across the region. Of particular focus were MSMEs and those facing structural barriers to full participation in the digital economy, especially women and those in underserved communities. Go Digital ASEAN was launched amidst a digital environment in the ASEAN region that has become increasingly fraught and fragmented in recent years. Public and private enterprises compete over control of data flows and access to economic growth drivers, multilateral agreements offer differing proposals for growing the digital economy and toward differing objectives, large tech companies generally exert the most control over digital resources, and MSMEs and individuals tend to suffer the direct consequences as all of this competition and disagreement widens the regional digital divide. This digital divide also plays out within individual ASEAN economies, with governments and private enterprises developing digitalization trainings and programs that often bypass underserved populations.⁴¹

The goal of Go Digital ASEAN is to help close the digital gap across the ASEAN region. More specifically, it was “designed to equip MSMEs and the emerging workforce, with digital skills and tools; expand economic opportunity across ASEAN; and minimize the negative impact from the COVID-10 crisis.”⁴² Another stated goal is “to create a more inclusive ASEAN region.”⁴³ Furthermore, the initiative specifically targets rural regions and underserved communities, particularly women-led MSMEs. In Phase 1 of the program, the initiative also reached unemployed and underemployed youth, ethnic minorities, and people with disabilities.⁴⁴

3.2.5.2 Strategies and Methodologies

Go Digital ASEAN makes use of a collaborative approach, implemented by The Asia Foundation with funding support from Google.org, and endorsement from ASEAN’s ACCMSME. For example, Google.org announced a new USD4 million grant for a second phase of the program that will equip 200,000 MSMEs in Southeast Asia with the skills to grow their business, including green skills, cybersecurity and financial planning. The Asia

Foundation president David D. Arnold explained the initiative as a collaborative effort that “pool[s] expertise and approaches from government, business, and NGO sectors,” with local offices from The Asia Foundation leading local networks of volunteers and trainers to reach MSME owners and others in need of digital skills in each economy.⁴⁵

The initiative is also dedicated to economy-by-economy curricula, tailoring its content and digital skills delivery to meet needs and conditions at the community level. According to a “Program Snapshot” article from May 2022, specialized curricula was developed for each country.⁴⁶ For example, Malaysia has a special website that showcases its curriculum. The program includes training content for job seekers, existing entrepreneurs, and aspiring entrepreneurs, and provides flexible and customizable learning methods (including e-learning/self-learning, virtual instructor-led training, and in-person instructor-led training) that can be tailored to each participant’s baseline skills.⁴⁷ In Viet Nam, program participants expressed strong interest to learn about online safety, so the local partners expanded the focus of the curriculum beyond just how to take advantage of e-commerce to why it is an important tool for businesses and how to use it safely.⁴⁸

Lastly, the initiative is being implemented in phases. Phase 1 began in June 2020 and concluded in December 2021 with a broad focus on closing the digital divide across the ASEAN region. Phase 2 will involve a three-level program known as Go Digital, Explore Digital, and Grow Digital, with more advanced curriculum modules that will teach skills such as business and financial literacy, digital marketing, cybersecurity, and carbon footprint reduction.⁴⁹

3.2.5.3 Results

Phase 1 (2020-2021) exceeded its target and trained 225,778 individuals across the region, 60% of them women. The Asia Foundation published the results of Phase 1 in the “Go Digital ASEAN Impact Report 2021” in June 2022.⁵⁰ The report provided a summary of results of quantitative, survey-based research carried out to better understand the impact of Phase 1 of Go Digital ASEAN (i.e. how the training was helping in building digital skills for MSMEs and job seekers and in addressing the impact of COVID-19 on the regional economy).⁵¹ Some of the study’s results highlighted in the report include 42,682 job seekers reached through the initiative, 140,276 women, 145,407 youth, 1,983 trainees with disabilities, and 19,064 indigenous trainees. Of the MSMEs trained, 95% reported increased knowledge of Information and Communication Technology (ICT) tools, 81% have seen an increase in customer engagement, 77% were able to move their business online, and 27% saw an increase in sales or revenue as a result of the training. Among job seekers who were trained, 94% reported increased knowledge of ICT tools, 51% were able to be more efficient in their work, 28% found employment as a result of the training, and 58% of those who found employment did so within two months of the training.⁵²

3.2.5.4 Success Factors and Lessons Learned

It appears that having a highly prominent supporter greatly amplifies the visibility of the program. Additionally, Go Digital ASEAN has been featured in more than 87 media profiles within Indonesia and Thailand alone.⁵³

According to an analysis published on 31 August 2022 by Hannah Najar regional program manager for Go Digital ASEAN, and Robin Bush, representative of The Asia Foundation's Malaysia office, one of the keys to creating training programs that more MSMEs can access is “to design for the intersecting needs of rural entrepreneurs, in particular, with special attention to how gender, culture, and (dis)ability relate to those needs.”⁵⁴ Other simple but effective strategies noted by Najar and Bush include scheduling training at accessible locations and times, training locally based trainers to lead the sessions and provide follow-up support, and keeping the curricula focused and relevant.⁵⁵ For instance, in Indonesia, a one-on-one training approach was heavily utilized where the program’s more than 1,000 trainers

visited participants homes and businesses. In Thailand, where literacy rate among rural entrepreneurs is low, video-based online curriculum was developed to meet the needs of mobile phone users from whom a text-heavy system would create a barrier to effective learning.⁵⁶

A news article published by the Entrepreneur on 22 June 2022 notes utilizing cross-economy collaborations like Go Digital ASEAN can help encourage growth in the digital sphere, even in the most digitally impoverished economies. Economies with fewer resources can benefit greatly from the shared knowledge and best practices, and participating economies can “identify and address common challenges.”⁵⁷

As one of the lessons learned from the initiative, Najar mentioned the importance of acknowledging and adjusting curriculum for different needs of program participants – whether they are trying to expand and grow their business or simply looking for ways to sustain it during the pandemic.⁵⁸ This is one of the reasons why they offer the three-level program in the program’s second phase that is mentioned earlier (See 3.2.5.2 “Strategies and Methodologies”).

