



**CLOSING THE DIGITAL
SKILLS GAP FORUM**

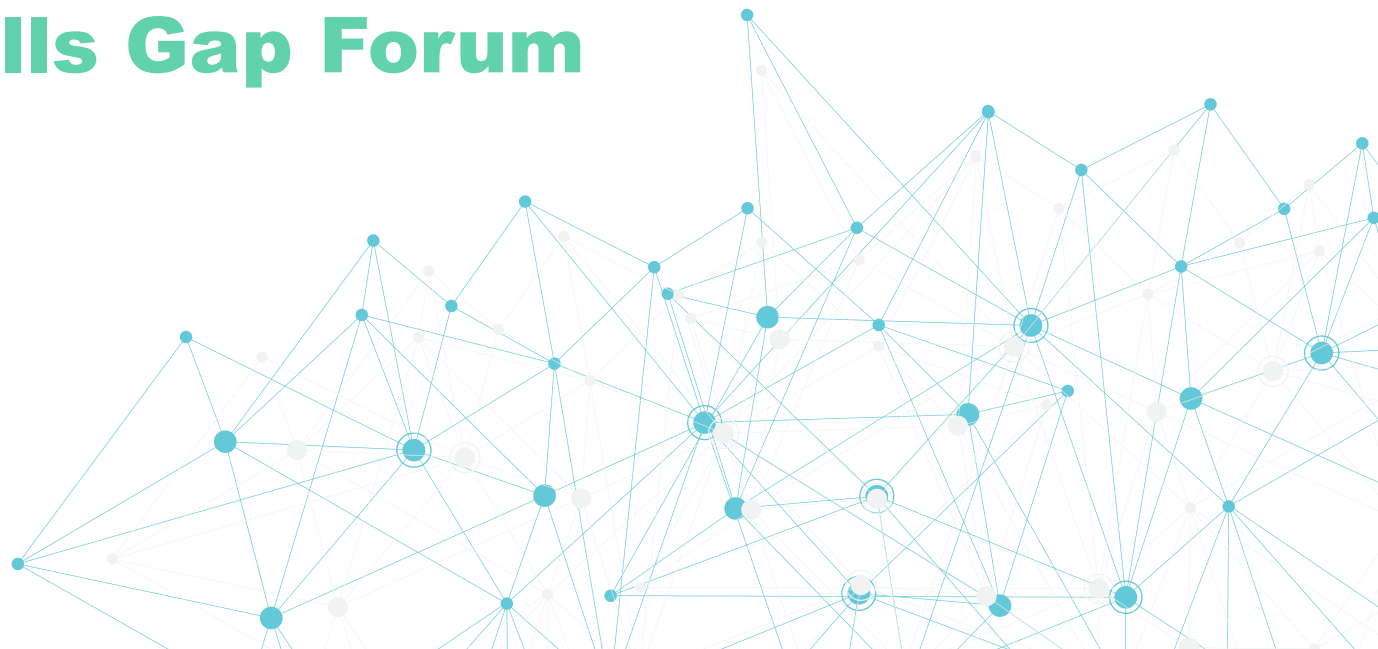


APEC

Closing the Digital Skills Gap Forum

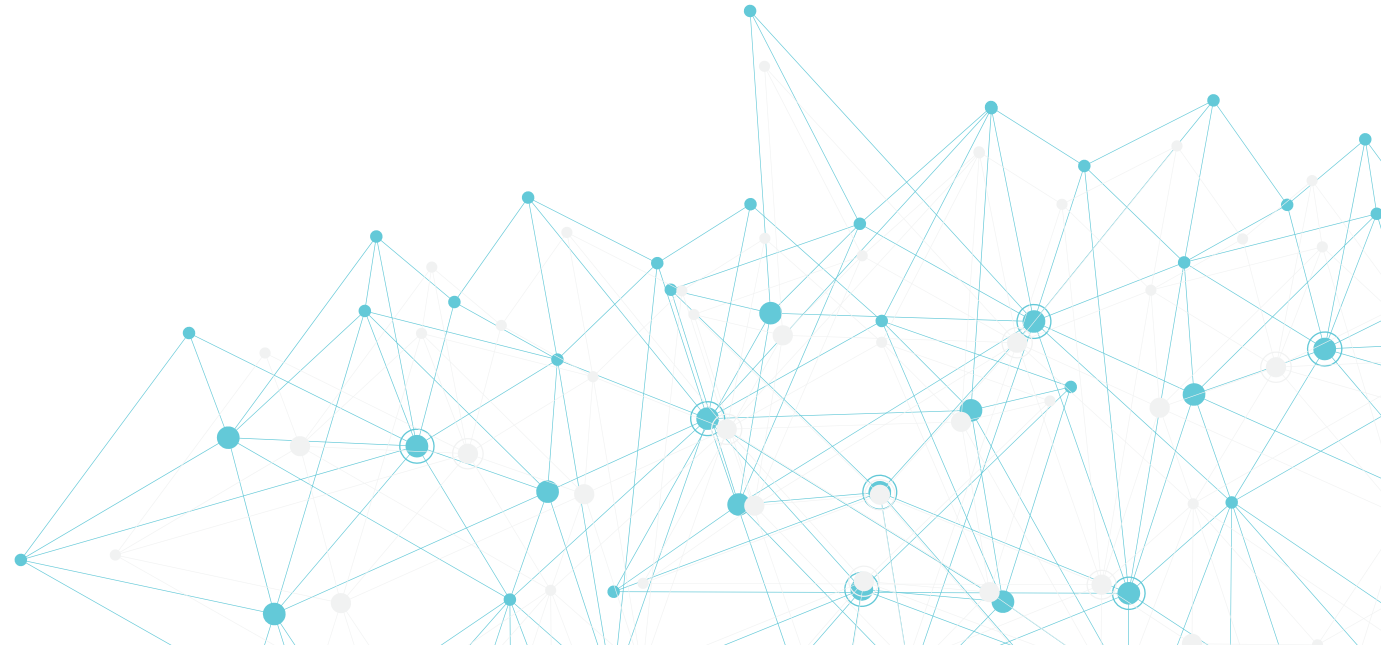
Singapore | 15 – 16 July 2019

#MindTheDigitalSkillsGap

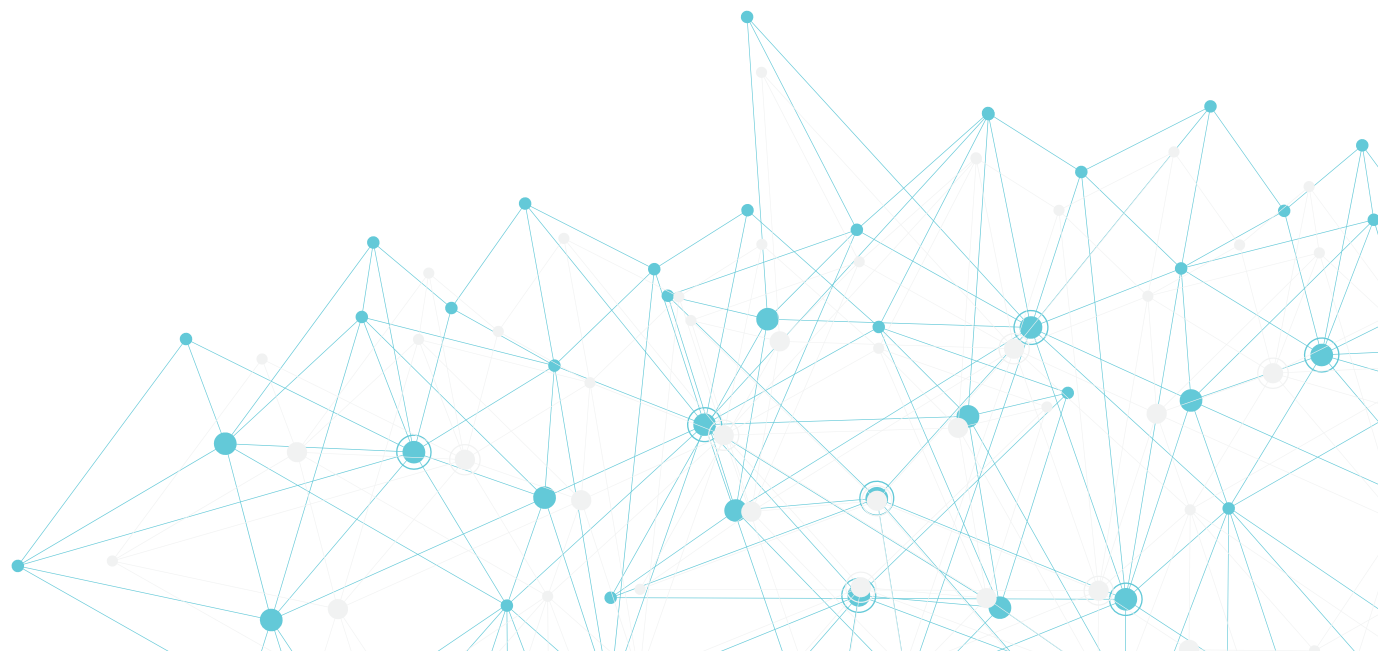


Welcome Remarks

- **Mr. Christopher Watson**, Senior Advisor for APEC Affairs, International Labor Affairs Bureau, U.S. Department of Labor, *APEC Closing the Digital Skills Gap Forum Project Overseer*
- **Prof. Dong Sun PARK**, Lead Shepherd, APEC Human Resources Development Working Group



Participant Introductions





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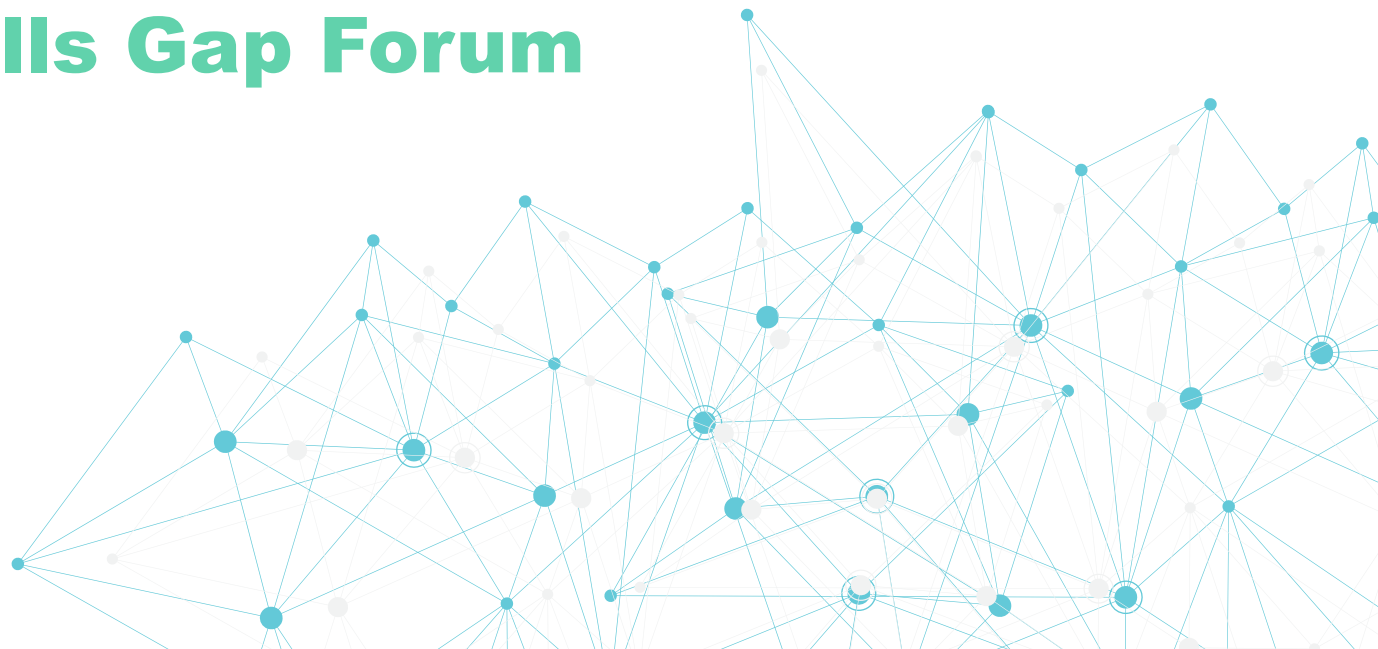


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Closing the Digital Skills Gap Forum

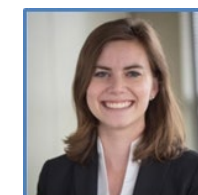
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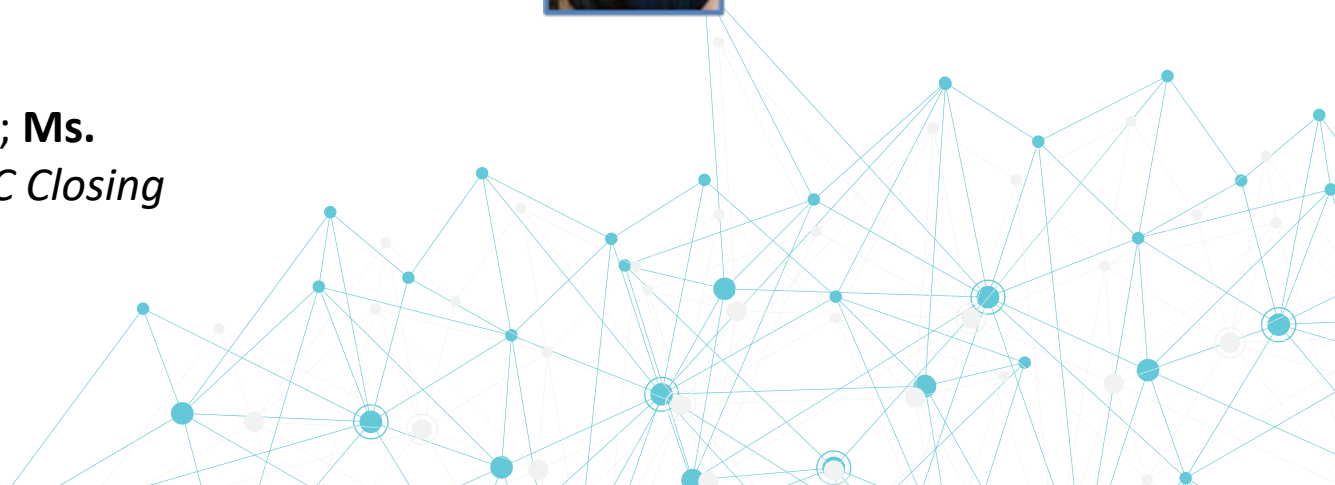
Where have we been and where are we going? Presenting, finalizing, and beginning to implement a collaborative vision and roadmap for collective action in APEC to support efforts to upskill and reskill at scale

- **Mr. Andrew Tein**, Chief of Staff to the CEO, Vice-President of Global Government Affairs, Wiley, *APEC Closing the Digital Skills Gap Forum Co-Chair*
- **Ms. CJ Hwu**, Director, Government Affairs, Asia Pacific, Wiley
- **Dr. L. Isabel Cárdenas-Navia**, Vice-President, Programs, The Business-Higher Education Forum (BHEF), *APEC Closing the Digital Skills Gap Forum Co-Chair*



Moderated by:

- **Ms. Patricia Wu**, Managing Director, C&M International; **Ms. Katherine Nunner**, Consultant, C&M International, *APEC Closing the Digital Skills Gap Forum Secretariat*



Timeline: 2017 – 2020



2018

APEC Project DARE

- 60+ participants shared models on how to bridge the digital skills gap
- Developed case studies on *Recommended APEC Data Science & Analytics (DSA) Competencies*

ROADMAP ELEMENTS	KEY ACTIONS	CURRENT METRICS
1. Build capacity building, networks, and tools to support the digital skills gap		60 percent of member economies indicated that they will implement or strengthen their digital skills gap measures
2. Share government national strategies and policies to support the digital skills gap		40 percent of member economies indicated that they will implement or strengthen their digital skills gap measures
3. Share how demand for digital skills are evolving in the future		40 percent of member economies indicated that they will implement or strengthen their digital skills gap measures
4. Share how to build digital skills and high impact investments in digital learning and training		40 percent of member economies indicated that they will implement or strengthen their digital skills gap measures
5. Share digital skills assessment data and insights to build evidence		40 percent of member economies indicated that they will implement or strengthen their digital skills gap measures
6. APEC Consortium of digital skills solutions to provide increased coordination		40 percent of member economies indicated that they will implement or strengthen their digital skills gap measures
7. Share insights and approaches to supporting members to effectively work with data		40 percent of member economies indicated that they will implement or strengthen their digital skills gap measures

2020 – 2025

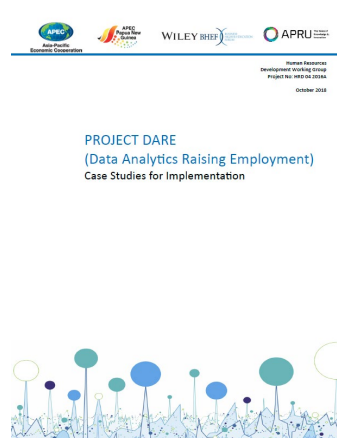
- Implementation of Roadmap



2017

APEC Project DARE (Data Analytics Raising Employment)

- Developed *Recommended APEC Data Science & Analytics (DSA) Competencies*
- Quantified and published research on DSA skills shortage



2019

APEC Closing the Digital Skills Gap Forum

- Present, finalize, and begin implementing a collective vision and roadmap in APEC to support efforts to upskill and reskill at scale

DSA Competencies are Impacting Industry, Higher Education, Governments across APEC Economies

2017: Expert working group developed 10 APEC Data Science & Analytics Competencies necessary for the jobs of tomorrow



2018: APEC Competencies Implemented by A Number of Organizations



Philippines: Incorporated the 10 APEC DSA Recommended Competencies in the Master in Applied Business Analytics (MABA) program of the University of Asia and the Pacific (UA&P). In addition, the Government is funding training of 30,000 workers over three years led by the Analytics Association of the Philippines (AAP).

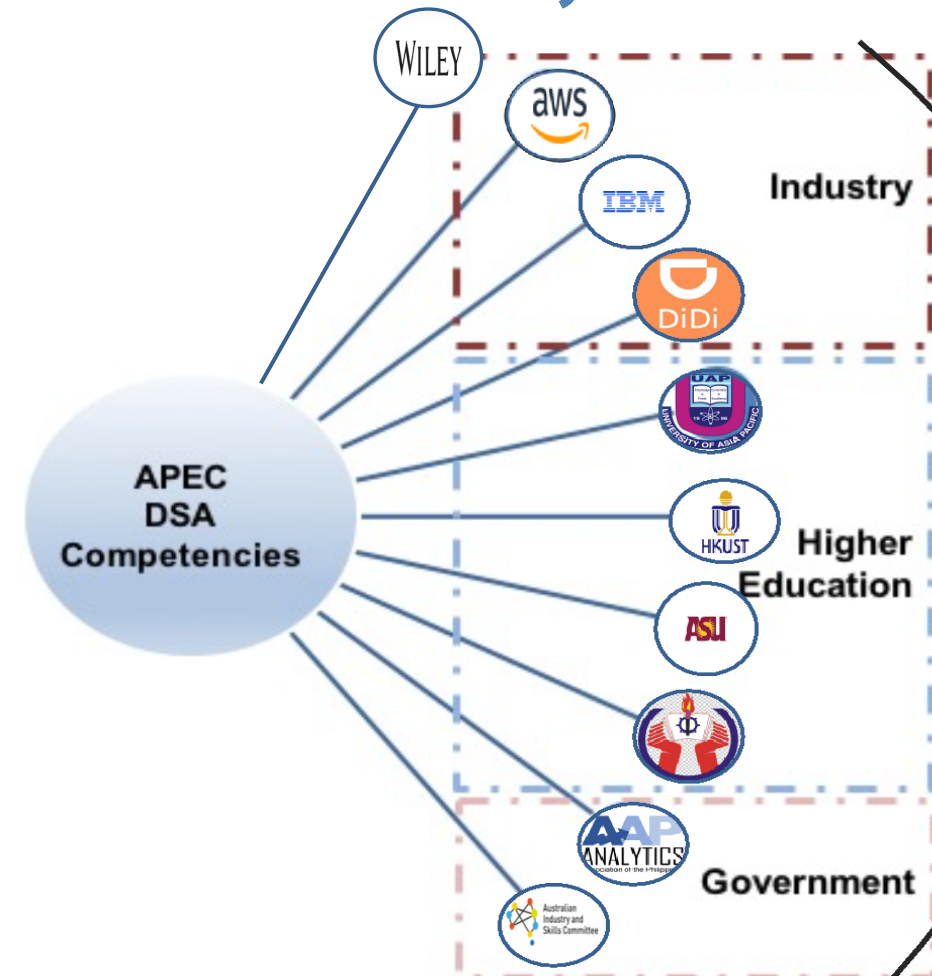


AWS: 10 APEC DSA Recommended Competencies established in Data Scientist and Data Integration Specialist pathways.



Hong Kong University Science and Technology School of Business and Management: Leveraging competencies to inform curriculum in data science and technology, including a full undergraduate degree track.

DSA Competencies are Impacting Industry, Higher Education, Governments across APEC Economies



- Reduces barriers for addressing talent needs of business translators
- Creates paths for commonly recognized training around upskilling/reskilling
- Offers link to quality metrics based on meeting commonly defined needs

- Framework that is flexible and adaptable
- Provides ed providers tools for creating value and remaining relevant
- Develops central voice representing multi-company, multi-sector needs
- Links foundational skills needed for the future with tech skills needed now

- Provides nations place to start, compare, contextualize
- Facilitates priority investments in AI
- Creates sense of urgency on skills needed for workers around the world

1. Increased investment in scaled reskilling
2. Building new industry skilling/reskilling tools
3. Develop academic programs at intersection of business and digital
4. New modalities for addressing life long learning (online)
5. Country-wide skills frameworks
6. Gov-sponsored skilling of labor market

2017

Industry-engaged
commonly defined
competencies

2018

Organic utilization
and deployment of
competencies

2019

On-the-ground implementations
leading to value creation and
roadmap for systemic change

2019 and Beyond

Wide-spread integration of
competency framework with
large-scale measurable impacts



CLOSING THE DIGITAL
SKILLS GAP FORUM

1

Set and Pursue an
Ambitious APEC
Target to Close the
Digital Skills Gap
by 2025

>>>

ROADMAP ELEMENTS	KEY ACTORS			CURRENT METRICS
2 Build capacity building, networks, and tools to support/increase digitally enabled faculty				82 percent of survey respondents indicated that faculty and teachers are not enabled to incorporate DSA into classrooms
3 Share government statistical methodologies that can help close the digital skills gap				41 percent of respondents ranked their government's understanding of the digital skills gap landscape as <u>weak</u> or <u>very weak</u>
4 Share how demand in digital skills are evolving in real time				At least 46 percent of respondents indicated that they <u>do not</u> update job requirements every year
5 Share innovative models and high impact investments in digital upskilling and reskilling				
6 Share digital skills supply/demand data and insights to build understanding				76 percent of respondents characterize the skills mismatch between employers' needs and job seekers' talents for digital job placements as a <u>very significant mismatch</u> or <u>mismatched</u>
7 APEC Compendium of digital skills definitions to promote increased coordination				61 percent of respondents indicated that current levels of coordination to close the digital skills gap at the highest levels of government, employers, and academia <u>are weak</u> or <u>very weak</u>
8 Share insights/approaches to equipping workers to ethically work with data				88 percent of respondents state they are not confident that today's workers are equipped to ethically work with data



Academia



Governments



Employers

APEC Closing the Digital Skills Gap Survey

Results to reskill and upskill at scale

July 2019



WILEY

Recommended APEC DSA Competencies

I. BUSINESS AND ORGANIZATIONAL SKILLS

- 1. Operational Analytics:** Use data analytics and specialized Business Analytics (Business Intelligence) techniques for the investigation of all relevant data to derive insight for decision making.
- 2. Data Visualization and Presentation:** Create and communicate compelling and actionable insights from data using visualization and presentation tools and technologies.
- 3. Data Management and Governance:** Develop and implement data management strategies and governance, incorporating privacy and data security, policies and regulations, and ethical considerations.
- 4. Domain Knowledge and Application:** Apply domain-related knowledge and insights to effectively contextualize data, achieved by practical experience and exposure to emerging innovations.

Recommended APEC DSA Competencies

II. TECHNICAL SKILLS

5. Statistical Techniques: Apply statistical concepts and methodologies to data analysis.

6. Computing: Apply information technology, computational thinking, and utilize programming languages and software and hardware solutions for data analysis.

7. Data Analytics Methods and Algorithms: Capture, clean and inspect data. Implement and evaluate data analytics and machine learning methods and algorithms on the data to derive insights for decision making.

8. Research Methods: Utilize the scientific and engineering methods to discover and create new knowledge and insights.

9. Data Science Engineering Principles: Use software and system engineering principles and modern computer technologies, incorporating a data feedback loop, to research, design and prototype data analytics applications. Develop structures, instruments, machines, experiments, processes, systems to support the data lifecycle.



Recommended APEC DSA Competencies

III. WORKPLACE SKILLS

10. 21st Century Skills: Exhibit crosscutting skills essential for DSA at all levels, including but not limited to: collaboration, communication and story telling, ethical mindset, organizational awareness, critical thinking, planning and organizing, problem solving, decision making, customer focus, flexibility, business fundamentals, cross cultural awareness, social & societal awareness, dynamic (self) re-skilling, professional networking & entrepreneurship.



1
Set and Pursue an Ambitious APEC Target to Close the Digital Skills Gap by 2025

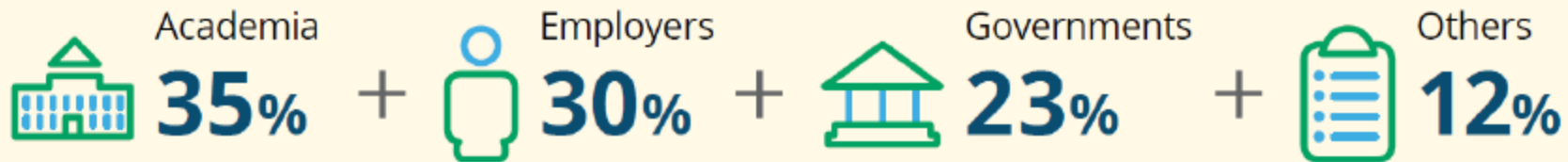
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ROADMAP ELEMENTS		KEY ACTORS		
2	Build capacity building, networks, and tools to support/increase digitally enabled faculty			
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8	Share insights/approaches to equipping workers to ethically work with data			



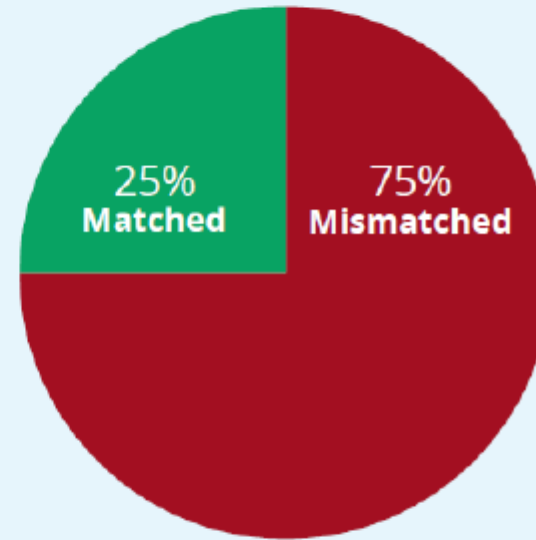
APEC Closing the Digital Skills Gap Survey

123 respondents from **16** APEC economies and **2** non-APEC economies, representing:



Job seekers' talents are not fit for purpose in the digital world

How would you characterize the digital skills match between employers' needs and job seekers' talents?



6

Share digital skills supply/demand data and insights to build understanding



75 percent of respondents characterize the skills mismatch between employers' needs and job seekers' talents for digital job placements as a very significant mismatch or mismatched

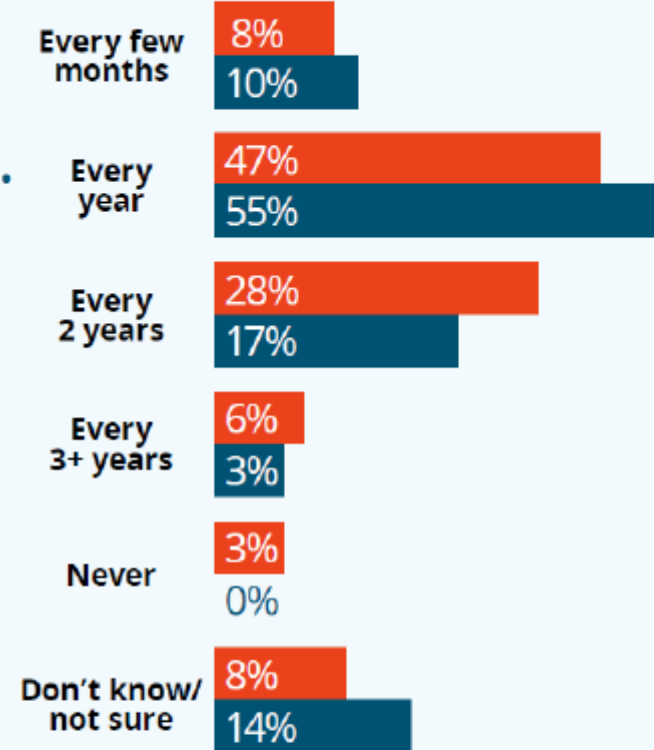
Most stakeholders are working hard to keep pace with changing digital needs ...



How often do you review employers' needs for digital skills to update your curriculum?



How often are job requirements updated for digital skills?



4

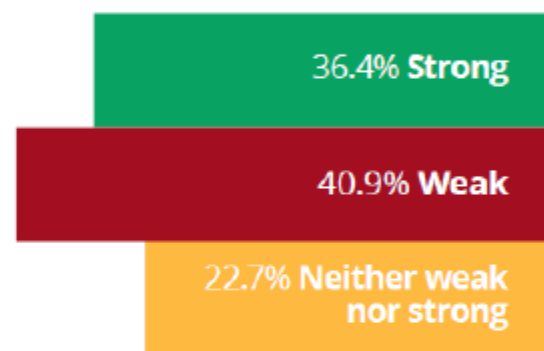
Share how demand in digital skills are evolving in real time

Employers

At least 45 percent of respondents indicated that they do not update job requirements every year

...but government and government policy are less responsive

How would you rate your government's understanding of the digital skills landscape?

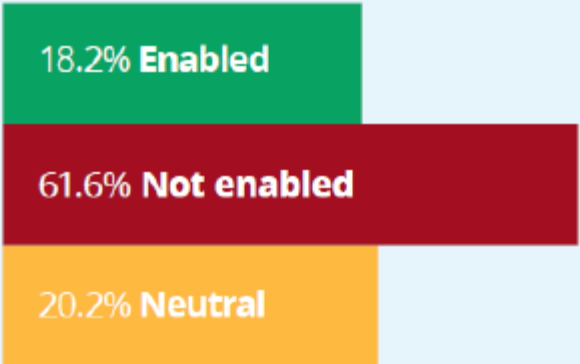


3

Share government statistical methodologies that can help close the digital skills gap



41 percent of respondents ranked their government's understanding of the digital skills gap landscape as weak or very weak



18.2% **Enabled**

61.6% **Not enabled**

20.2% **Neutral**

And faculty and teachers are still not getting enough support

How well are teachers and faculty enabled to incorporate data science and analytics in classrooms?

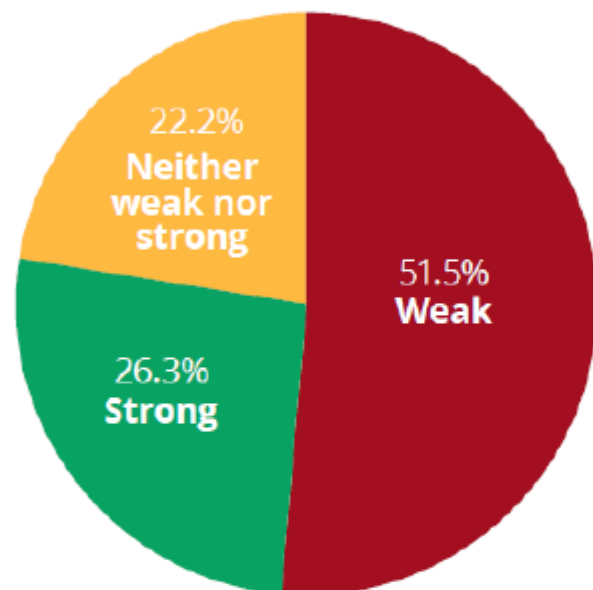
2

Build capacity building, networks, and tools to support/increase digitally enabled faculty



Academia

62 percent of survey respondents indicated that faculty and teachers are not enabled to incorporate DSA into classrooms



There is a lack of coordination between government, employers and academia to close the digital skills gap

How would you rate the coordination of government, employers, and academia to close the digital skills gap?

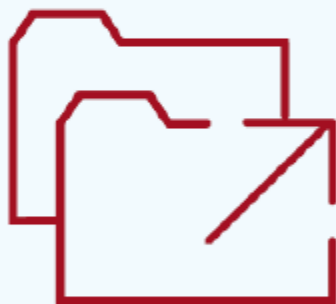


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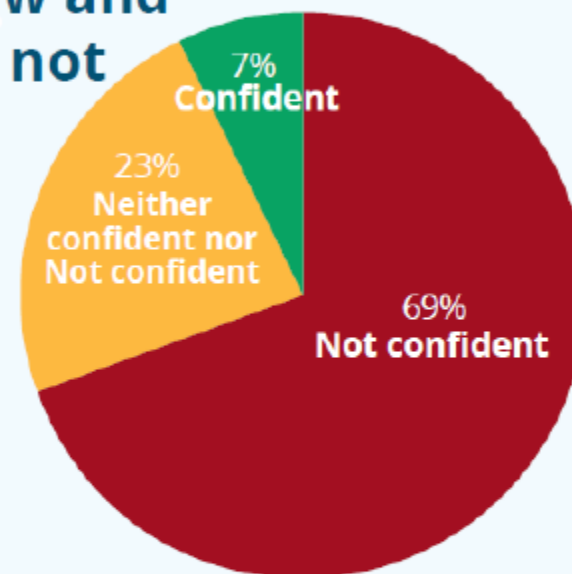
Set and Pursue an Ambitious APEC Target to Close the Digital Skills Gap by 2025



The Digital World is relatively new and rapidly changing—consequently not many professionals know how to work with data ethically



Are you confident that today's workers are equipped to handle data ethically?



8

Share insights/approaches to equip workers to ethically work with data



69 percent of respondents state they are not confident that today's workers are equipped to ethically work with data

The most pressing ethical concerns are:

#1 False information, #2 Opaque algorithms, #3 AI bias

Which of the following ethical issues relating to AI are the most critical?

72%



Machine learning and False information

ranked Machine learning & false information - the first, second or third most critical issue - How can we slow the spread of false information, and who will get to decide which news count as "true"?

61%



Transparency of AI

ranked transparency of AI - the first, second or third most critical issue - algorithms that cannot be publicly scrutinized, or ones that are obscure even to their creators

60%



Biases in AI

ranked biases in AI - the first, second or third most critical issue - the danger that machine learning will reflect, or even magnify, biases in the base data

59%



Supremacy of AI

ranked supremacy of AI - the first, second or third most critical issue - who should have the final word on important decisions: AI or humans

49%



Privacy vs Surveillance

ranked Privacy vs Surveillance - the first, second or third most critical issue - integrated with AI, CCTV cameras are being used to monitor the location of citizens



Strong participation by women is vital to bridging the skills gap...

What can be done to encourage more girls/women to enter STEM fields?

Showcase Female Role Models 17.1%

Promote current female STEM heroes.

Early Intervention 17.1%

Start in kindergarten; Better planning about the economy of the future, so everyone sees their role.

Improve STEM Pedagogy 15.3%

Teach STEM through applications to real-life situations, and integrated into everyday curriculum.

Financial incentives 13.2%

Waive student loans; Create scholarships for girls in STEM.



Accent STEM Applications & Job Impact 10.5%

Make STEM a field where women feel they can make a difference for themselves and their society/economies

More Programs & Events 9.2%

Priority for female interns; Support for programs such as Girls Who Code; AWS, PwC, IBM support such programs but it has to be more widespread and more coordinated.

Change Government Policy 7.9%

Gender-blind government policy on education & employment; subsidies for female workers / employers of female workers in STEM.


Revise School Curricula, 5.3%

Integrate STEM topics into other fields at secondary and tertiary levels.

Other responses: *Tackle unconscious bias; Change parental mindset; Flexible work arrangement; Distance and online programs to enable girls/women from disadvantaged groups to study STEM; Gamification; Educational and marketing campaigns sponsored by governments and industry; Empower more women to participate in policy discussions.*



“Provide proof that the digital economy is not biased...(but) gender-neutral.”



“We will champion...people-centred development, in which the digital society equips our citizens with the right tools and skills to ensure they can participate to their full potential in this new economy...”