Furthermore, through the program’s first phase, the organizers witnessed the larger needs among women entrepreneurs; growing opportunities in green and inclusive business models; and interests from the program participants and stakeholders for opportunities to exchange information and opinion with each other.⁵⁹ These are all reflected on the content of the approaches taken in the program’s second phase.

3.3 Virtual Workshop

Forty four people attended the workshop from eight APEC member economies⁶⁰, as well as ABAC. The speakers joined from five member economies: Indonesia; Japan; Malaysia; the Philippines; and Viet Nam, as well as Cambodia. These speakers represented leading scholarship on digital transformation, human resources development, and digital training, as well as key government-level initiatives that support these efforts.

The findings from the workshop's presentations, panel discussions, and audience Q&A were compiled into a summary report. The main contents of the summary report are reproduced in this report in Annex A: Workshop Summary Report.

4 Concluding Discussion

A number of shared observations can be drawn from the assortment of initiatives toward cross-border development of skilled professionals that were featured in this project's case study profiles and online workshop.

First is that a digitally trained workforce is becoming an imperative in all APEC economies and across all industrial sectors. All but three of the twelve initiatives featured across the case study profiles and online workshop centered either partially or fully on digital skills training. A second observation is that several of the programs emphasize the significance of harmonizing educational and training qualifications not just across different economies but also across different fields of study and industrial sectors. A third observation is that each of the programs have come up with creative ways to get various stakeholders involved throughout the training process. This has helped the programs align their goals and content to the most current workforce and industry needs, enabling them to maximize the effectiveness of the trainings carried out.

Finally, it should be noted that while all of these featured programs have the potential to create cross-border benefits, only a few of them operate in a truly cross-border fashion, and most of these are the products of institutional bodies already dedicated to cross-border interaction, such as ASEAN, The Asia Foundation, etc. This suggests that there is room for further enhancing the impressive array of initiatives supporting the cross-border development of skilled professionals across the APEC region, and for even more creative thinking as to how to apply good practices and continue sharing and interacting across borders of economy, education, and industry.

Undoubtedly, all of these initiatives represent important work in response to the growing demand for skilled professionals, and they all highlight ways of doing this work that prioritize digital transformation and cross-border sharing.

5 Annex A: Workshop Summary Report

5.1 Executive Summary

Skilled professionals are key to growth and innovation in a diverse set of industries and business sectors, such as the fields of digitalization and supply chain management. The demand for skilled professionals is expected to grow over the course of the APEC region's recovery from the economic and social impacts of the COVID-19 pandemic.

Given the importance of skilled professionals to accelerating the region's sustainable economic growth, APEC economies must work with the private sector to explore new ways to improve the business environment and facilitate professional development, through a combination of domestic and cross-border initiatives encouraging education, training, and job creation. Currently there are a wide range of existing initiatives across different APEC economies to bolster the development of skilled professionals across borders, including programs for capacity building and cooperation on the development of skilled professionals among economies. Promoting these initiatives for cross-border training and workforce development has the potential to increase the capacity of skilled professionals across the entire APEC region. In addition, the pandemic-driven challenges, such as supply chain disruptions, have spurred a wide range of policy responses, including new measures for cross-border training and workforce development, in fields like digitalization.

This online workshop was tasked with promoting the further development and utilization of skilled professionals across the APEC region. By sharing best practices on cross-border initiatives and measures by the public sector and private sector to develop skilled professionals through education, training and the creation of new job opportunities, this event will hopefully result in the advancing of collaborative cross-border educational and training efforts across the region. With its twin focus on developing skilled professionals and creating job opportunities, this workshop drew from the expertise of a number of presenters. These presenters represent leading scholarship on digital transformation, human resources development, and digital training, as well as key public sector-level initiatives that support these efforts.

After opening remarks and brief introductory presentation, the workshop moved into two back-to-back panel sessions, each featuring a series of presentations followed by a Q&A panel during which audience members were encouraged to submit questions. Forty-four people attended the workshop from eight APEC member economies⁶¹, as well as ABAC. The speakers joined from five member economies: Indonesia; Japan; Malaysia; the Philippines; and Viet Nam, as well as Cambodia. Their details are as follows:

- Prof MAEDA Mitsuhiko, Moderator
Epistemic Research Institute of Social Ethics (ERISE), Advanced Institute of Industrial Technology (AIIT), Japan
- Dr Mohd Naz'ri Mahrin, Expert Panelist in Session 1
Department of Advanced Informatics, Razak Faculty of Technology and Informatics, Universiti Teknologi Malaysia (UTM)
- Ms KOBAYASHI Ayaki, Expert Panelist in Session 1
Higher Education Bureau, Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan
- Dr Alvin B. CULABA, Expert Panelist in Session 1
Center for Engineering and Sustainable Development Research, De La Salle University, the Philippines

- Dr Nita YUANITA, Expert Panelist in Session 1
Faculty of Civil and Environmental Engineering, Institut Teknologi Bandung (ITB),
Indonesia
- Mr YODEN Tomohiro, Expert Panelist in Session 2
Client Support Global Talent Acquisition and Development Division, Business
Development and Human Resources Support Department, Japan External trade
Organization (JETRO)
- Dr KAMAGA Masamu, Expert Panelist in Session 2
Vice President for Global Engagement, Kirirom Institute of Technology, Cambodia
- Dr DO Sinh, Expert Panelist in Session 2
Vice Rector, Dong A University, Viet Nam

5.2 Event Summary

5.2.1 Welcome and Opening Remarks

Opening remarks were delivered by Mr Niikura Takayuki, Director of the APEC office in the Trade Policy Bureau of Japan's Ministry of Economy, Trade and Industry (METI).

As endorsed in the spring of 2022 by APEC's Human Resources Development Working Group (HRDWG), this workshop is part of a larger project exploring ways to support and improve the cross-border development of skilled professionals throughout the APEC region. The objective of this project is to help promote economic growth by a) deepening understandings of the role and significance of skilled professionals, and b) enhancing the level of skilled professionals in the APEC region by sharing best practices regarding cross-border development of skilled professionals through education, trainings, and the creation of job opportunities. Enhancing the development of skilled professionals who contribute to innovation in the APEC region is key for creating growth across industrial sectors and facilitating economic recovery from the COVID-19 pandemic.

Each economy in the APEC region has introduced measures to address this need to enhance the development of skilled professionals. Those measures have originated from the governments of each economy as well as from educational institutions and the private sector, and they include such efforts as the refashioning of educational curricula to better reflect current workforce needs, governmental support for training and certification programs, and private sector development of human resource matching services and funding of training programs. Some of these measures have been implemented across borders, and there is great potential for further collaboration. By sharing some of the measures through this workshop, it is hoped that this will contribute to raising the skill level of skilled professionals in the APEC region. Mr Niikura concluded his remark by explaining that the workshop would have included two panel sessions, one focusing on developing skilled professionals through education and one focusing on creating job opportunities in the region for skilled professionals.

5.2.2 Introductory Presentation

The Importance and Potential of Creating Innovation by Developing Skilled Professionals for Economic Recovery in the APEC Region

The introductory presentation was delivered by Mr Naganuma Satoru, Assistant Director of the APEC office in the Trade Policy Bureau of Japan's METI.

Developing cross-border skills cooperation is of particular importance in the present moment for a number of reasons. First, cross-border initiatives for new skills development programs allow several current opportunities to be seized. These opportunities include the growing demand for skilled workers as economies recover from the COVID-19 pandemic, the increasing need to train workers in new fields that are growing in importance due to digitalization and technological advancements, and the imperative to prioritize underserved populations such as women and minorities. Cross-border skills development programs can also help address current challenges, including the decline in new graduates with STEM backgrounds, the need to maintain a skilled workforce despite aging populations in some economies, supply chain disruptions, and climate change.

In looking at the APEC region as a whole, increasing the number of skilled workers and the level of skill of these workers will provide a variety of benefits at the regional level. Human capital development in the form of more skilled workers with higher levels of skills is a key contributor to economic growth and competitiveness. Skills programs that are easily accessible can also create more inclusive economic growth and can help mitigate wage pressures in certain high-skilled fields. In spite of these benefits, there are also challenges to

implementing successful skills training programs. For example, governments may find it difficult to determine how best to support training in the private sector or to implement policies that support the development of new industries. And private companies and non-profits that are implementing training programs frequently face capacity constraints and problems with coordination.

Some of the regional entities that are addressing these challenges and promoting the cross-border development of new skills programs include APEC, the Association of Southeast Asian Nations (ASEAN), and the Southeast Asian Ministers of Education Organization (SEAMEO). For the years between 2022 and 2025, the Capacity Building Network (CBN), established under APEC's Human Resources Development Working Group (HRDWG), focuses its activities on encouraging economies to prioritize digital capacity building and the reskilling and upskilling of workers in response to the post-pandemic economic recovery.⁶² ASEAN and SEAMEO have both been active in promoting Technical and Vocational Education Training (TVET) in Southeast Asia, with initiatives such as ASEAN's Qualifications Reference Framework (AQRF) and SEAMEO's SEA-TVET Consortium and Regional Knowledge Platform.⁶³

Japan has also worked cooperatively with ASEAN to promote sustainable resilience development in the region, particularly in the wake of economic disruptions caused by the COVID-19 pandemic. Japan is the top contributor of direct foreign investment to ASEAN and has two key programs that involve cooperation with ASEAN: the ASIA-Japan Investing for the Future Initiative (AJIF) and the Asia Energy Transition Initiative (AETI). Three areas of focus facilitated by these programs include improving the attractiveness of the region as a hub for global supply chains, creating innovation that enhances sustainability and helps address social challenges, and promoting energy transitions.⁶⁴

5.2.3 Panel Session 1: Developing Skilled Professionals to Create Innovations Across the Region Through Education

This panel session was moderated by Prof Maeda Mitsuhiro, of the Advanced Institute of Industrial Technology (AIIT), in Japan.

5.2.3.1 Presentation by Dr Mohd Naz'ri Mahrin ASEAN Education System and Innovation

Dr Naz'ri presented on the ASEAN education system, specifically in terms of how the ASEAN University Network (AUN) has worked to establish cooperation, connections, and translatability between higher education institutions across the ASEAN region, with the goal of enhancing connectivity and regional capacity in higher education.

As a region, ASEAN represents the third most populated economy in the world, after China and India, and the fifth richest economy. In short, it is a very significant component of the global economy with a great deal to contribute to efforts to enhance the cross-border development of skilled professionals.

In 2022, ASEAN launched the ASEAN Higher Education Space 2025, an ambitious plan to promote synergy and cooperation among ASEAN member states, to adapt educational systems within ASEAN to new realities within the global education realm, and to enable greater harmonization and internationalization of the ASEAN higher education system. With six key areas of focus, ranging from enhancing the implementation of the ASEAN Qualifications Reference Framework (AQRF) to promoting and strengthening regional cooperation on higher education mobility, the plan is to be fully implemented by 2025.⁶⁵

Key to the work of this plan and all ASEAN-based higher education work is the existence of the ASEAN University Network (AUN), which connects 30 leading ASEAN universities and

works to promote human resources development by strengthening cross-border cooperation among these institutions. Among the key initiatives instituted by AUN since its launch nearly 30 years ago—referred to as thematic networks—are their Quality Assurance Assessment Model and their ASEAN Credit Transfer System.⁶⁶

A recent study, funded by the European Union's (EU) Support to Higher Education in ASEAN Region program (EU-SHARE), examined student and labor mobility trends in the ASEAN region, with particular emphasis on how intra-ASEAN student mobility (exchanges between institutions and economies) affected employability outcomes for graduates. Notable findings from the study include the following: a) there has been a significant increase in intra-ASEAN student flows in recent decades; b) based on interviews, most graduates perceive their intra-ASEAN mobility as having had a positive impact on their careers; c) the soft skills demanded by employers appear to align closely with those developed by graduates through intra-ASEAN mobility; and d) agreement among stakeholders that more should be done to enhance industry involvement in student mobility and higher education programs.⁶⁷

Dr Naz'ri concluded with a series of policy recommendations drawn from the findings of this report. These include embedding the employability dimension into existing intra-ASEAN student mobility programs, enhancing structured university-industry collaborations, strengthening intra-ASEAN student and alumni networking opportunities, and generating more robust data collection on program initiatives.