– Sebastián Piñera, President of Chile

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WILEY

Roadmap Element 1

- **Mr. Juan Eduardo Carmach**, National Training and Employment Service (Chile)



1

**Set and Pursue an
Ambitious APEC
Target to Close the
Digital Skills Gap
by 2025**



**CLOSING THE DIGITAL
SKILLS GAP FORUM**

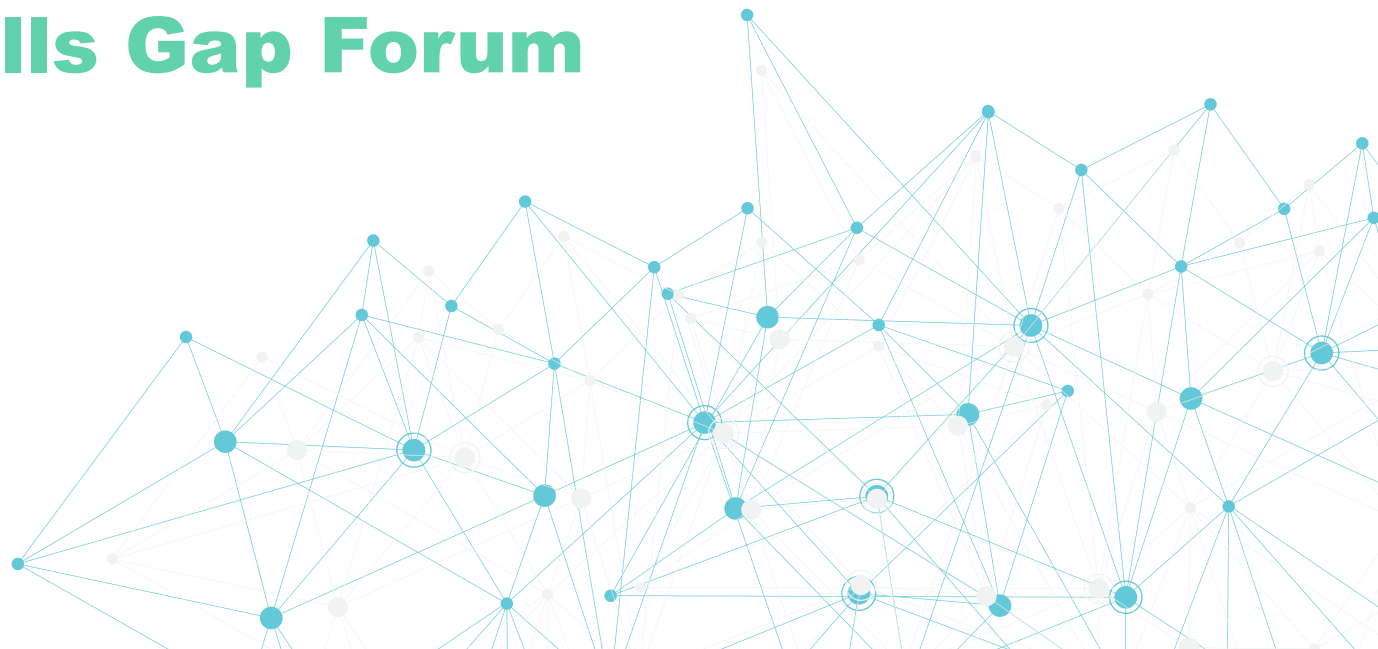


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Closing the Digital Skills Gap Forum

Singapore | 15 – 16 July 2019

#MindTheDigitalSkillsGap



Roadmap Element 4 + 6

Moderated by:

- **Dr. L. Isabel Cárdenas-Navia**, The Business-Higher Education Forum (BHEF)

Discussants:

- **Mr. Olivier Legrand**, Asia Pacific Managing Director, LinkedIn
- **Ms. Lydia Cheng**, Associate Director, Learning Design Solutions, Wiley
- **Mr. Ma Leju**, Head of International Government Affairs, DiDi



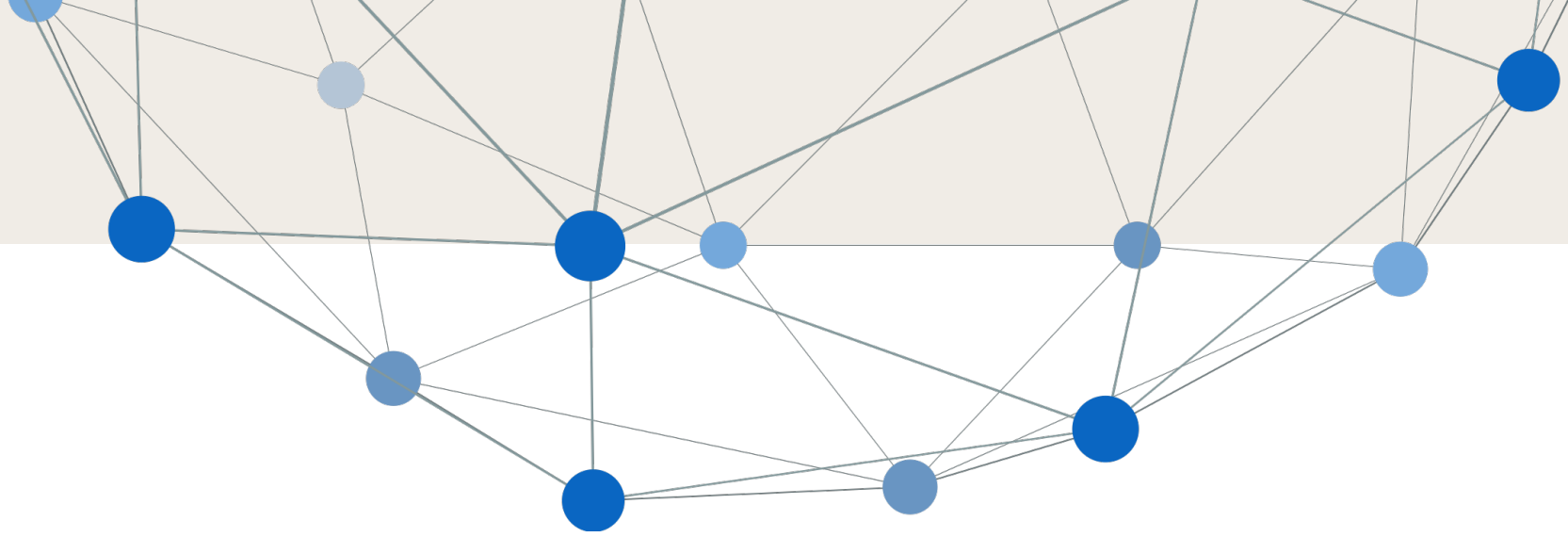


APEC – Closing the Digital Skills Gap Forum



Our Vision

Create economic
opportunity for every member
of the global workforce



630M

Members



30M

Companies



20M

Open Jobs



35K

Skills



90K

Schools

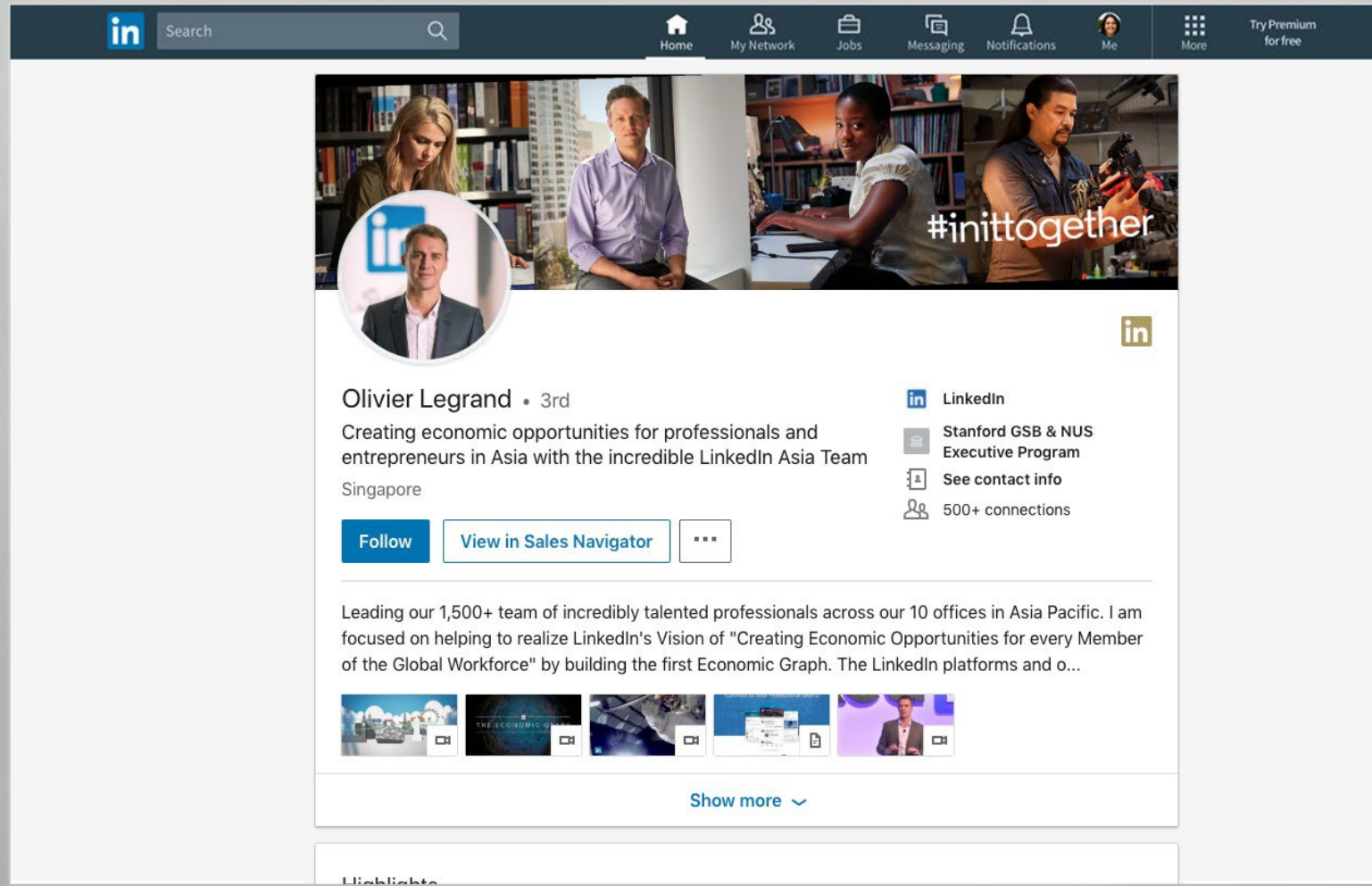


109B

Updates viewed

The Economic Graph

LinkedIn uses algorithms
and data science to
transform data into **labor**
market insights



Features of LinkedIn data



Global

Compare hundreds
of countries
and cities



Granular

Breakdown by
location, industry,
occupation, etc.



Real-Time

Members
constantly update
their profiles



Historical

Monitor data
– like migration
patterns – over time



AI Talent: Who, Where, What?

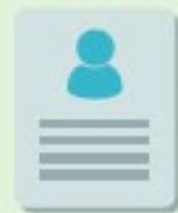
“

AI and emerging technologies will have an impact on the global workforce, no matter where we live and work.

THE LEVEL OF IMPACT BASED ON



Industry



Occupations



Country

It is important to understand what
is the lay of the land for AI.

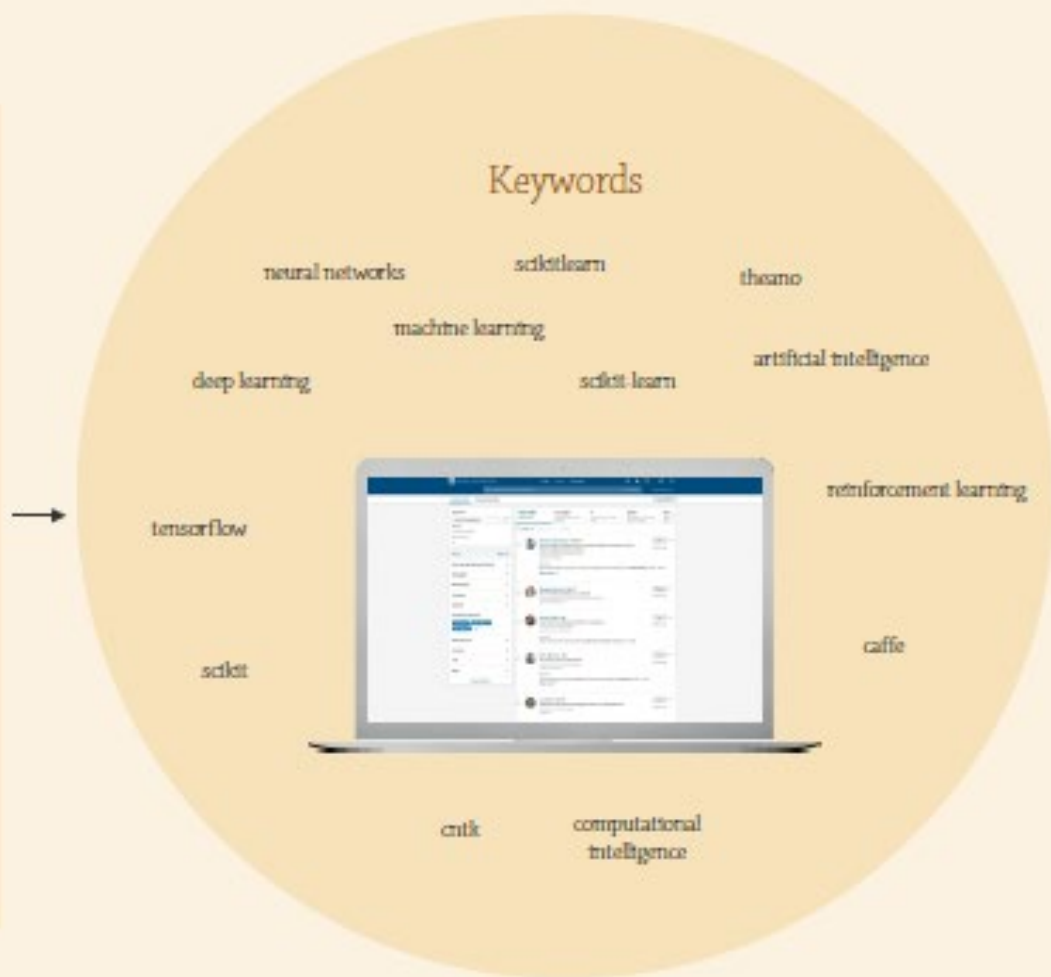


And for each country to understand it's local
challenges and design suitable interventions.

Closing this gap in the
foreseeable future.

Identifying AI talent

Model Input



Model



Output

AI Professional



Non-AI Professional



AITalent: Who, Where, What?



Industry
Insights

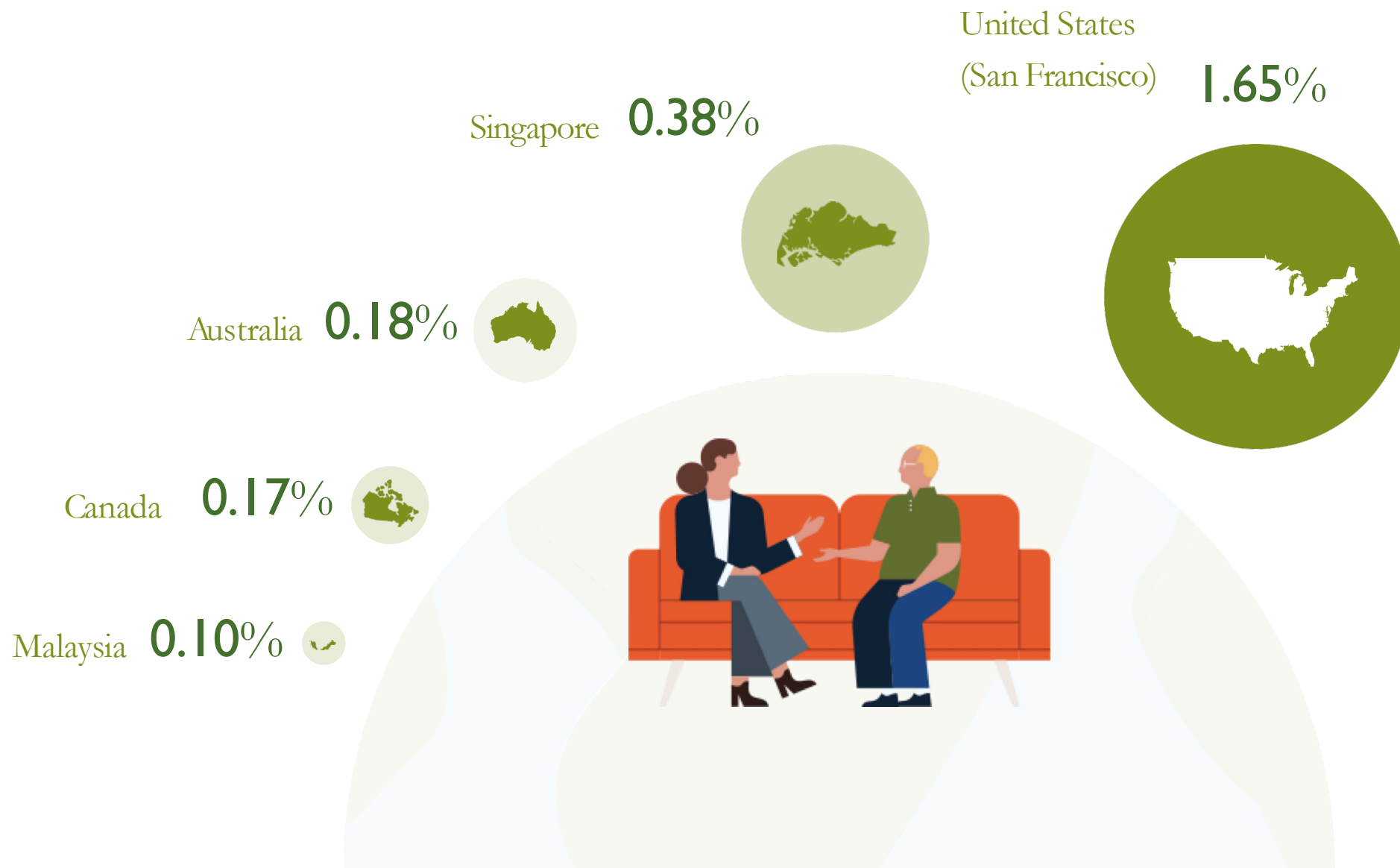


Professional
Attributes



Demographics

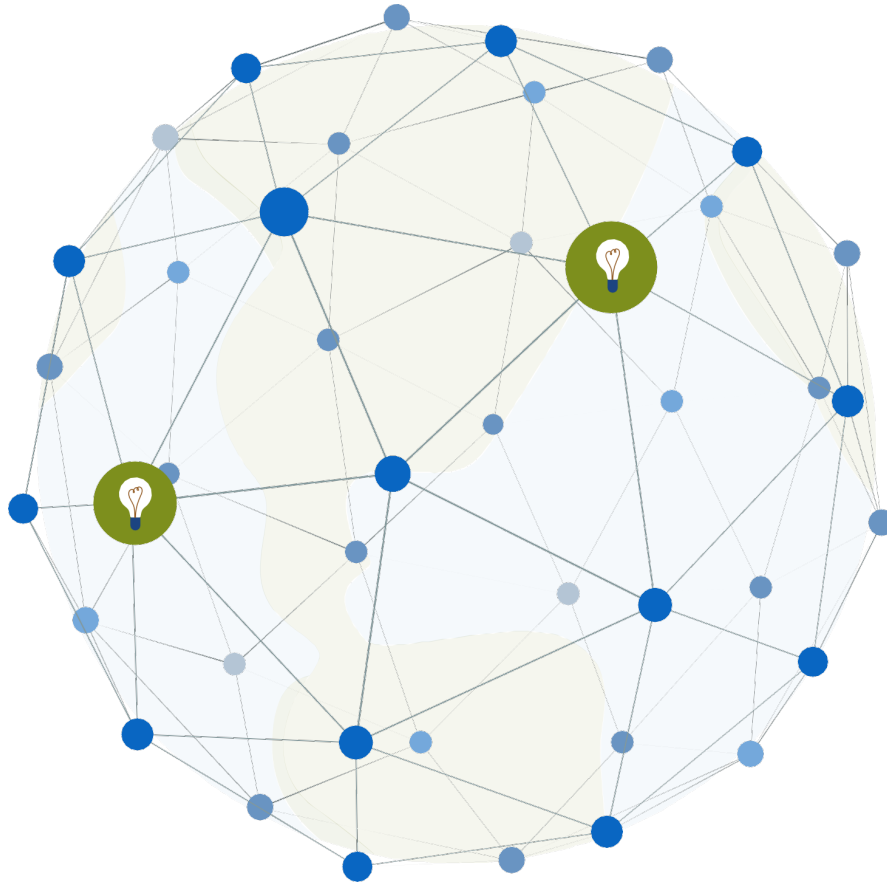
Proportion of *AITalent* in each country



Top Industries where AI talent work



INDUSTRY
INSIGHTS



Australia

- Software & IT Services
- Education
- Hardware & Networking
- Manufacturing
- Finance



Singapore

- Education
- Software & IT Services
- Hardware & Networking
- Manufacturing
- Finance



United States

- Software & IT Services
- Hardware & Networking
- Consumer Goods
- Education
- Manufacturing



Canada

- Software & IT Services
- Education
- Hardware & Networking
- Manufacturing
- Entertainment



Malaysia

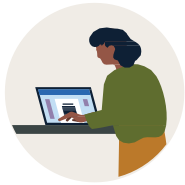
- Software & IT Services
- Education
- Hardware & Networking
- Manufacturing
- Energy & Mining



Key insight:

There are localized differences in the focus area for AI - Software & IT is the generally the top industry where AI talent works, with exception of Singapore where Education tops the charts.