5.2.3.2 Presentation by Ms Kobayashi Ayaki Exchanges between Japan and ASEAN in Higher Education

Ms Kobayashi presented on the work of Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) in fostering cross-border cooperation between businesses and institutions of higher education in Japan and those in ASEAN economies.

Student mobility in Japan, both in terms of international students coming to Japan and Japanese students going abroad, was seriously impacted by border closures due to the COVID-19 pandemic. This is true with regard to ASEAN economies as well as the world as a whole. In spite of this, however, a number of important MEXT initiatives focused on supporting international exchange remain in place.

One such program aims to enhance employment opportunities for international students in Japan. To achieve this, MEXT supports initiatives by universities to collaborate with local governments and industries in offering international students Japanese business language classes, career education on Japanese corporate culture, and medium-to-long-term internships at Japanese companies. Another program, known as the Inter-University Exchange Project, works to globalize Japanese higher education.⁶⁸ It involves the provision of support to Japanese universities for the development of collaborative educational programs, scholarships, and airfare for students and faculty members who wish to go to their partner universities. A third program focuses on the higher education environment outside of Japan and involves support for the global dissemination of the Japanese KOSEN system for technology education. MEXT offers support for the introduction of the KOSEN system according to the needs of each economy, and currently operates liaison offices in Mongolia; Thailand; and Viet Nam.

To address the impact of the COVID-19 pandemic and help revitalize student exchange, in July 2022 MEXT published a new global strategy known as Direction for Globalization of Higher Education Policies in Japan. The goal of this effort is to recover, by 2027, the pre-pandemic numbers of international students coming to Japan and Japanese students studying abroad, with the ultimate objective of growing Japan's international human resources. Policies for achieving these goals will fall under three categories: attracting

inbound students from around the world, promoting outbound exchanges and study programs for Japanese students, and constructing a foundation of support among Japanese companies and local governments. Significantly, MEXT's goals in launching this program are also reflected more broadly in the work of Japan as a whole, as evidenced, for example, by the September 2022 discussion by the Prime Minister's Council for the Creation of Future Education on investing in human resources in the post-COVID-19 world.⁶⁹

5.2.3.3 Presentation by Dr Alvin B. Culaba

A Multiversity Model: An HRD Framework for the New Philippine Industrial Strategy

Dr Culaba presented on the Japanese-based multiversity model as a human resources development framework for harnessing the higher education system in support of the Philippine's newly developed industrial strategy.

The economic and social disruptions of the COVID-19 pandemic, along with movement toward a Fourth Industrial Revolution, have accelerated the digitalization of processes as well as of products and services, and this in turn has created many new opportunities for innovation, including in educational systems. As part of this process, the need for advanced human resources in the industrial sector is critical, and it may require developing a new model of professional education. In the Philippines, one of its strengths in terms of human resources is having a young, English speaking, and highly trainable working population. In terms of its human resources challenges, however, the Philippines currently lacks sufficient skilled workers, and there are limited standards and certifications available for worker training.

The new presidential administration in the Philippines has begun taking steps toward innovating its industrial sector with a new agenda from the Department of Trade and Industry, known as the Inclusive Innovation Industrial Strategy.⁷⁰ A key component of that effort is the upskilling and reskilling of the workforce, which will involve the upgrading of educational curricula and training programs as well as a new framework for human resources development. Digital transformation will also be a key component of the Inclusive Innovation Industrial Strategy, so in concert with education/training and human resources development efforts, reskilling and upskilling of the current and future workforce specifically in terms of digital skills will be very important.

The multiversity model offers a promising framework for the related goals of enhancing education/training and human resources development and the digital reskilling and upskilling of the workforce. The concept of the multiversity, which originated in Japan and is partially based on the KOSEN training system, involves an integrated higher education system designed to foster highly talented industrial human resources across a variety of employment levels. In developing a multiversity model tailored to the Philippines, it will be crucial to collaborate with industry in order to understand their needs and shape the multiversity's professional programs accordingly. Recent changes in the Philippines educational system will also need to be taken into consideration.

Dr Culaba's proposed multiversity model will consist of three strategies for adapting to the new Inclusive Innovation Industrial Strategy: industry collaboration, entrepreneurship/innovation, and artificial intelligence. Significant to this model will be ensuring that the standards of the ASEAN Qualifications Reference Framework (AQR) are met, along with those of the Philippine Skills Framework (PSF). Furthermore, skills and competencies will need to be addressed, alongside the redesign of curricula and new courses in the academic sector.

5.2.3.4 Presentation by Dr Nita Yuanita Human Resources Information System (HRIS)

Dr Yuanita presented on the experience of Indonesia's Bandung Institute of Technology (ITB) in digitally transforming its human capital management by implementing a new Human Resources Information System (HRIS).⁷¹

Human Capital Management, or HCM, can be defined as a set of practices and tools used to attract, recruit, train, develop, manage, and retain employees in order to achieve business goals. And Human Resources Information Systems, or HRIS, can be defined as a software system that provides a centralized repository of employee master data that human resources management requires in order to complete core human resources processes.

ITB's motivation for revamping its HCM process is, in the first place, to improve its human resources quality, and second, to have a reliable HCM process, particularly since the HRIS encompasses all human resources management activities. ITB's process of transforming its HCM process can be laid out in three stages. First is strengthening the human resources foundation, which involves optimizing the planned HRIS system, creating a competency-based job profile, and then implementing a performance management system and a payroll system. The second stage is improving the quality of human resources, which consists of improving training and development programs, increasing employee engagement, and creating effective HR guidelines and policies. The third stage is strengthening the organization itself, which occurs through knowledge management, good corporate governance, and adherence to organizational culture and values. The ultimate vision associated with creating this new HCM process rests on having an HR system that attracts the best employees, who will have a comfortable workplace from which they can best offer skilled professional training to students.

ITB's HRIS system itself encompasses three separate systems: the Performance Management System, the Organization and Competency Information System, and the Employee Management Information System. The Performance Management System manages the performance indicators and performance targets of each employee in the ITB system. The Organization and Competency Information System controls organizational data, data hierarchies, working areas, and system history. Lastly, the Employee Management Information System is the primary data source for the other components of ITB's HRIS and can easily be accessed by both managers and employee users.

The use of a digital employee score card serves as the foundation for the information in HRIS's Performance Management System. The objective of having this score card is to allow human resources to be measured quantitatively, according to both mandatory and optional targets. The categories to be inputted into this score card can easily be modified according to the particular requirements of different job roles.

5.2.3.5 Panel Session 1 Q&A Session

Prof Maeda moderated the Q&A session. The first question came from an audience member from Malaysia and was directed to Dr Naz'ri. The questioner asked that he explain the difference between skilled workers/highly skilled workers and skilled professionals. Dr Naz'ri responded that the terms "skilled professional" and "high-skill professional" are used to refer to workers who possess a specific advanced skill requiring specialized training; examples of these skills include the ability to engage with big data, data science, and AI. Medium- or low-skill professionals practice skills that are commonly available and do not require specialized training.

The next question also came from an audience member from Malaysia and was addressed to Ms Kobayashi. The questioner asked whether the inter-university exchange program of

Japan is also applicable to TVET (technology and vocational education and training) institutions. Ms Kobayashi responded that the subsidies apply only to conventional universities within Japan, but that overseas higher education institutions could partner with Japanese universities to participate in the program.

Prof Maeda provided the next question. He asked all four presenters to consider what the fundamental difference is between industrial human resources development and digital human resources development, and whether a fundamentally new system is needed for the implementation of digital human resources development. Dr Culaba responded that in the case of the Philippines, there is a wide range of economic sectors and therefore still a need for industrial human resource development, even in the absence of the digitalization processes that are involved in some sectors of the economy. It is important, therefore, to ensure that the needs of various industries as well as the multiversity model fit into educational training opportunities available to the workforce. In short, the industrial human resources development process is a major component of the developing digital transformation of economies; they are not separate processes.

Dr Yuanita then responded that she agrees with Dr Culaba, and that in the case of her institution, which is an engineering institute, industrial interaction is still a core component of the training needed by students. The digital transformation is requiring additional new skills for the optimization of engineering knowledge and skills, but those new skills and knowledge areas will be based on the industrial core of the engineering profession.

Dr Naz'ri responded that in thinking of our current Industrial Revolution 4.0 as a dramatic progression from the original Industrial Revolution 1.0 focusing on mechanical steam power to the current world of cyber systems, human resources development also needs to be dramatically transformed to reflect the immensity of the shift. His opinion is that we cannot manage human resources in the digital era using approaches that were designed for the mechanical or electrical era.

Lastly, Ms Kobayashi responded that based on her vantage point in seeing the Japanese government promote digital transformation, with human resources development as a major factor, it seems that significant changes and upgrades will be needed while still retaining industrial human resources development as a major component of the human resources development process.

5.2.4 Panel Session 2: Creating Job Opportunities for Skilled Professionals in the Region for Sustainable Economic Growth

This panel session was moderated by Prof Maeda Mitsuhiro, of the Advanced Institute of Industrial Technology (AIIT), in Japan.

5.2.4.1 Presentation by Mr Yoden Tomohiro Enhance Your Career in Japan

Mr Yoden presented on opportunities available for highly-skilled foreigners to come to Japan to work and live and on supports from the Japan External Trade Organization (JETRO) toward that process.

As a small island with few natural resources of its own, trade and connections with other economies are vital to Japan's prosperity. According to a recent survey by JETRO, 82.8% of Japanese companies would like to increase their exports, and 47% of Japanese companies with offices abroad would like to expand these international operations. A major challenge to these efforts, however, is a lack of human resources for overseas businesses. Many Japanese companies hire Japanese people to manage their overseas operations, but nearly a quarter of all companies with overseas offices would like to hire the non-Japanese for

these positions, according to the survey. Although growth in the number of foreigners working in Japan slowed during the pandemic, the overall number has risen significantly over the past decade, with more than 1.7 million foreigners currently employed by Japanese companies and some 3 million foreigners residing in Japan.

For foreigners considering exploring employment opportunities in Japan, JETRO offers a variety of resources via its English-language “Open for Professionals (OFP)” website.⁷² These include videos showcasing foreigners who currently work in Japan, an animated Work in Japan Starter’s Guide outlining the steps for finding a job in Japan and highlighting the attractiveness of life and work in Japan, an OFP list providing information on companies interested in global talent, and online job fairs. At two fairs held in late 2022, over 240 Japanese companies participated, and several thousand people registered to attend online. Open for Professionals also maintains an active presence on social media, including Facebook, Twitter, and LinkedIn.

For foreigners who have received a job offer from a Japanese company, the next step is fulfilling immigration requirements for moving to Japan. Once an offer has been made, the Japanese company applies to the Immigration Bureau for a Certificate of Eligibility, or CoE. The employee then requests the CoE from the company for the purposes of applying for a visa, which will allow them to travel to Japan. Upon arrival in Japan, the new employee will receive a residence card.

Two statuses of residence are available for highly skilled foreign professionals. The first is known as Gi-Jin-Koku, or Engineers/Specialists in Humanities/international Services. The second is a points-based system that awards points for categories such as education, work experience, and annual income.

5.2.4.2 Presentation by Dr Kamaga Masamu A New Digital Human Resource Development Paradigm based on the Industry-Academia Collaboration

Dr Kamaga presented on the experience of the newly established Kirirom Institute of Technology (KIT), in Cambodia, in pioneering a novel approach to digital and Industry 4.0 training via an innovative industry-academia collaboration.

Kirirom Institute of Technology was established in 2014 as an innovative tech institute, with special curricular focus on digital transformation and Industry 4.0 via a unique industry-academia collaboration.⁷³ With rapid changes occurring in the current era of digital transformation, required skills and knowledge for employment are also changing very rapidly, and as a result universities often find it difficult to keep fully abreast of these changes and provide their students in technical fields with the latest and most cutting-edge skills and areas of expertise. KIT’s answer to this dilemma is a 4-year curriculum for all students that prioritizes project-based learning (PBL) and internship work to a greater extent than traditional 4-year institutions. Significantly, this emphasis on PBL and internship work relies on a more all-encompassing form of industry-academic collaboration.