Most Common Roles of AI talent in various industries



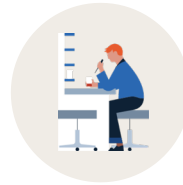
1 Software & IT Services

1. Software Engineer
2. Data Scientist
3. Full Stack Engineer



2 Education

1. Researcher
2. Assistant Professor
3. Research Assistant



3 Hardware & Networking

1. Software Engineer
2. Engineer
3. Data Scientist



4 Manufacturing

1. Software Engineer
2. Engineer
3. Project Engineer



5 Finance

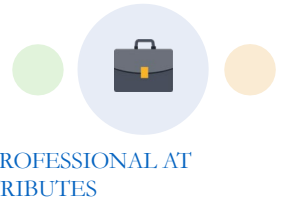
1. Software Engineer
2. Data Scientist
3. Analyst








Key insight:

For Tech, Manufacturing and Finance industries, AI talent takes up software engineering and data scientist roles, while for Education there is more academia focus with AI talent taking up researcher and professor positions.

Top 10 skills unique to AI talent in each country



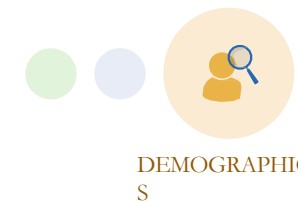
	 Australia	 Canada	 Malaysia	 Singapore	 United States
#1	Python (Programming Language)	Python (Programming Language)	Python (Programming Language)	Python (Programming Language)	Python (Programming Language)
2	Machine Learning	G++	G++	Machine Learning	Machine Learning
3	Data Analysis	Machine Learning	Machine Learning	G++	G++
4	SQL	Java	Java	Java	Java
5	Java	SQL	Matlab	Data Analysis	SQL
6	Research	C (Programming Language)	Research	C (Programming Language)	C (Programming Language)
7	G++	Data Analysis	JavaScript	SQL	Linux
8	Programming	Matlab	C (Programming Language)	Matlab	Software Development
9	Matlab	JavaScript	Data Analysis	JavaScript	JavaScript
10	Software Development	Research	Programming	Programming	Data Analysis



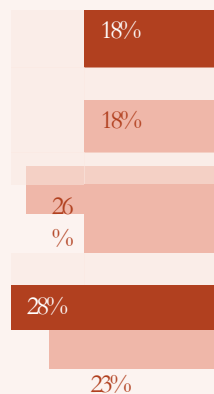
Key insight:

7 out of the top 10 pertinent skills possessed by AI professionals are programming languages. Python is the most popular coding language amongst AI professionals with about 35% listing it.

The split between male and female AI talent



Female



Australia

Canada

Malaysia

Singapore

United States



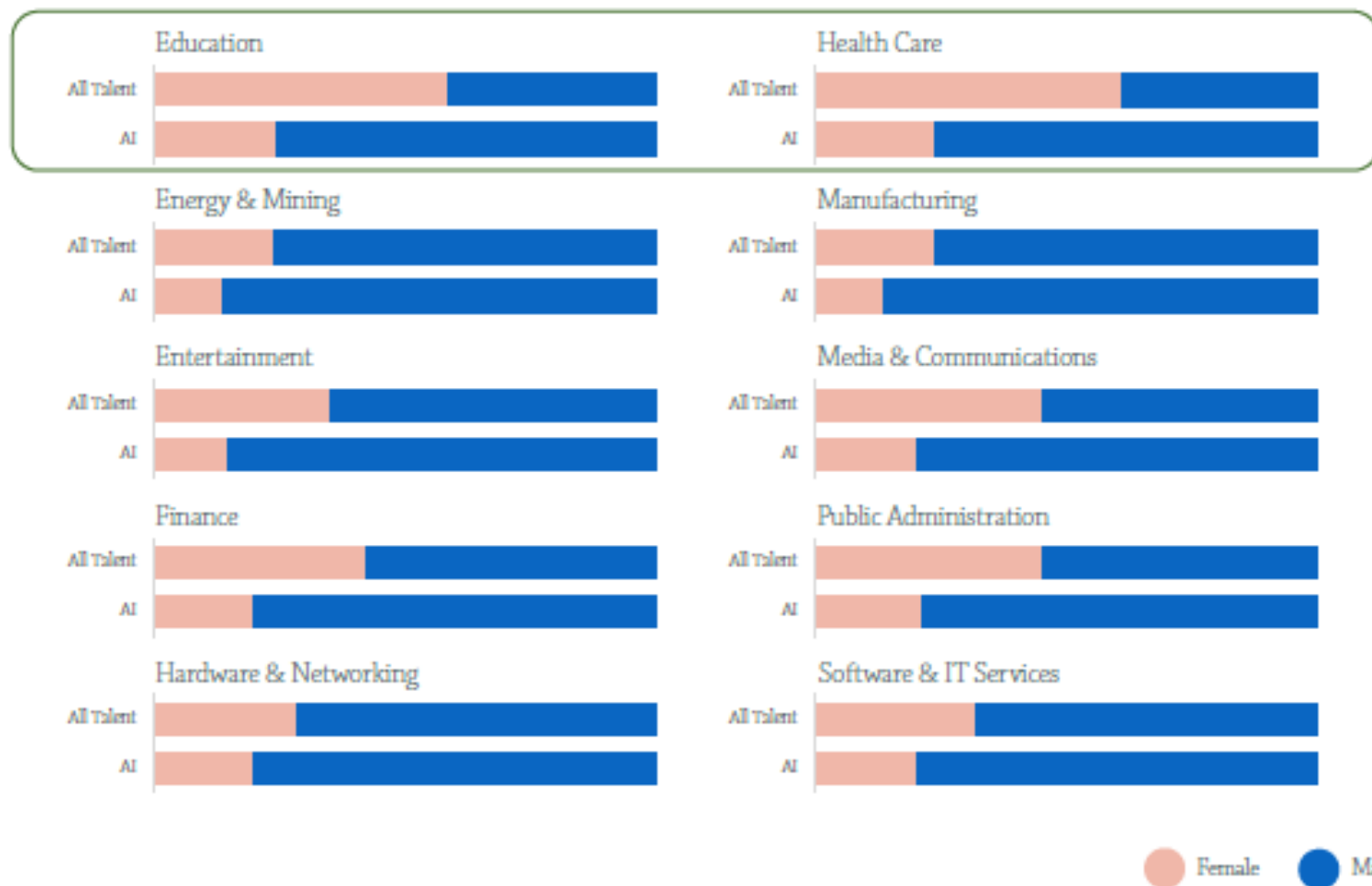
Male



Key insight:

There is a stark gender gap - only 20% of the AI professionals are female.

The gender split across different industries



Key insight:

AI gender gap is wider than the general gender gap in each industry, indicating gender imbalance within AI. This is seen even in industries like Education and Healthcare, which are traditionally popular with female professionals.



Summary

- With AI becoming prominent even in non tech industries, we need to start thinking of industry specific interventions to prepare the workforce.
- Apart from tech skills in AI, soft skills remain important to navigate the uncertainty and constant changes in the labour market.
- Interventions may also be necessary to avoid perpetuating the gender gap.
- In collaboration with governments and public sector organisations, insights from private organisations can be highly valuable in understanding the labour market trends and preparing for the future of work.

Thank you

APEC Closing the Digital Skills Gap

Roadmap Element #6 and Roadmap Element #4

July 15, 2019

Lydia Cheng, Associate Director, Learning Design Solutions, Wiley

- **AI is going to transform nearly everything about your business and markets.** According to a [study conducted by PwC in 2019](#) with 1,000 US business executives, developing the “how” to define and implement an AI strategy is one of the biggest challenges.
 - How do you find AI-literate workers or train existing staff?
 - What can you do to get your data AI-ready?
 - How do you ensure your AI is trustworthy?

Deloitte: **Future in the balance?** How countries are pursuing an AI advantage

- To obtain a **global view of how organizations are adopting and benefiting from AI technologies**, in [Q3 2018 Deloitte surveyed 1,900 IT and line-of-business executives](#) from companies that are early adopters of AI (prototyping or implementing AI solutions). Seven countries were represented: Australia, Canada, China, Germany, France, the United Kingdom, and the United States.
- More than eight in 10 believe that:
 - Human workers and AI technologies will **augment each other to produce new ways of working**
 - **AI empowers their employees** to make better decisions
 - and that AI technologies will **enhance employee performance and job satisfaction**.

Deloitte: Future in the balance? How countries are pursuing an AI advantage

FIGURE 3

Regardless of country, many AI early adopters agree on the strategic importance of AI—and that skill gaps pose an issue

		Overall	Australia	Canada	China	France	Germany	United Kingdom	United States
Maturity	Percentage that are “Seasoned” AI adopters	21%	17%	19%	11%	16%	22%	15%	24%
	Have a comprehensive, companywide AI strategy	35%	34%	27%	46%	28%	26%	41%	37%
Urgency	Believe AI is very or critically important to company’s success now	63%	56%	58%	54%	49%	46%	61%	69%
	Achieve strong competitive advantage with AI	37%	22%	31%	55%	27%	47%	44%	37%
	Believe AI will transform their business within three years	56%	51%	51%	77%	63%	60%	55%	55%
Challenges	Major or extreme concern about AI risks	43%	49%	44%	16%	48%	29%	35%	46%
	Cybersecurity vulnerabilities of AI are a top-three concern	49%	46%	42%	54%	49%	51%	44%	50%
	Moderate-to-extreme AI skill gaps	68%	72%	72%	51%	57%	62%	73%	68%

Source: Deloitte State of AI in the Enterprise survey, 2nd Edition, 2018.

Deloitte Insights | deloitte.com/insights

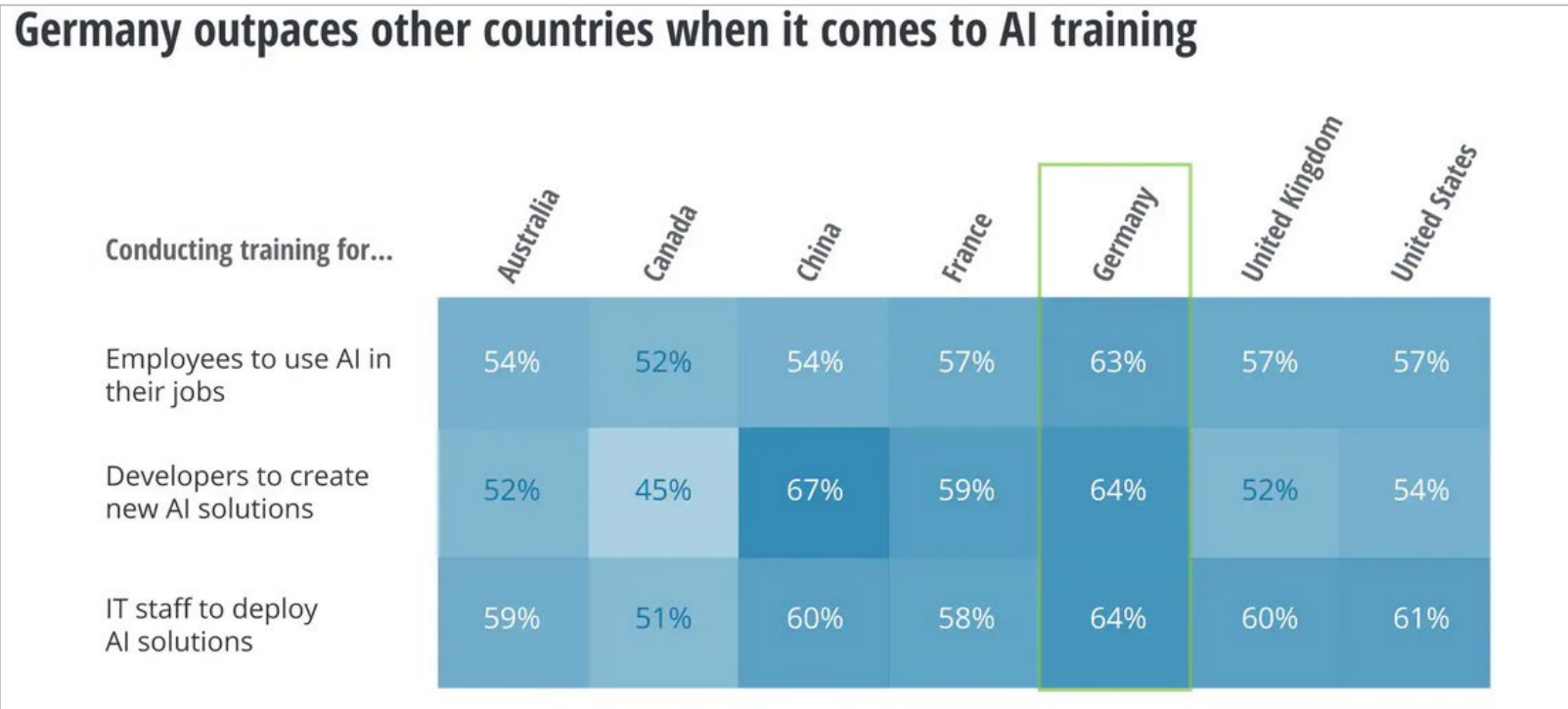
Regardless of countries' AI maturity level, we can learn from their approaches. By examining countries' challenges and how companies there are addressing them, we can glean some essential leading practices.

For example, leaders in some countries are more concerned about addressing skill gaps.

Others are focusing on how AI can improve decision-making or cybersecurity capabilities.

Deloitte: **Future in the balance?** How countries are pursuing an AI advantage

- The German government is looking to accelerate the adoption and development of AI technologies. As a result, it is planning to invest €3 billion in AI research between now and 2025 to help implement its national AI strategy (“AI Made in Germany”).



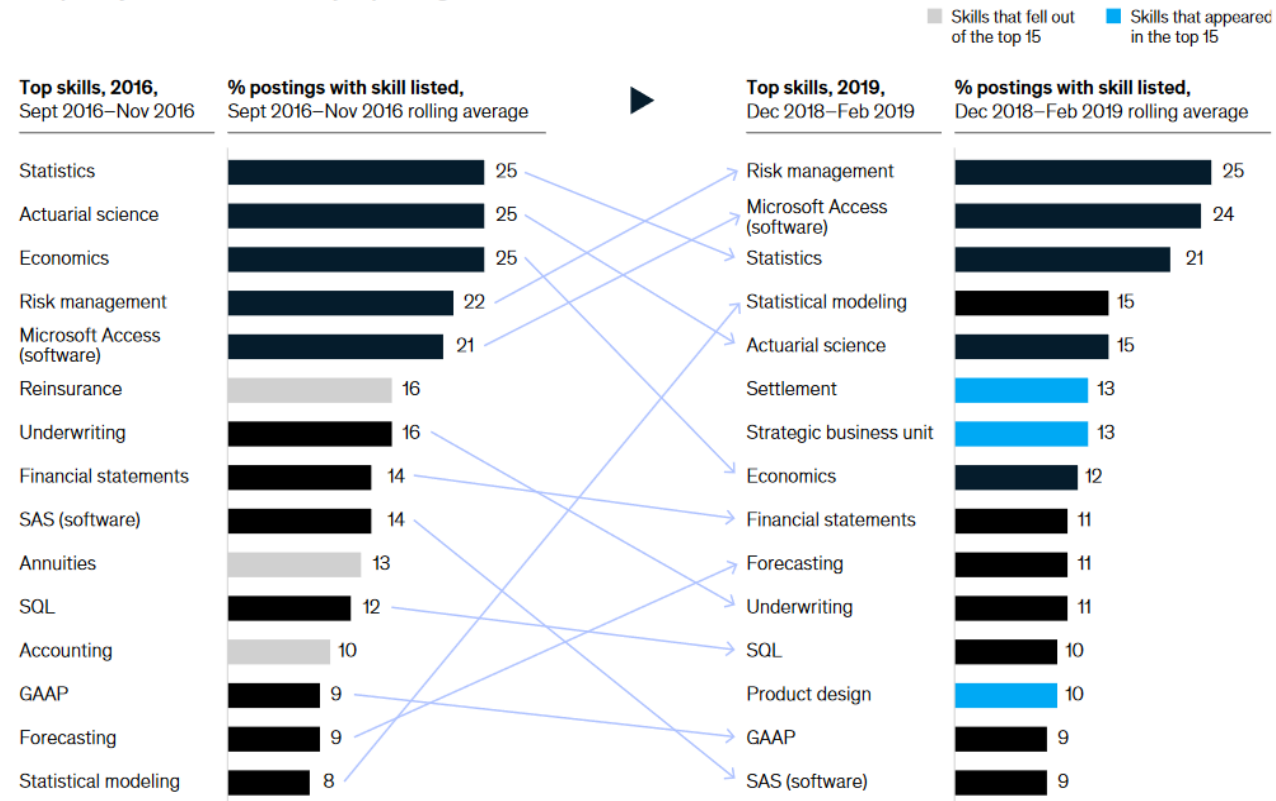
Source: Deloitte State of AI in the Enterprise survey, 2nd Edition, 2018.

- According to a [new report from the World Economic Forum](#), machines and algorithms in the workplace are expected to create 133 million new roles, but cause 75 million jobs to be displaced by 2022 which results 58 million net new jobs in the next few years.
- According to [Gartner's 2019 CIO Survey](#) (it includes over 3,000 CIOs from 89 countries) AI is considered the most disruptive technology. Recruiting for tech talent with **specialized skills in machine learning and AI will** continue to become increasingly competitive.
- As AI-enabled automation advances, in addition to other technological advances, organizations should embrace “**lifelong employability**,” which stretches traditional notions of learning and development and can inspire workers to adapt, more routinely, to the evolving economy.