Over the course of their four years, students at KIT gradually increase the number of hours per week spent on PBL and internship work relative to hours in their academic program. For example, in their first year they devote 10 hours/week to PBL and internship work and 30 hours/week to their academic program; by their fourth year the balance is reversed, with students devoting 30 hours/week to PBL and internship work and only 10 hours /week to academic program work. As a result, an education at KIT provides more than 3,000 hours of internship time, which is the equivalent of 1.5-2 years of work experience. KIT also meets more general learning outcomes for academic programs, with the expected emphasis on fundamental skills and knowledge and on the specific skills and knowledge of students’

areas of study. Of particular focus are cognitive skills such as critical thinking, intra-personal skills such as self-motivation, and interpersonal skills such as intercultural communication.

The structure of the PBL and internship component of student work draws heavily from the participation of industry, with KIT-sponsored companies serving as actual clients for student-run projects carried out at the KIT Incubation Center.⁷⁴ The project team for each student project at the Incubation Center is known as a virtual company, and all positions on the team are filled by students. As a result, students receive significant hands-on training in the latest issues, key areas of knowledge, and desirable skills in their professional fields.

As a testament to some of the early success of KIT as an institution of higher education, its graduates are already emerging as global leaders. Some alumni have started their own companies as entrepreneurs, others work as skilled engineers for global companies such as Microsoft, and others are serving as youth leaders within developing economies.

5.2.4.3 Presentation by Dr Do Sinh How to Create Human Resources Suitable for IT Industries

Dr Do presented on how one Vietnamese university—Dong A University in the city of Da Nang—is training its students for IT fields and thus supporting Viet Nam’s burgeoning IT and digital sector.⁷⁵

Viet Nam’s Information and Communications Technology (ICT) sector increased its 2021 revenue by 9% over 2020, and its internet economy growth rate increased from 17% to 31% over the same period. Also in 2021, digital technology became one of the pillars of the fight against COVID-19, supporting Viet Nam’s economic recovery and continued development. And according to the president of the Viet Nam Software Association (VINASA), by 2025 the digital economy will account for 20% of Viet Nam’s GDP. In short, the IT and digital economy is booming in Viet Nam.

A critical problem, however, is the shortage of skilled IT personnel. In spite of significant increases in salary and bonuses in the industry, and the construction of numerous new IT and high-tech software parks across Da Nang and the economy as a whole, the Vietnamese economy is still expected to have a shortage of 150,000 to 195,000 developers/engineers per year in the period from 2022 to 2024. In order to address this shortage, improvements in Viet Nam’s IT human resources development system are badly needed. The quantity and quality of human resources training has not yet met the actual job requirements for the industry, and universities have been slow to adopt programs in specialized fields of digital technology such as Cloud computing, AI, and blockchain technologies.

Dong A University is currently undertaking a number of efforts to improve education and human resources training in IT fields. These efforts include collaborating with local industries on events and training programs, implementing teaching and learning methods that emphasize “Teaching and Learning 4.0,” and involving students in the building of IT products and start-up services. In concert with universities in Japan, Dong A University is also working to establish joint research groups, research and technology transfer projects, and the exchange of faculty between universities, in addition to strengthening student exchanges between the two economies and implementing internship opportunities, among other proposals.

5.2.4.4 Panel Session 2 Q&A Session

Prof Maeda moderated the Q&A session. The first question came from an audience member from Malaysia and was addressed to Mr Yoden. The questioner wanted to know what the possibilities or potential are for recruitment or internships. Mr Yoden responded that it was

difficult to sum up those possibilities briefly, but he recommended that those considering working in Japan attend the upcoming online career fair in early February.

The next question was also from an audience member from Malaysia and was for Dr Kamaga. The questioner asked what Kirirom Institute of Technology has done to facilitate the continuous participation of industry for job placement since it is a challenge to get continuous engagement from industry. Dr Kamaga responded that the situation has been uniquely difficult recently due to the COVID-19 pandemic and the closure until recently of many borders in the region. However, according to Dr Kamaga, KIT continues to produce graduates who have the required skills as required by industry.

The next question came from an audience member from Brunei Darussalam and was not specifically directed to any of the panelists. The questioner wanted to know if there are any best practices or initiatives for the training of educators in light of the rapidly changing digital transformational needs of the industry. Dr Kamaga responded, in part to the previous question, by noting that KIT has an incubator center that helps students learn entrepreneurial skills and keep up to date with trends in business and technology, which in turn helps them to survive and thrive in this era of digital transformation. KIT students tend to be very competitive in the market after graduating, and the institute is able to keep sending its students into top industry positions.

Prof Maeda then offered a question to Mr Yoden, asking what efforts by universities would help his office increase the number of foreigners coming to live and work in Japan. Mr Yoden first noted that he expects universities in the region to visit his office's website and social media so that they can learn more about employment opportunities in Japan. Second, he expressed hope that more support from universities would be made available for disseminating information about JETRO's online events.

Prof Maeda then asked Dr Do if he had any concrete requests for public sector or industry to assist with developing Dong A University's curriculum or educational system of digital human resources development. Dr Do responded by discussing internship opportunities available through his university, as well as collaborative events between the university and local companies, and new online teaching methods developed during the COVID-19 pandemic.

Prof Maeda then asked each panelist to respond to the same question he posed to the Session 1 panelists: what is the fundamental difference between industrial human resources development and digital human resources development? Mr Yoden responded that there is a significant difference between the two, and he noted that it is much more difficult to attract digital experts to Japan than industrial experts.

Dr Kamaga then responded that it was difficult for him to answer this question given that KIT really only focuses on digital human resources development. He suggested, though, that as Mr Yoden said, industrial and digital human resources development processes are quite distinct from one another.

Dr Do responded that curricular programming at Dong A University is built from the human resources requirements of industry, and that students who graduate from the university are well equipped for joining the IT industry.

5.2.5 Concluding Remarks

In concluding the workshop, Prof Maeda offered thanks to the expert speakers who presented during the two panel sessions. Prof Maeda then offered a few closing thoughts on enhancing cross-border development of skilled professionals. He repeated his suggestion from earlier in the workshop that the two biggest tasks for people living today are 1) recovering economically from the COVID-19 pandemic, and more importantly, 2)

establishing a digitally transformed society. And in order to establish such a society, the development and enhancement of digital human resources development practices will be the key. He concluded his remarks by briefly summarizing each of the seven expert panel presentations and noting the synergy between topics, and then offered thanks to METI and everyone involved with the workshop.

6 Annex B: Workshop Handouts

6.1 Agenda

* Note: program dates and times are shown in Singapore Standard Time (UTC+8:00).

Begin*	End*	Description
9:00	9:05	Housekeeping Announcements
9:05	9:15	Welcome and opening remarks from Mr NIIKURA Takayuki, Director for the APEC office, Trade Policy Bureau, Ministry of Economy, Trade and Industry (METI), Japan
9:15	9:30	Introductory Presentation: <i>The Importance and Potential of Creating Innovation by Developing Skilled Professionals for Economic Recovery in the APEC Region</i> Mr NAGANUMA Satoru, Assistant Director for the APEC office, Trade Policy Bureau, Ministry of Economy, Trade and Industry (METI), Japan
9:30	10:20	SESSION 1: <i>Developing Skilled Professionals to Create Innovations Across the Region Through Education</i> Moderator: Prof MAEDA Mitsuhiro Advanced Institute of Industrial Technology (AIIT), Japan Panelists: <ul style="list-style-type: none"> • Dr Mohd Naz'ri Mahrin Universiti Teknologi Malaysia (UTM) <i>ASEAN Education System and Innovation</i> • Ms KOBAYASHI Ayaki Higher Education Bureau, Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan <i>Exchanges between Japan and ASEAN in Higher Education</i> • Dr Alvin B. CULABA De La Salle University, the Philippines <i>A multiversity model: An HRD framework for the new Philippine industrial strategy</i> • Dr Nita YUANITA Institut Teknologi Bandung (ITB), Indonesia <i>Human Resources Information System (HRIS)</i>
10:20	10:30	BREAK
10:30	11:20	SESSION 2: <i>Creating Job Opportunities for Skilled Professionals in the Region for Sustainable Economic Growth</i> Moderator: Prof MAEDA Mitsuhiro Advanced Institute of Industrial Technology (AIIT), Japan Panelists: <ul style="list-style-type: none"> • Mr YODEN Tomohiro Business Development and Human Resources Support Department, Japan External Trade Organization (JETRO) <i>"Open for Professionals" - Promotion of highly-skilled foreign professionals to work in Japan</i> • Dr KAMAGA Masamu Kirirom Institute of Technology, Cambodia <i>A New Digital Human Resource Development (d-HRD) Paradigm based on the Industry-Academia Collaboration</i> • Dr DO Sinh Đông Á University, Viet Nam <i>How to create human resources suitable for IT industries</i>
11:20	11:25	Housekeeping Announcements
11:25	11:30	Concluding remarks from Prof MAEDA Mitsuhiro Advanced Institute of Industrial Technology (AIIT), Japan

6.2 Speaker Biographies

Prof. MAEDA Mitsuhiro, Moderator

Epistemic Research Institute of Social Ethics (ERISE)

Advanced Institute of Industrial Technology (AIIT), Japan



Prof. Maeda is a Professor at the Advanced Institute of Industrial Technology (AIIT), President of ERISE (Epistemic Research Institute of Social Ethics), and Vice President of the Global Society of Applied Infoscionomics (Glo-SAI). Prof. Maeda's career has included multiple other prominent roles in both the government and academia. At the Ministry of Economy, Trade and Industry (METI), he served as Director for International Finance, and Director of the Financial Cooperation Division. In academia, he served as Associate Professor at the University of Saitama, Visiting Professor of the Graduate Institute of Policy Studies (GRIPS), Visiting Fellow of the Royal Institute of International Affairs (Chatham House, UK), Visiting Fellow of Johns Hopkins University School of Advanced International Studies (SAIS, USA) and Visiting Fellow of the University of Cambridge. He graduated from the University of Tokyo Department of Law.

Dr Mohd Naz'ri Mahrin, Expert Panelist in Session 1

Department of Advanced Informatics, Razak Faculty of Technology and Informatics, Universiti Teknologi Malaysia (UTM)



Dr Mohd Naz'ri Mahrin is currently the Dean of Razak Faculty of Technology and Informatics, UTM, Kuala Lumpur. He has held several faculty positions at UTM including Deputy Dean (Academic and Student Affairs), Assistant Dean (Quality and Strategy), and IT Manager. His research interests lie in the areas of software engineering, big data analytics, enterprise architecture, and information security management systems. He is a senior member of IEEE, and also a member of IEEE Computer Society since 2010. Dr Naz'ri completed his PhD degree in Software Engineering from the University of Queensland, Australia in 2010. He received his BSc (Computer Science) and MSc (Real-Time Software Engineering) from UTM in 1997 and 2000 respectively.

Ms KOBAYASHI Ayaki, Expert Panelist in Session 1

Higher Education Bureau,
Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan

Ms Kobayashi is a unit chief in the International Affairs Division of the Higher Education Bureau at the Ministry of Education, Culture, Sports, Science and Technology (MEXT). Her responsibility covers international exchanges in the higher education sector. In particular, she is involved in promoting inter-university and bilateral exchanges and participation in higher education related activities in multilateral frameworks such as ASEAN+3 and UNESCO. Her prior experience at MEXT includes work with APEC-EDNET, OECD, and evaluations of economy-level public universities.

Dr Alvin B. CULABA, Expert Panelist in Session 1

Center for Engineering and Sustainable Development Research
De La Salle University, the Philippines



Dr. Culaba is a Distinguished University Professor and University Fellow at De La Salle University Manila. He served as the university's Executive Vice President from 2010-2016 and is currently the Director of its Center for Engineering and Sustainable Development Research. Dr Culaba is an Academician of the National Academy of Science and Technology Philippines (NAST PHL) recognized for his contribution to the development and applications of Life Cycle Assessment (LCA) methodology in manufacturing and energy systems engineering. He is a member of the Executive Council of NAST PHL, mandated to provide advice to the President of the Philippines and the Philippine

government.

Dr. Culaba holds a Ph.D. in Mechanical Engineering from the University of Portsmouth, United Kingdom and is listed in the Who's Who in Philippine Engineering.