Lifelong Employability: Jobs and Skills are constantly evolving

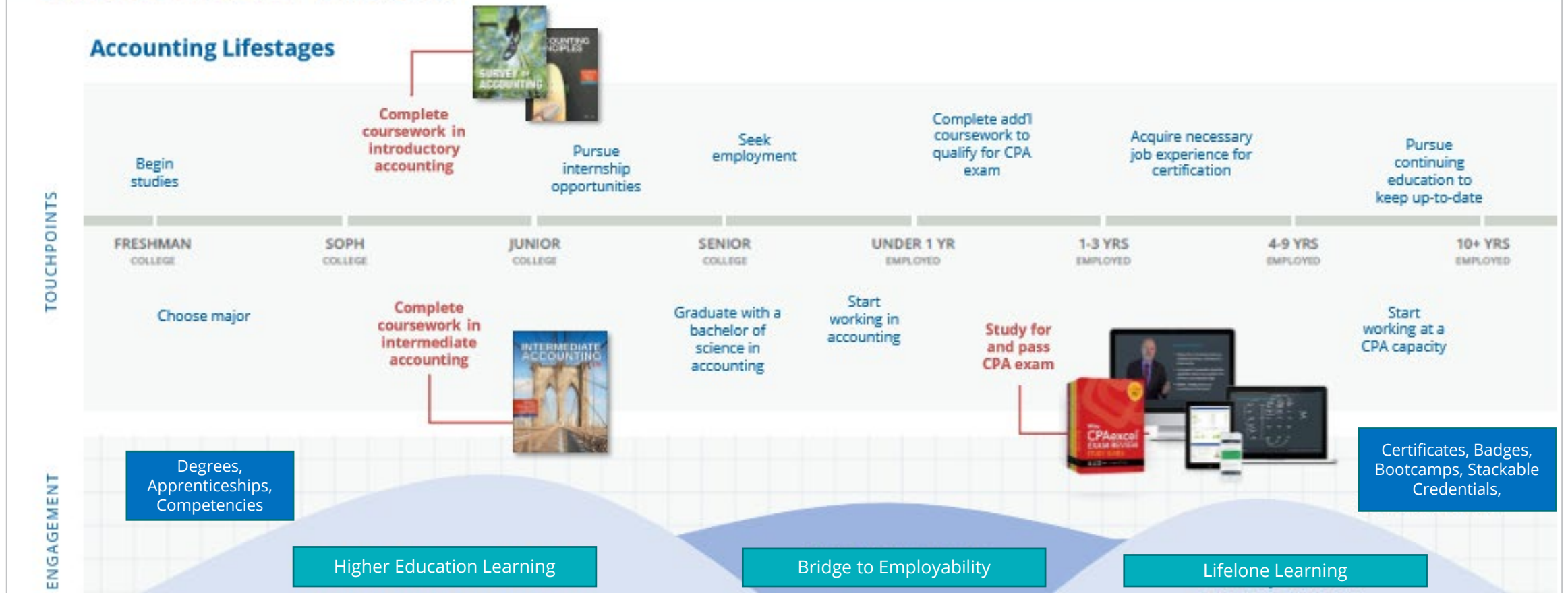
Over time, job postings for actuaries show growing emphasis on strategic skills and advanced analytical techniques.

Frequently mentioned skills in job postings for actuaries, 2016–19



Source: McKinsey Global Institute analysis

Journey Map



Reskilling: If you currently have employees who are business analysts or have experience with data engineering, then they could be good candidates to train for AI tasks. This would include focusing on skills like Python and TensorFlow, which is a deep learning framework.

“From a training and learning perspective, there are an abundance of online resources via Coursera, Udacity, open.ai, and deeplearning.ai that can help companies develop their employees’ AI/ML skills...Additionally, **it will be valuable for a company to acquire someone with existing experience in AI to be a leader and mentor for developing employees.** The interesting thing about AI/data science is that you don't need to be an experienced software engineer to do it. The field is so exciting because of the diversity of talent and backgrounds spanning science, engineering, and economics.” Mehul Patel, CEO of [Hired](#), said in a recent [interview in Forbes](#).

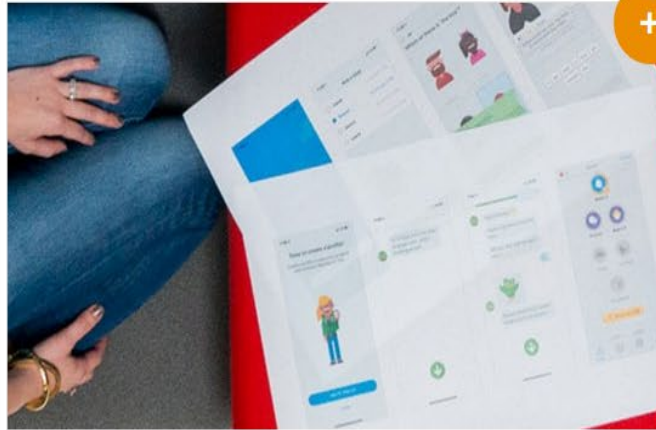
- Though most are looking to the external market to build their AI expertise, **opportunities abound to train and utilize existing employees**. Build an education plan to identify and prepare current developers, IT staff, and other employees that could help advance your AI efforts.
- Take a holistic approach and **improve both technology *and* business talent** to support your AI strategy.
- Develop structured ways to integrate AI into roles and functions—and be prepared to evolve them for the future. Create a vision for what your “**augmented workforce**” looks like.

Source: Deloitte Study 2019: <https://www2.deloitte.com/insights/us/en/focus/cognitive-technologies/ai-investment-by-country.html>

Takeaways



Train, coach, collaborate



Adapt your workforce
strategy



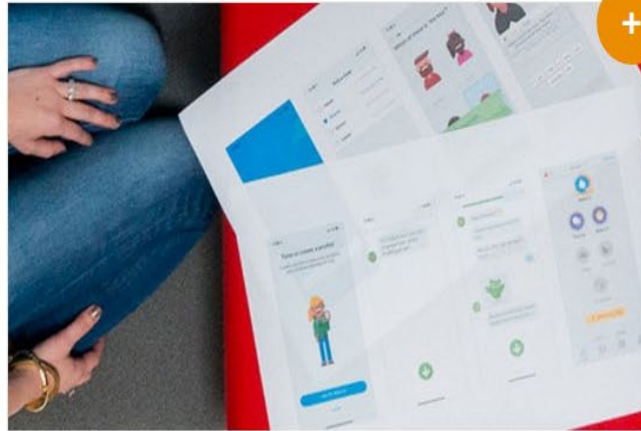
Cultivate a welcoming
culture

Source: Deloitte Study 2019: <https://www2.deloitte.com/insights/us/en/focus/cognitive-technologies/ai-investment-by-country.html>

Takeaways

Train, coach, collaborate

For your business specialists to become citizen users and developers, they'll need training in basic data science concepts. Your data scientists, in turn, will need coaching and new collaborative structures to enable them to partner effectively with business staff.



Adapt your workforce strategy



Cultivate a welcoming culture

Source: Deloitte Study 2019: <https://www2.deloitte.com/insights/us/en/focus/cognitive-technologies/ai-investment-by-country.html>

Takeaways



Train, coach, collaborate

Adapt your workforce strategy

Recruiting and upskilling are just two pieces of the puzzle. You also need to systematically identify how AI is changing job roles and skills; evolve upskilling, performance and compensation frameworks and develop new collaborative processes.



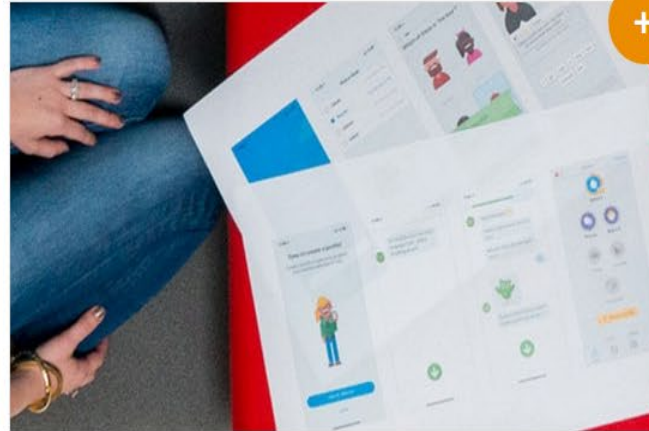
Cultivate a welcoming culture

Source: Deloitte Study 2019: <https://www2.deloitte.com/insights/us/en/focus/cognitive-technologies/ai-investment-by-country.html>

Takeaways



Train, coach, collaborate



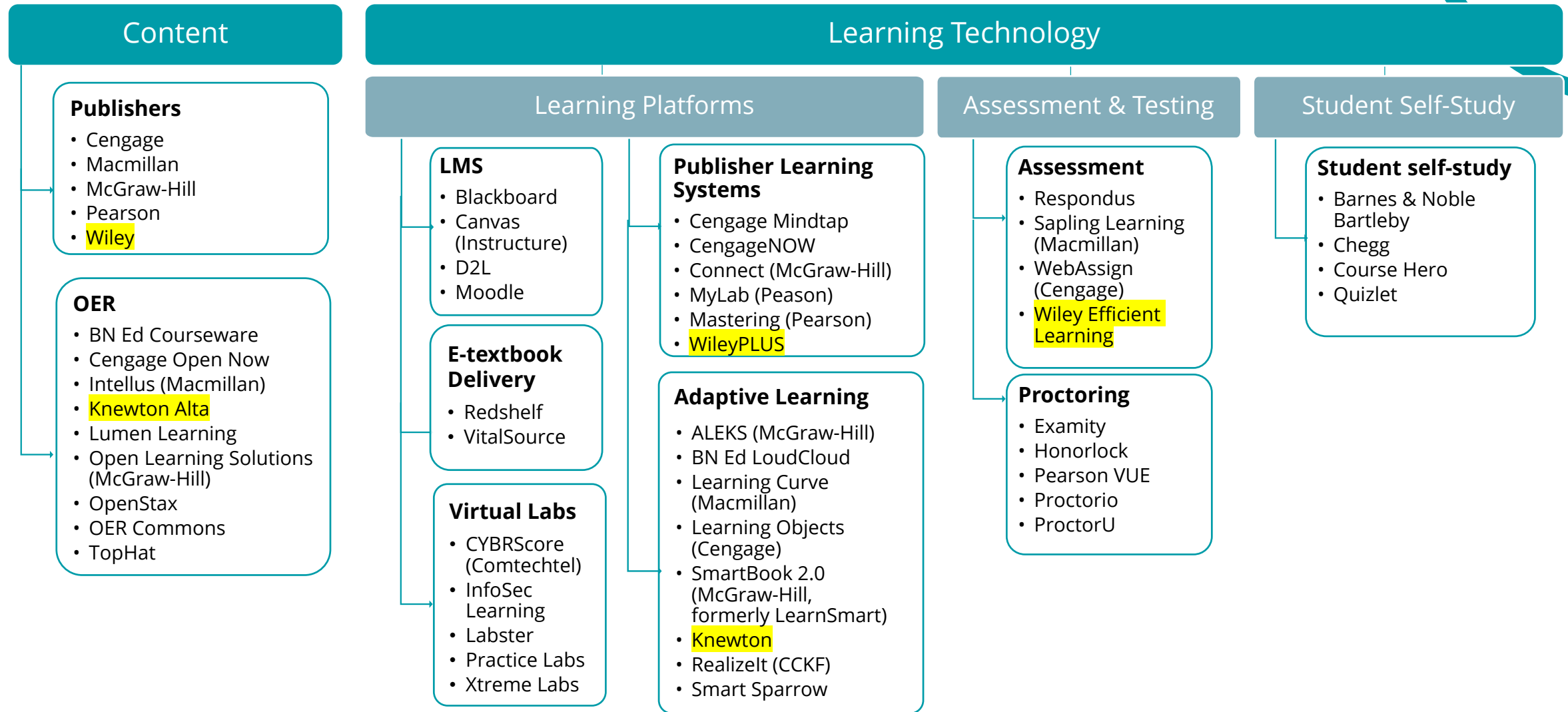
Adapt your workforce
strategy

Cultivate a welcoming culture

To attract and retain AI talent, use AI responsibly and offer top minds the resources, individual empowerment and collaborative culture that enables employees to do great work.

Source: Deloitte Study 2019: <https://www2.deloitte.com/insights/us/en/focus/cognitive-technologies/ai-investment-by-country.html>

What tools do you need? **Content and Learning Technologies**



What tools do you need? **Partners**

Institutional Ed Services

Bundled Delivery Services

- 2U
- Academic Partnerships
- Bisk
- EverSpring
- Extension Engine
- Grand Canyon Education
- Guild Education
- Hot Chalk
- iDesign
- Kaplan
- Keypath
- Noodle Partners
- Orbis
- Pearson Embanet
- Synergis
- **Wiley Education Services**

Student Enrollment/Retention Services

- CampusLabs
- Civitas Learning
- EAB
- Ellucian
- Hobsons Starfish Retention Solutions
- HelioCampus
- Inside Track
- Quin Street
- Ruffalo Noel Levitz

Bridge Learning

Branded Instructor-Led Training Services

- App Academy
- CareerStep
- Flatiron School
- Fullstack Academy
- Galvanize
- General Assembly
- Hack Reactor
- Lambda School
- Trilogy

Test Prep

- Becker
- BenchPrep
- Bloomberg
- BYJU's
- Fitch Learning
- Kaplan
- Khan Academy
- Manhattan Prep
- Princeton Review
- **Wiley**

Badging/Credentialing

- Accredible
- Credly
- Portfolio

Professional Learning & Development

Self-Directed Training Services

- BetterUp
- Colibri
- Cornerstone OnDemand
- **Cross Knowledge**
- Degreed
- Docebo
- Edcast
- Litmos
- Lynda.com/LinkedIn Learning
- OnCourse Learning
- Pluralsight
- Relias
- Skillsoft

Continuing Professional Education

- Becker
- Kaplan
- Surgent





- Should we **build** on our existing skills? Should we **acquire** them? Or should we **“rent”** them?
- Many companies approach learning and development (L&D) much as they did 30 years ago. That is, they rely on classrooms for training and take a one-size-fits-all approach. It doesn't have to be that way anymore: Microlearning, study groups, AR/VR, etc.
- Organizations should take advantage of the solid research, grounded in neuroscience, psychology, sociology, and pedagogy, about what works in learning in general and adult learning in particular.

Source: <https://www.mckinsey.com/featured-insights/future-of-work/competitive-advantage-with-a-human-dimension-from-lifelong-learning-to-lifelong-employability>

Thank you,

Lydia Cheng
lycheng@wiley.com

Roadmap Element 4

ROADMAP ELEMENTS	KEY ACTORS	CURRENT METRICS
 Share how demand in digital skills are evolving in real time	   Employers	At least <u>45 percent</u> of respondents indicated that they <u>do not</u> update job requirements every year

Action Items:

- Competencies captured for badging; Credentialing
- Connection between skills acquisition and new jobs (accessibility)
- Quantifying the gap (analyze and track combination of skills on job descriptions and what skills people have)
- Bring subject sector matter experts to align on new skills of the year
- Soft skills tracking, employee engagement
- Credit system for individuals who want to learn
- Industry specific insights on demand / cross comparison and effectiveness

Further Metrics:

- X
- X
- X



**CLOSING THE DIGITAL
SKILLS GAP FORUM**

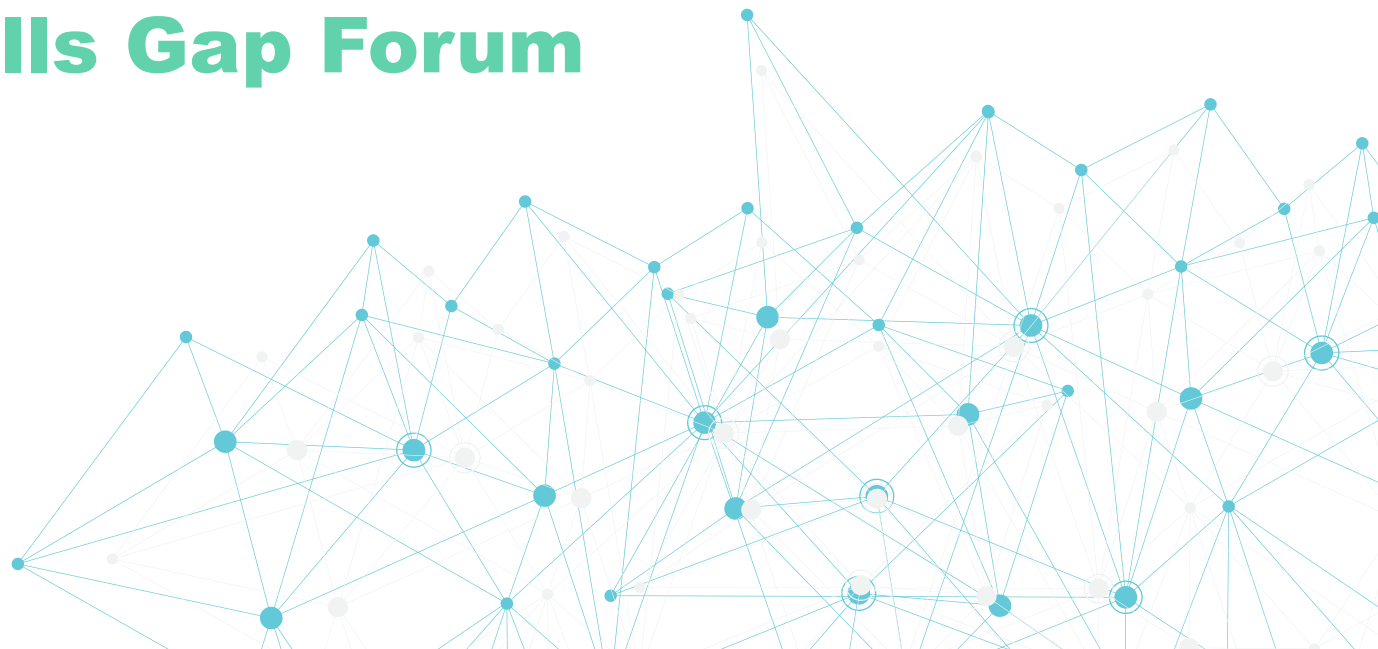


APEC

Closing the Digital Skills Gap Forum

Singapore | 15 – 16 July 2019

#MindTheDigitalSkillsGap



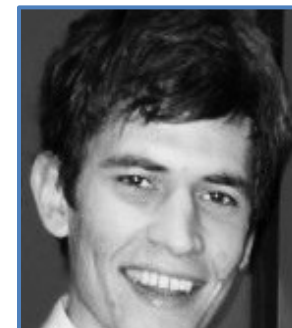
Roadmap Element 3

Moderated by:

Mr. Christopher Watson, International Labor Affairs Bureau, U.S. Department of Labor

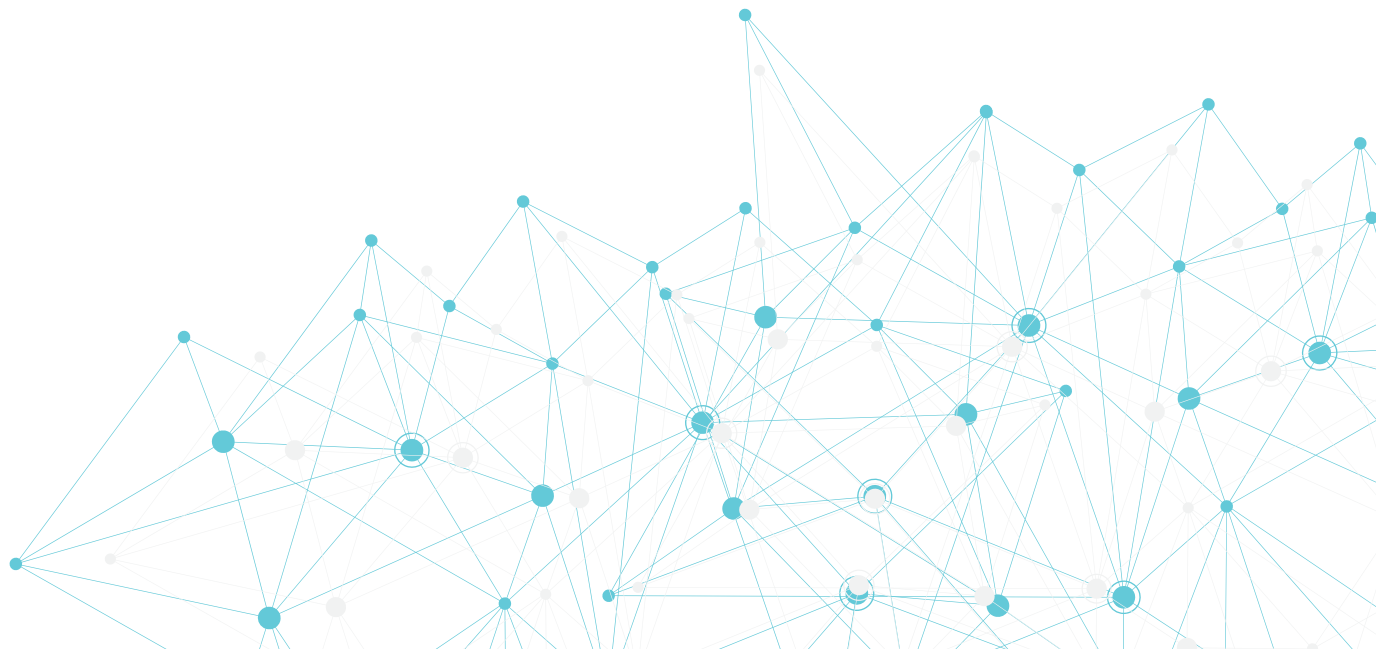
Discussants:

- **Ms. Layla O’Kane**, Burning Glass Technologies
- **Mr. Harry Edmund Moroz**, World Bank Malaysia
- **Mr. Michael Lau**, New South Wales (NSW) Department of Industry, Australia
- **Mr. Tran Ngoc Ahn**, Indiana University; Advisor to the Prime Minister of Vietnam
- **Dr. Gog Soon Joo**, SkillsFuture Singapore



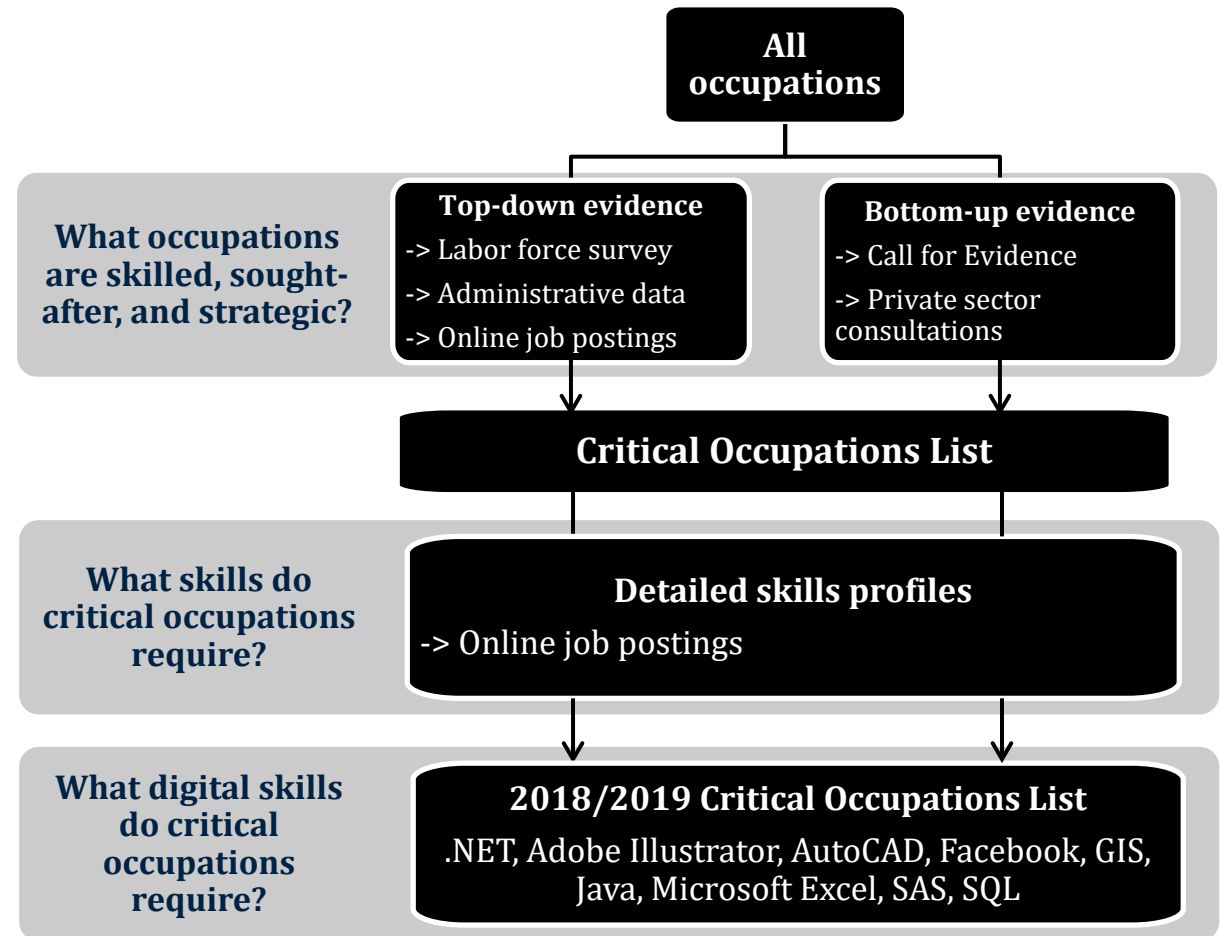


#MindTheDigitalSkillsGap



Malaysia uses the Critical Occupations List (COL) to monitor skills gaps and occupational shortages

- The COL will help coordinate policy interventions for higher education and TVET, upskilling, scholarships, and immigration
- Led by TalentCorp and the Institute of Labour Market Information and Analysis in the Ministry of Human Resources
- Evidence-based list that identifies the most sought-after and hard-to-fill occupations in key economic sectors
- Online job posting data shows skills required in critical occupations
 - Digital skills
 - Soft skills associated with digital skills
 - Similar occupations by skill content



Roadmap Element 3

ROADMAP ELEMENTS	KEY ACTORS	CURRENT METRICS
3 Share government statistical methodologies that can help close the digital skills gap	 Government	41 percent of respondents ranked their government's understanding of the digital skills gap landscape as <u>weak</u> or <u>very weak</u>

Action Items:

- Indicators around government methodologies
- Taxonomy
- Job posting alignment; perhaps governments to recommend
- Incentives for faculty and employers to be doing a better job in descriptions
- Stakeholder impact map to compare methods
- Alignment around government recommendations and starter questions for policy makers should be asking for policy alignment
- Share top 3 government reforms from your economy for enabling a digital workforce

Further Metrics:

- X
- X
- X



**CLOSING THE DIGITAL
SKILLS GAP FORUM**

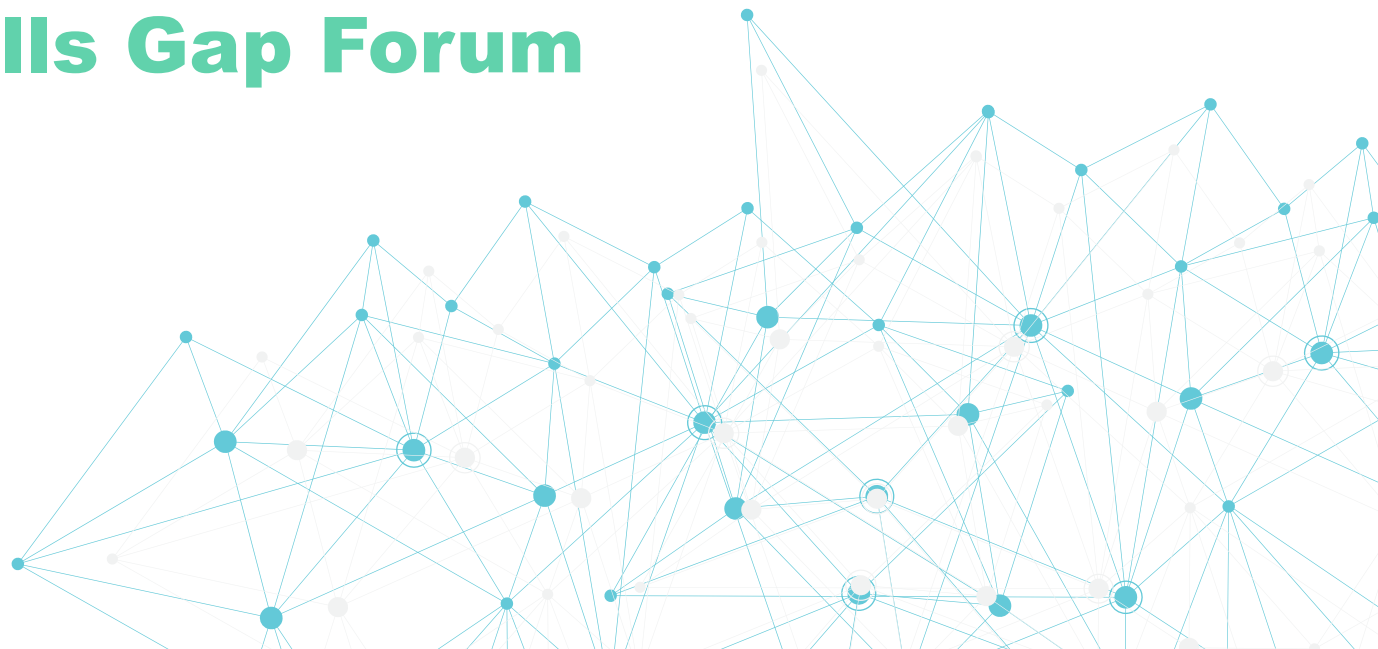


APEC

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Singapore | 15 – 16 July 2019

#MindTheDigitalSkillsGap

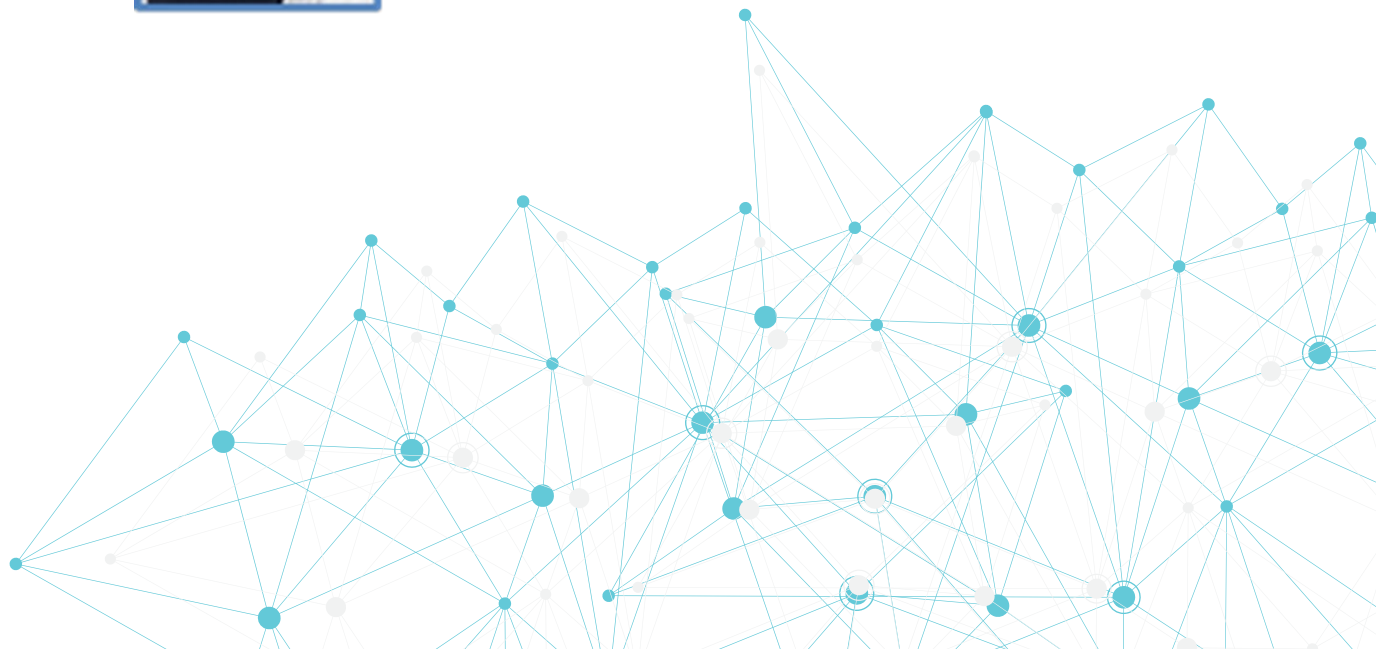




Day 1 Conclusion

- **Mr. Christopher Watson**, International Labor Affairs Bureau, U.S. Department of Labor, *APEC Closing the Digital Skills Gap Forum*, Project Overseer
- **Mr. Andrew Tein**, Chief of Staff to the CEO, Vice-President of Global Government Affairs, Wiley, *APEC Closing the Digital Skills Gap Forum Co-Chair*
- **Dr. L. Isabel Cárdenas-Navia**, The Business-Higher Education Forum (BHEF) *APEC Closing the Digital Skills Gap Forum Co-Chair*

[#MindTheDigitalSkillsGap](#)





Day 1 Conclusion

- Pull data together from delegates (ie. insights from LinkedIn / Burning Glass data)
- Implement DSA Competencies for economies across APEC
- Develop coordination efforts between government, academia, employers and industry on a economy level
- Update APEC DARE competencies for others in the DSA profession (ie. managers)
- Economy level discussions to foster public-private dialogue
- Analyze government historical data. Joint publication can help disseminate the learnings
- Create a platform on sharing best practices for digital skills development
- Metrics on the predictive models for governments to track digital skills development
- Governments to provide training for workers to upskill (incentives / value proposition for each stakeholder)
 - Make sure this training is inclusive (increase awareness to policy makers)
- Quantifying the return on investment for training workers for employers (WEF report framework)
 - So all stakeholders understand the incentives / value
 - Singapore assesses via a survey so learners can choose courses
 - ROI on productivity, study of individuals of expensive courses
 - Mandatory for the training providers

Awareness for workers on the decaying of skills

Focus on leaders to upskill and reskill

All to take responsibility for their role in closing the digital skills gap

Start small to prove concept in different economies

Strategic intervention at one facet of workers' experience to prove concept

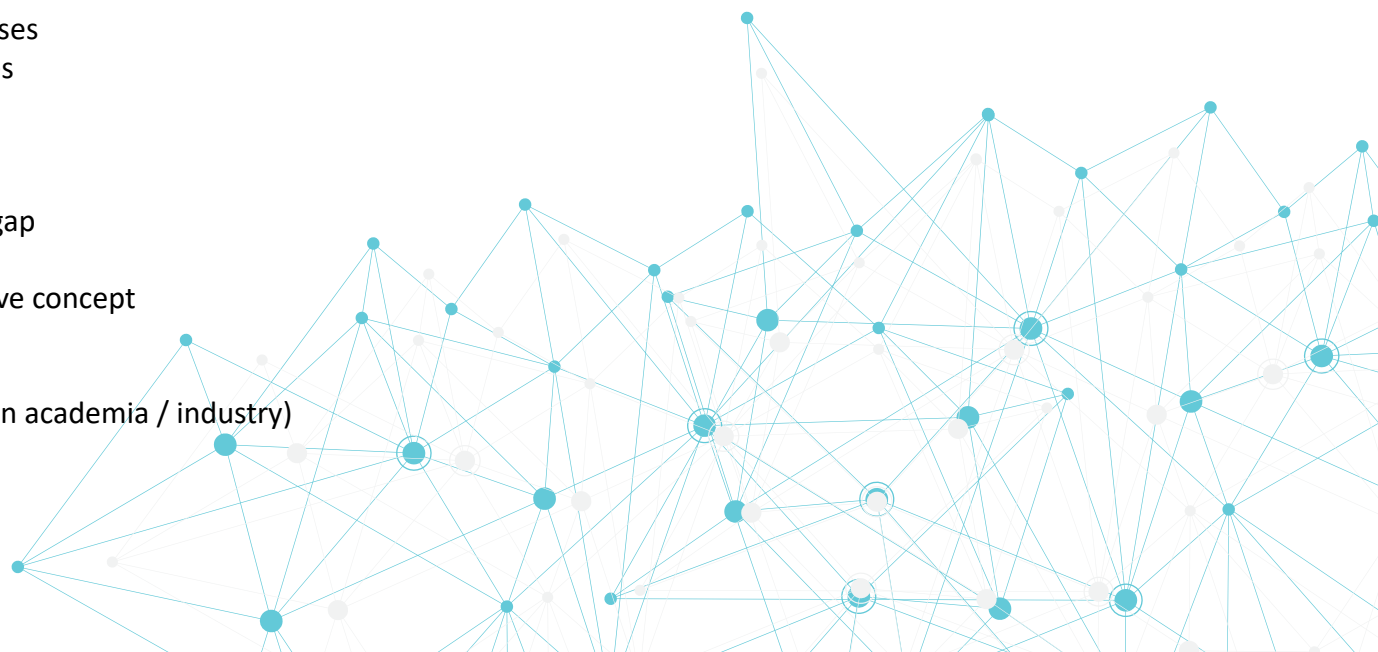
Align on matrix of success

Government to put in place measures for SMEs

Depends on the gap we are looking at (ie. income gap or between academia / industry)