Dr Nita YUANITA, Expert Panelist in Session 1

Faculty of Civil and Environmental Engineering,
Institut Teknologi Bandung (ITB), Indonesia



Ms Nita Yuanita is Vice Dean of the Faculty of Civil and Environmental Engineering (FCEE) at the Bandung Institute Technology (ITB) in Indonesia. She works as a university lecturer with over 25 years of broad-ranging experience in the field of Civil Engineering, specifically in the Ocean Engineering field of study. As a vice dean, Ms Nita plays a crucial role in managing the academic and research atmosphere and strengthening external collaboration of the ITB FCEE. As a professional engineer, she contributed to solving maritime industry problems, such as harbor development, sedimentation and coastal protection. She is also concerned about climate change and sustainable infrastructure in the field of coastal engineering, and she conducts research using natural components in coastal protection structures that are good for the coastal environmental and social aspects.

Please see the next page for the expert panelists in the session 2.

Mr YODEN Tomohiro, Expert Panelist in Session 2

Client Support Global Talent Acquisition and Development Division,
Business Development and Human Resources Support Department,
Japan External Trade Organization (JETRO)



Mr. Tomohiro Yoden has been supporting cross-sectoral business development with more than 20 years of experience as a bridge between Japan and emerging economies. He is currently in charge of various projects for “Open for Professionals”, an inter-ministerial initiative that supports Japanese companies to work with highly skilled foreign professionals. He specializes in supporting business development with new ideas/solutions. He has deep experience in cross-cultural environments and interacting directly with emerging economies in Eastern Europe, Israel, and Palestine on open innovation, technology scouting, and global environmental issues. He has worked for JETRO in Romania and Israel.

Dr KAMAGA Masamu, Expert Panelist in Session 2

Kirirom Institute of Technology, Cambodia



Dr Kamaga Masamu is currently the Vice President for Global Engagement at Kirirom Institute of Technology (KIT), Cambodia. After his stint at Japan’s National Institute of Advanced Industry, Science and Technology (AIST) and TOSHIBA’s Corporate Research & Development Center, he began his career in the academia as an educator and researcher in Electrical and Electronic Engineering and Japanese Studies and Language at Maranatha Christian University, Indonesia. After 4 years there, he moved to Bina Nusantara (BINUS) University, Indonesia and held the same position for 2 years.

He obtained his Ph.D. in Engineering from Chiba University, Japan in 2010. Both his Bachelor and Masters in Electrical and Electronic Engineering were obtained at the Tokyo Institute of Technology, Japan.

Dr DO Sinh, Expert Panelist in Session 2

Dong A University, Viet Nam



Dr Do Sinh is the Vice Rector of Dong A University, Viet Nam. He performs management duties and directs scientific research and community service among lectures and students of Dong A University. He has more than 13 years of experience in management and policy making - concerning management of telecommunications and information technology - under the Ministry of Information and Communications, and has over 15 years working on teaching and research. He is a researcher at SDN Technology Center, Broadband Mobile Lab, NCTU, Chinese Taipei. His research interests include 5G networks, SDN/NFV, Internet of Things, big data and machine learning.

6.3 Participant Survey Form

Information learned from the workshop

Instructions: Please indicate your level of agreement with the statements listed in the table below by circling the number that applies. Please leave comments if any.

The workshop was helpful for deepening my understanding on cross-border development of skilled professionals.

1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

Comment:

Developing skilled professionals across the APEC region will be beneficial for my economy and/or organization.

1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

Comment:

The best practices and recommendations discussed during the workshop could be effective for my economy and/or organization.

1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

Comment:

The presentations helped me understand what challenges are faced in developing skilled professionals.

1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

Comment:

The presentations provided valuable insights on how these challenges can be overcome.

1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

Comment:

Findings and suggestions

What were the most useful insights that you learned from today's workshop?

Are there any additional topics that were not covered in this workshop that you would like to be addressed in future APEC reports and/or events relating to human resource development?

What further steps should APEC take to address member economy concerns on this subject?

Participant information

Economy: _____

Organization type: (Please select one that applies from below)

Government agency	International organization (APEC, etc.)	Private company or industry organization	Educational / Research institution	Others
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If “Others”, please specify.

The following information is optional.

Name/position:

Organization name:

Email:

Gender: Male / Female / Prefer not to specify

Thank you. Your evaluation is important in helping us assess this project, improve project quality and plan next steps. If you have any questions or additional comments, please contact:

apec@wcore.com

7 Annex C: Workshop Presentation Materials

The presentation materials submitted from the speakers are saved and published in the APEC Meeting Document Database (MDDDB).

Please access the document folder by following the link below:

<http://mddb.apec.org/Pages/search.aspx?setting=ListMeeting&DateRange=2023/01/01%2C2023/01/end&Name=Workshop%20on%20Enhancing%20the%20Cross-Border%20Development%20of%20Skilled%20Professionals%20Across%20the%20APEC%20Region%202023>

8 Annex E: Key Acronyms

ABAC	APEC Business Advisory Council
ACCMSME	(ASEAN) Coordinating Committee on Micro, Small, and Medium Enterprises
ADB	Asian Development Bank
APEC	Asia-Pacific Economic Cooperation
AQRF	ASEAN Qualifications Reference Framework
ASEAN	Association of Southeast Asian Nations
CBN	(APEC HRDWG) Capacity Building Network
COVID-19	coronavirus disease 2019
HRDWG	(APEC) Human Resources Development Working Group
ICT	Information and communications technology
ILO	International Labour Organization
MSME	Micro-, Small and Medium-sized Enterprises
OECD	Organisation for Economic Co-operation and Development
R&D	Research and Development
SOM	(APEC) Senior Officials' Meeting
STEM	Science, technology, engineering, and math
TVET	Technical and vocational education and training
UNESCO	United Nations Educational, Scientific and Cultural Organization

9 Annex F: References

- ¹ ILO, “World Employment and Social Outlook 2018” (Geneva: ILO, 2019).
- ² APEC Policy Support Unit, “2021 APEC Economic Policy Report”
- ³ http://mddb.apec.org/Documents/2022/HRDWG/CBN/22_hrdwg_cbn_002.pdf
- ⁴ <https://www.meti.go.jp/press/2021/01/20220110001/20220110001-2.pdf>
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