Relationship between academia and industry

#MindTheDigitalSkillsGap





**CLOSING THE DIGITAL
SKILLS GAP FORUM**

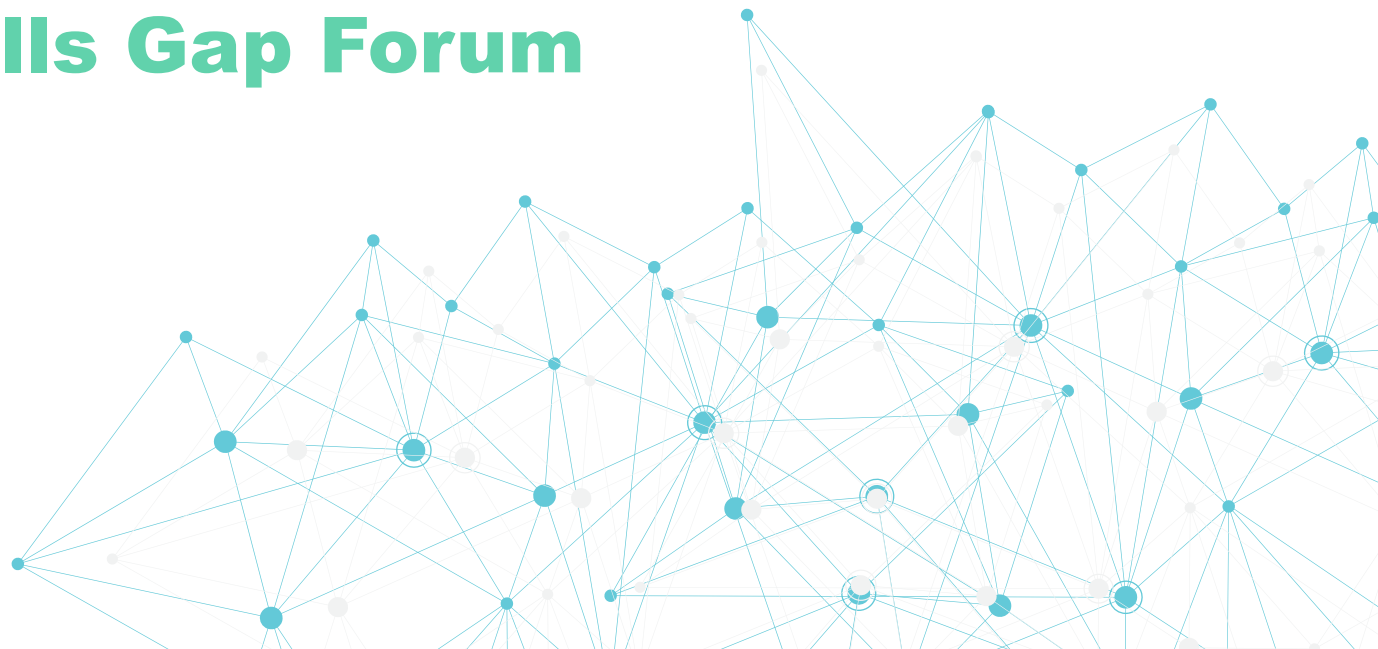


APEC

Closing the Digital Skills Gap Forum

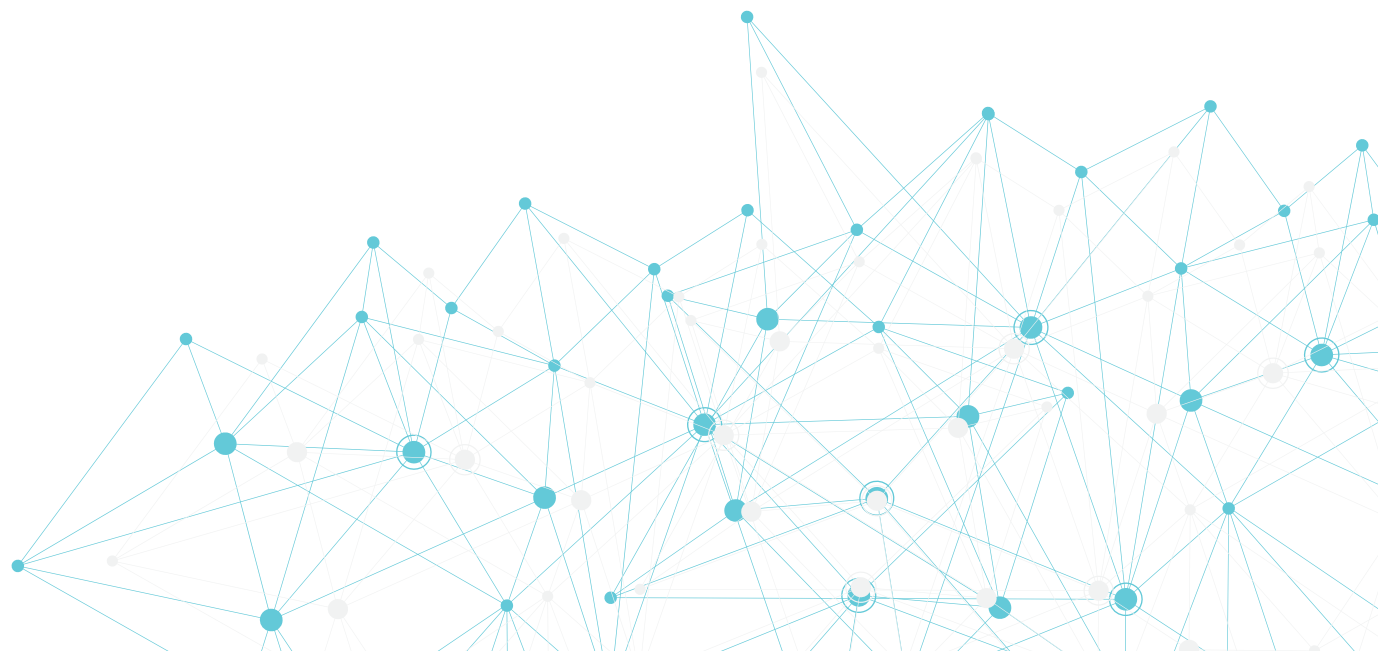
Singapore | 15 – 16 July 2019

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#MindTheDigitalSkillsGap



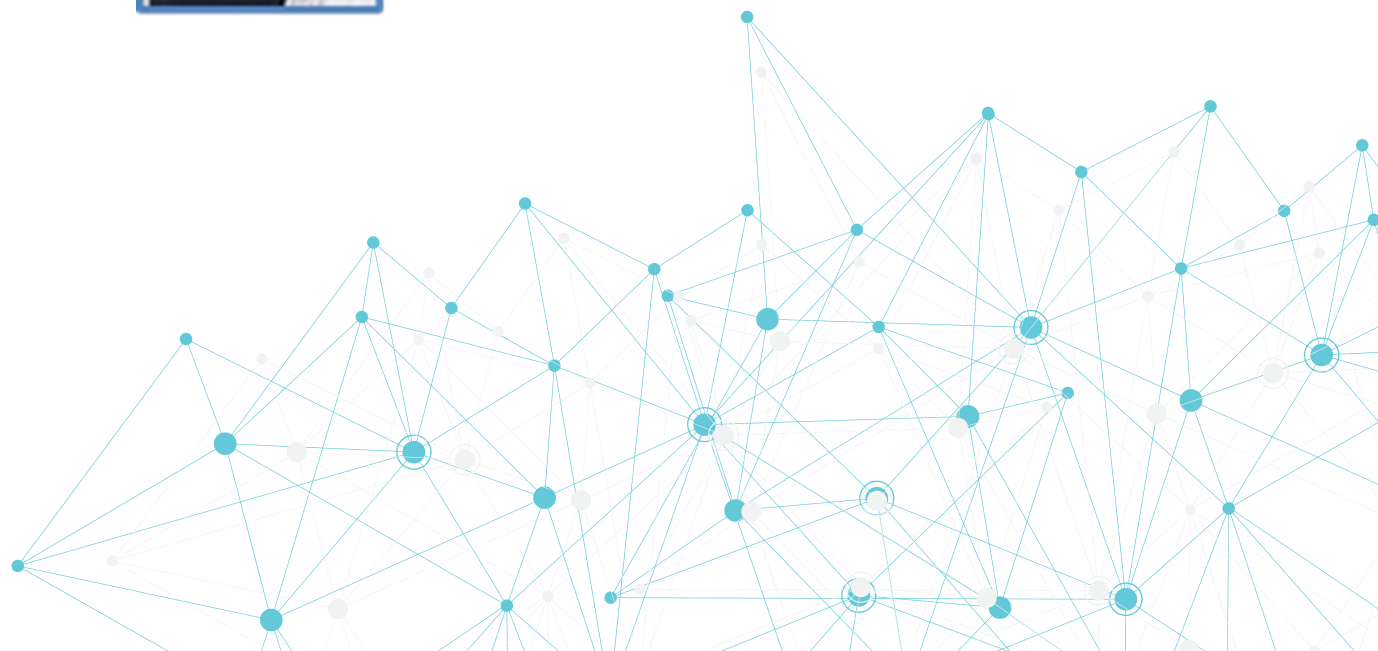


Summary and Day 2 Welcome

- **Mr. Christopher Watson**, International Labor Affairs Bureau, U.S. Department of Labor, *APEC Closing the Digital Skills Gap Forum*, Project Overseer
- **Mr. Andrew Tein**, Chief of Staff to the CEO, Vice-President of Global Government Affairs, Wiley, *APEC Closing the Digital Skills Gap Forum Co-Chair*
- **Dr. L. Isabel Cárdenas-Navia**, The Business-Higher Education Forum (BHEF) *APEC Closing the Digital Skills Gap Forum Co-Chair*



[#MindTheDigitalSkillsGap](#)



Roadmap Element 5

Moderated by:

- **Mr. Sherwin Pelayo**, Analytics Association of the Philippines (AAP)

Discussants (Part 1):

- **Dr. Eugene Rex Jalao**, University of the Philippines Dilliman
- **Dr. Enrico Paringit**, Department of Science and Technology (DOST); Philippine Council for Industry, Energy, and Emerging Technology Research and Development (PCIEERD)
- **Mr. Allan de Venecia**, moocs.ph

Discussants (Part 2):

- **Mr. Chris Gray**, Education APAC, Wiley
- **Mr. Juan Eduardo Carmach**, Advisor, National Training and Employment Service (Chile)
- **Ms. Ashley Woods**, APAC, Google





Innovative Models in Digital Upskilling and Reskilling

APEC Closing the Digital Skills Gap Forum
Singapore, July 15-16, 2019


















Our Mission

**Develop the ecosystem
that makes the Philippines**

- ... a data-driven country
- ... globally competitive in and a leading talent source of Analytics and other emerging Analytics-enabled disciplines
- ... for the good of society.



The AAP Professional Maturity Model v1.0

	 Steward	 Engineer	 Scientist	 Analyst	 Manager
 Domain Knowledge	3 ★★★	1 ★	2 ★★	3 ★★★	3 ★★★
 Data Governance	3 ★★★	2 ★★	2 ★★	2 ★★	3 ★★★
 Operational Analytics	3 ★★★	3 ★★★	3 ★★★	3 ★★★	3 ★★★
 Data Visualization	2 ★★	1 ★	2 ★★	3 ★★★	3 ★★★
 Research Methods	1 ★	1 ★	3 ★★★	1 ★	1 ★
 Data Engineering	-	3 ★★★	1 ★	-	1 ★
 Statistical Techniques	-	1 ★	3 ★★★	-	1 ★
 Methods & Algorithms	-	1 ★	3 ★★★	-	1 ★
 Computing	1 ★	2 ★★	3 ★★★	1 ★	1 ★
 21 st Century Skills	3 ★★★	3 ★★★	3 ★★★	3 ★★★	3 ★★★

Use Cases



University of Asia & the Pacific

Master in Applied Business Analytics

The first business analytics graduate program in the country that covers:

- foundation subjects in mathematics, statistics, and computing
- core subjects in business strategy, industry domain, and the data value chain
- key subjects in data ethics and the human perspective in Analytics



Pointwest Technologies

Career and Competency Framework

An Analytics competency framework that includes:

- a career roadmap as a basis for goals-setting, performance evaluation, and career progression
- a capability development plan to increase the proficiency levels of the practitioners
- job profiles and descriptions for talent acquisition



FutureSkills PH

Research: "Assessing the Alignment of Philippine Higher Education with the Emerging Demands for Analytics Workforce"

A study funded by the Philippine APEC Study Center Network (PASCN) of the Philippine Institute for Development Studies (PIDS) to assess if the current supply of Analytics skills and workers produced by our schools is enough to meet the demands of industry.

Academia Collaboration Initiatives in the Philippines

Dr. Eugene Rex Jalao
Associate Professor
University of the Philippines,
Diliman



Overview

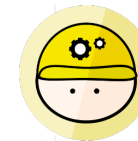
“Workshop on Closing the Digital Skills Gap for the Philippines”

University of the Philippines, Diliman
May 27, 2019

- Unify efforts to close the digital skills divide by discussing **curricula, resources, plans, policy intervention**, and **recommendations** for government institutions, particularly for the Commission on Higher Education (CHED)
- Determine **next steps, areas of collaboration**, and the creation of a **network** of academic institutions engaged in Data Science, Analytics, and other emerging fields

50 universities and colleges from all over the country

3 breakout sessions



Data Engineering



Data Science



Analytics Management

Proposed Degree Programs



Data Science

- Includes foundation and professional courses that cover core computing courses as well as major courses in Mathematics, Statistics, and Data Science
- Incorporates the APEC Data Science and Analytics (DSA) Competencies
- 4-Year Program



Data Science Business Analytics

- Focuses on the different Analytics careers
- Already offered in several Philippine universities
- Incorporates the APEC Data Science and Analytics (DSA) Competencies

Industrial Engineering Major in Data Engineering

- To be instituted by the University of the Philippines in 2020



Data Science

- To be instituted by the University of the Philippines Diliman in 2020
- Offered by three colleges: College of Engineering, College of Science, and School of Statistics
- Geared towards training a critical mass of Data Science professors in the Philippines

Future Work



Create a network of academia professionals for the advancement of Analytics in the Philippines

Conferences to be initiated in the future for continued collaboration

Develop an assessment tool using the APEC/AAP Framework to determine current baseline of instructors teaching Analytics at Philippine universities

Develop a certification program to determine that correct skills are expected of professionals

Learning at Scale: Data Science

Mr. Allan de Venecia
CEO and Founder
moocs.ph



Preparing the Philippine workforce of the future

RATIONALE

Business Process Outsourcing Centers (BPOs) are important part of the Philippines' national economy. However, countless jobs are at risk due to advances in Automation and Artificial Intelligence. Projected demand for Data Science and Analytics practitioners highlighted by APEC DARE was a vital insight for launching the online training programs back in 2017.

KEY GOAL

To train the next generation of Data Science and Analytics practitioners across the Philippines.

MODEL

Massive open online training is identified as a key component solution to help address the digital skills gap in Data Science and Analytics due to scalability, accessibility, cost efficiency and improved learning experience due to availability of current technologies.

LEARNING PATHWAYS

Coursera Specializations

APEC Competency Framework/AAP Professional Maturity Model



coursera



AAP | **ANALYTICS**
Association of the Philippines



AAP | **ANALYTICS**
Association of the Philippines



1 Learning at Scale: Data Science

Cooperating agencies agreed on a learning track consisting of four courses aimed to introduce Data Science to qualified participants. Utilized content from Coursera.



2 Extension

Expanded the original scope to four additional learning tracks covering different aspects of the Data Science and Analytics field. Utilized content from Coursera.

```
color: $c-link-hover;
}

&.selected {
  background-color: $c-action;
  color: white;
}
```

3 Sustainability Program for Analytics Reskilling, Training and Adoption

SPARTA builds on the success (and learnings) of the previous two implementations incorporating sustainability mechanisms to ensure continuity. Courses offered will be created and aligned with the APEC framework.





Data Science

Johns Hopkins University

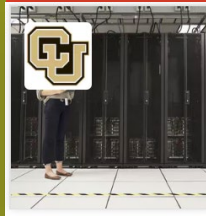
- The Data Scientist's Toolbox
- R Programming
- Getting and Cleaning Data
- Exploratory Data Analysis
- Reproducible Research
- Statistical Inference
- Regression Models
- Practical Machine Learning
- Developing Data Products
- Data Science Capstone



Data Science

University of Michigan

- Using Python to Access Web Data
- Using Database with Python
- Introduction to Data Science in Python
- Applied Plotting, Charting and Data Representation in Python
- Applied Machine Learning in Python
- Applied Text Mining in Python
- Applied Social Network Analysis in Python



Data Warehousing for Business Intelligence

University of Colorado System

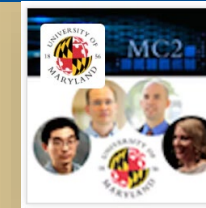
- Database Management Essentials
- Data Warehouse Concepts, Design, and Data Integration



Excel to MySQL: Analytic Techniques for Business

Duke University

- Business Metrics for Data-Driven Companies
- Mastering Data Analysis in Excel
- Data Visualization and Communication with Tableau
- Managing Big data with MySQL



Cybersecurity

University of Maryland, College Park

- Usable Security
- Software Security
- Cryptography
- Hardware Security



2,287 992 | 1295
Total Applicants

969 353 | 616
Unique Learners Enrolled



3,000
Total Course Enrollments



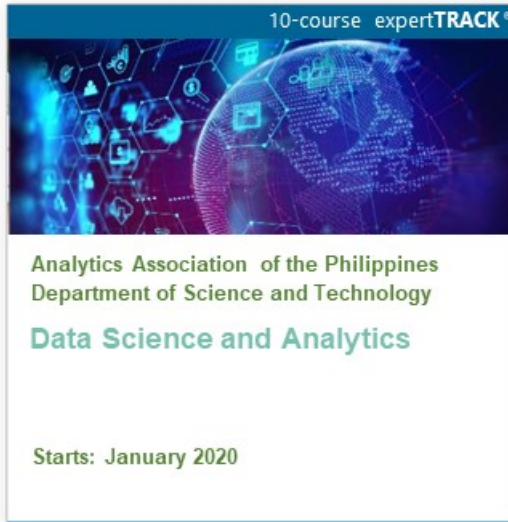
2,528
Course Completions

382 141 | 241
Full Track Completions



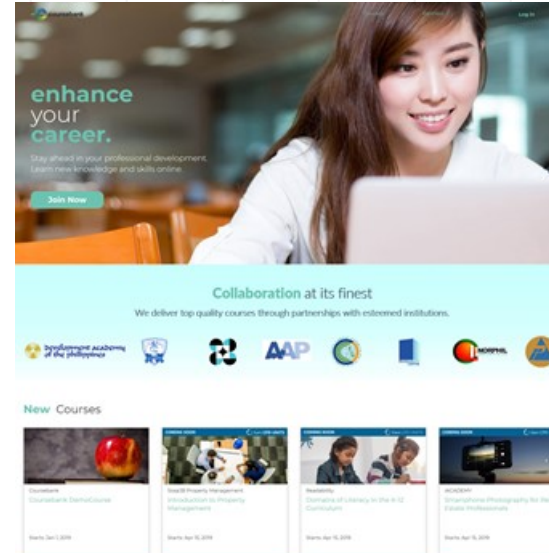
43,489
Estimated Learning Hours

\$3,821,516
Skill Value USD Estimate



create

localized massive open online courses, with industry practitioners, in data science and its supporting fields that are aligned to globally recognized framework.



train

30,000 human capital in order to truly jumpstart the emerging field and address the industry's demand for the profession.



sustain

the created courses by institutionalizing its use with organizations aligned to its intended goals.

10-course expertTRACK®

Analytics Association of the Philippines
Department of Science and Technology

Data Science and Analytics

Starts: January 2020

Data Science and Analytics Courses

Jointly develop with cooperating agency (AAP) localized massive open online courses on Data Science, Analytics, and related fields.



TARGET AUDIENCE

Professionals,
PRC Regulated (CPD)

Government Agencies

Students



CONTENT

AAP – Subject Matter
Experts

Coursebank – Content
development

Aligned to APEC
Competency Framework
and Job Roles



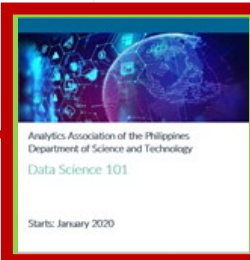
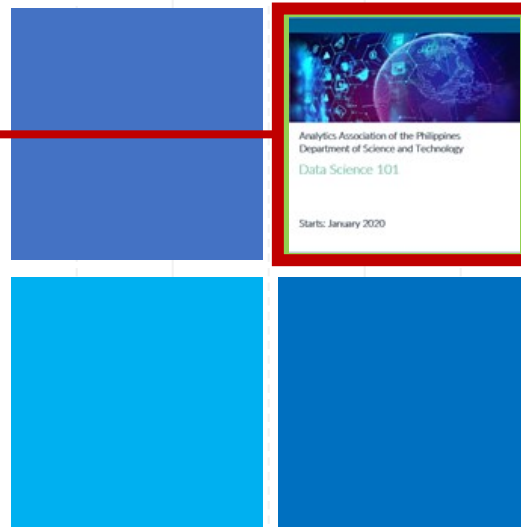
PLATFORM

coursebank.ph

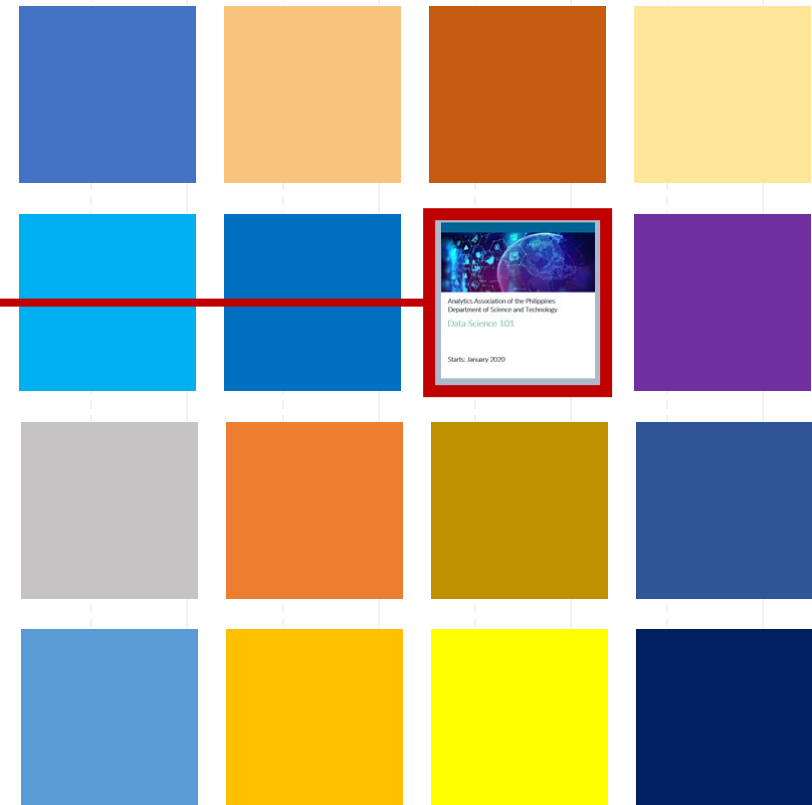
COURSE



SPECIALIZATION CPD PROGRAMS MASTERCLASS



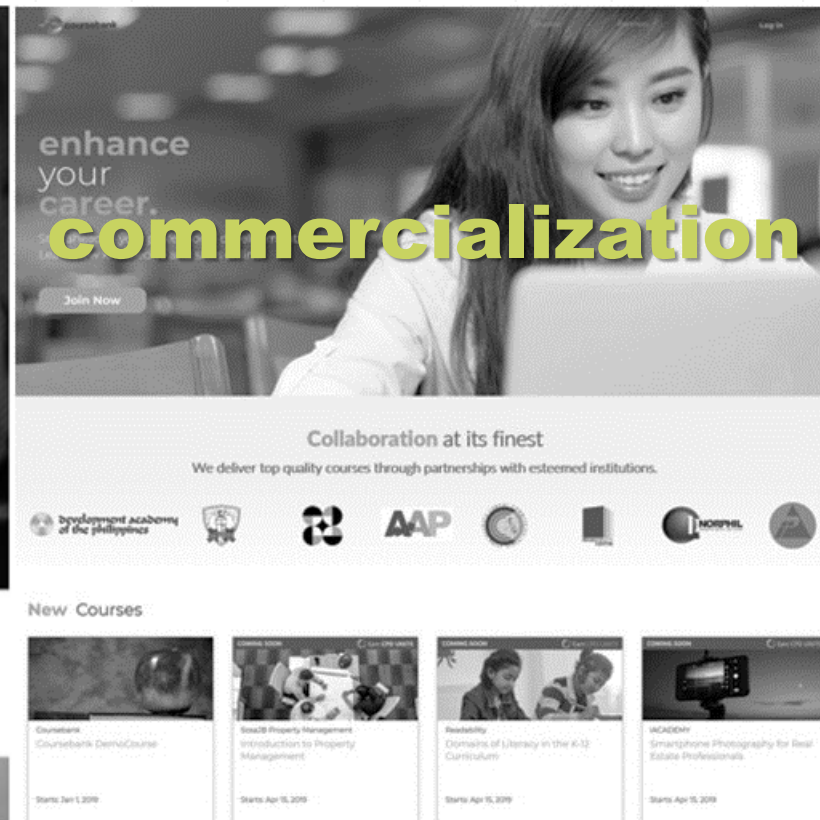
BACHELOR'S MASTER'S DOCTORATE



partnerships

commercialization

free-use licensing



what are still needed. . .



Project GODDESS

Good Governance through Data Science Support System

Dr. Enrico Paringit
Executive Director
DOST-PCIEERD



Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD)



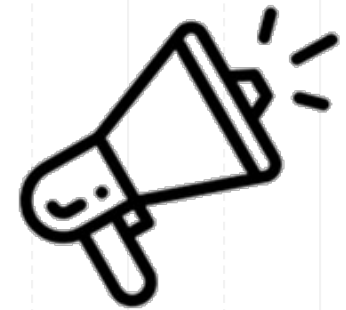
Our Mandate



Support for Research and Development



Human Resource and Institution Development



S&T Information Dissemination and Promotion



Support for Technology Transfer and Commercialization



Policy Development and Advocacy

The Department of Science and Technology (DOST) Contributes to the National Socio-Economic Agenda



**Promote
Science and
Technology**



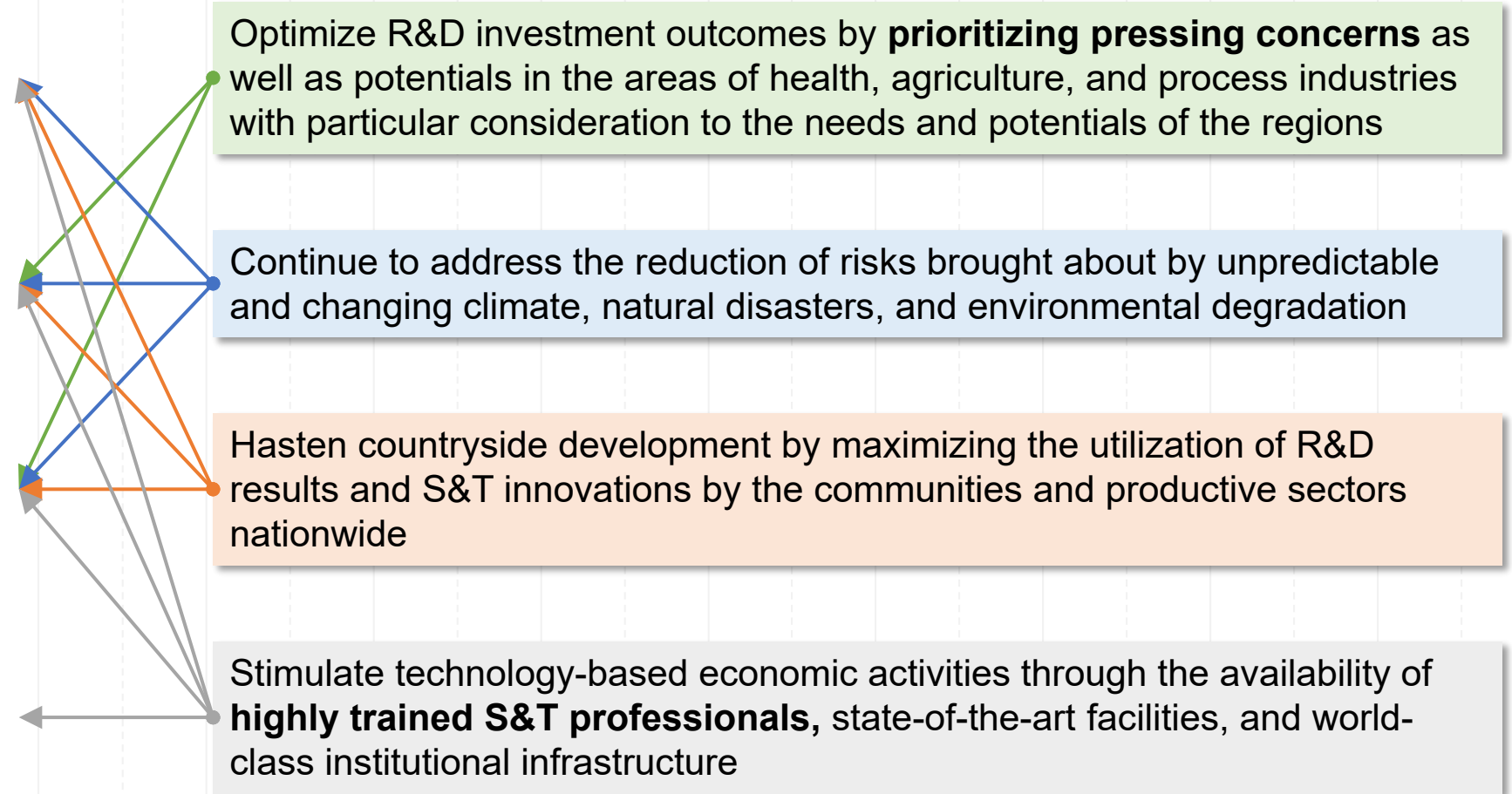
**Increase
Competitiveness**



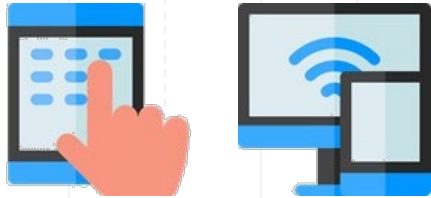
**Promote Rural
and Value Chain
Development**



**Invest in Human
Capital
Development**

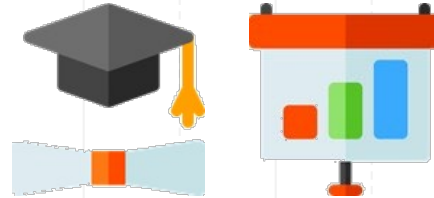


GODDESS Program: Good Governance through Data Science Support System



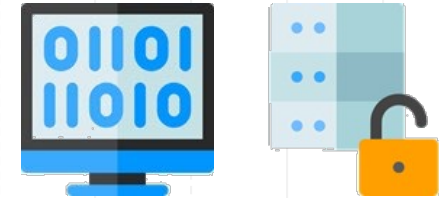
Online Courses

- Local platform, local content for local training
- Open call
- Target 30,000 program graduates



University Course Offerings

- Infrastructure and curriculum development
- BS DS / DE programs
- 3 target universities



Development of Smart Government Systems

- Collaborate with appropriate government agencies where Data Analytics would be applied

GODDESS Program: Key Deliverables



Publications

- Data Science Project Compendium
- BS DS / DE Curriculum Kit

Products / Patents / IP

- Smart City Research Project Design
- Localized Massive Open Online Courses (MOOC)
- Smart City Portal

People Services

- 30,000 MOOC Graduates
- 500 BS DS / DE Enrollees

Partnerships / Policy

- Smart Governance Portal
- Cross-Recognition Policy for MOOC and BS DS / DE Courses

GODDESS Program: Partners and Participants



GODDESS Program: Smart Governance through Smart Platforms



E-Governance and Citizen Services



- 1 Public Information, Grievance Redressal
- 2 Electronic Service Delivery
- 3 Citizen Engagement
- 4 Citizens - City's Eyes and Ears
- 5 Video Crime Monitoring

Waste Management

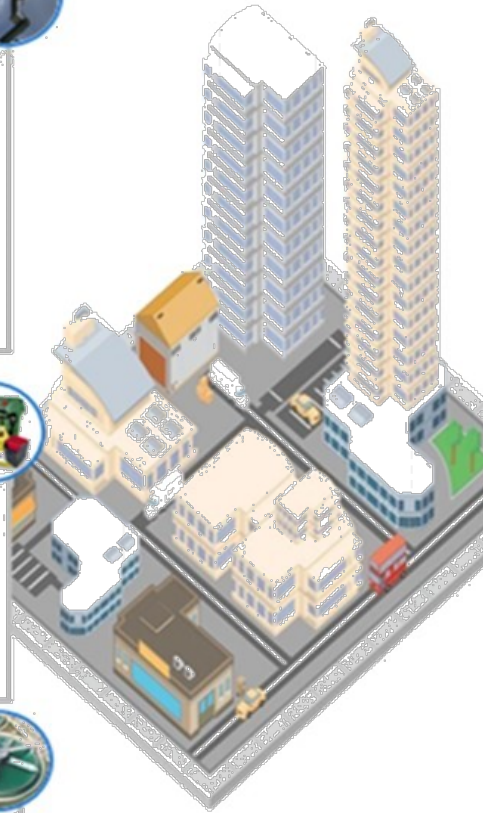


- 6 Waste to Energy & fuel
- 7 Waste to Compost
- 8 Every Drop to be Treated
- 9 Treatment of C&D Waste

Water Management



- 10 Smart meters & management
- 11 Leakage Identification, Preventive Maint.
- 12 Water Quality Monitoring



Energy Management



- 13 Smart Meters & Management
- 14 Renewable Sources of Energy
- 15 Energy Efficient & Green Buildings

Urban Mobility



- 16 Smart Parking
- 17 Intelligent Traffic Management
- 18 Integrated Multi-Modal Transport

Others



- 19 Tele-Medicine
- 20 Incubation/Trade Facilitation Centers
- 21 Skill Development Centers

Roadmap Element 5

Moderated by:

- **Mr. Sherwin Pelayo**, Analytics Association of the Philippines (AAP)

Discussants (Part 1):

- **Dr. Eugene Rex Jalao**, University of the Philippines Dilliman
- **Dr. Enrico Paringit**, Department of Science and Technology (DOST); Philippine Council for Industry, Energy, and Emerging Technology Research and Development (PCIEERD)
- **Mr. Allan de Venecia**, moocs.ph

Discussants (Part 2):

- **Mr. Chris Gray**, Education APAC, Wiley
- **Mr. Juan Eduardo Carmach**, Advisor, National Training and Employment Service (Chile)
- **Ms. Ashley Woods**, APAC, Google



“Talento Digital” Strategy, Design and organization

APEC - 15/07/2019

A project of

Develop by



VISION TALENTO DIGITAL

Accelerate Chile's participation in the **digital economy**, to expand the **benefits and opportunities** for people and for businesses, through the articulation and coordination of the **Chilean ecosystem** composed of demanding companies, training institutions, State institutions and industry.



What

Our role will be to prepare and reskill human capital, connecting the needs of people and companies to make digital transformation possible

How

In short training of 100 to 600 hours (1 to 4 months) under bootcamp methodologies where people acquire the digital and labor skills required by the industry today

Scope of the project

Have demand estimates

Have
Training Packages

Development of
Suppliers (Bootcamps)

Work with higher
education for
specialization training

Raise funding sources
for courses (Sence,
OTIC, Corfo, Others)

Manage attraction and
intermediation of
beneficiaries

Have Jobs available in
companies

Provide answers to the
needs of human
capital of the industry

Everything the executing unit does...

TRANSVERSAL	QUALITY	OPERATIONS	DEMAND
<p>7. Public - Private Board Management</p> <p>8. Advisory Board Management</p> <p>9. Present and Future Financial Management</p> <p>Platform development</p>	<p>13. Development of 24 Training Packages with their Exit Tests</p> <p>14. Quality System for Training Packages Update</p> <p>15. Management of Training Quality</p> <p>16. Development Suppliers (Bootcamps)</p> <p>17. Development of Higher Education Specialty Suppliers</p> <p>18. Tenders Management</p>	<p>13. Design and execute Communications for Attraction</p> <p>14. Pipeline Management Registration - Application - Pre-selection - Selection - Training</p> <p>13. Application of Exit Tests</p> <p>14. Public Communications</p>	<p>17. Product design for companies.</p> <p>18. Demand estimates (short and medium term)</p> <p>19. Business Network Management</p> <p>20. Engineers Club Management</p> <p>21. Design and execute Communications for Intermediation</p> <p>22. Intermediation campaigns for companies</p>

Reach and goals

16,000 Trained Persons
(15,000 young people and
workers + 1000 entrepreneurs)



- 70% of people with approved exit tests are employed / self-employed or continue studies
- 1.000 new business

70% of expected positive results:
Employment - Self-employment - Entrepreneurship - Continuing Studies

Training packages



Training packages

N. º	Plan Formativo	Tipo
1	Desarrollo de Aplicaciones Full Stack Java Trainee	ENTRY
2	Especialización Desarrollo de Aplicaciones Full Stack Java	ESP
3	Desarrollo de Aplicaciones Full Stack Python Trainee	ENTRY
4	Especialización Desarrollo de Aplicaciones Full Stack Python	ESP
5	Desarrollo de Aplicaciones Full Stack Javascript Trainee	ENTRY
6	Especialización Desarrollo de Aplicaciones Full Stack Javascript	ESP
7	Desarrollo de Aplicaciones Móviles Android Trainee	ENTRY
8	Especialización Desarrollo de Aplicaciones Móviles Android	ESP
9	Especialización Desarrollo de Aplicaciones Móviles React	ESP
10	Desarrollo de Aplicaciones Front-End Trainee	ENTRY
11	Especialización Desarrollo de Aplicaciones Front-End Vue	ESP
12	Especialización Desarrollo de Aplicaciones Front-End Angular	ESP
13	Especialización Desarrollo de Aplicaciones Front-End React	ESP
14	Diseño UX/UI	ENTRY
15	Especialización en Arquitectura de Software Cloud	ESP
16	Especialización en Ciencia de Datos	ESP
17	Especialización en Ingeniería de Datos	ESP
18	Especialización en Análisis de Datos	ESP
19	Especialización en DevOps	ESP
20	Especialización Product Owner	ESP
21	Liderazgo de Proyectos con enfoque de agilidad	ESP
22	Fundamentos de la Seguridad de la Información	ESP
23	Curso Emprendedores I - Ruby / MVP	ENTRY
24	Curso Emprendedores II	ESP

Roadmap Element 2

Moderated by:

- **Dr. Kar Yan Tam**, Hong Kong University of Science and Technology

Discussants:

- **Mr. Jeff Goss**, Arizona State University
- **Professor Lim Sun Sun**, Singapore University of Technology and Design and Nominated Member of Parliament
- **Mr. Damian Haas**, Oracle Academy, JAPAC +
- **Dr. Lieven Demeester**, Director, Centre for Teaching Excellence, Singapore Management University



Roadmap Element #2: Building Capacity, Networks, and Tools to Support/Increase Digitally Enabled Faculty

Professor Tam Kar Yan

Dean, HKUST Business School and Project Lead

July 16, 2019



- Supply of Faculty and Instructors of Data Science
- Co-development of Curriculum
- Competence and Qualification

Will Machines take away our jobs?

No Worry.
New jobs
will be
created!

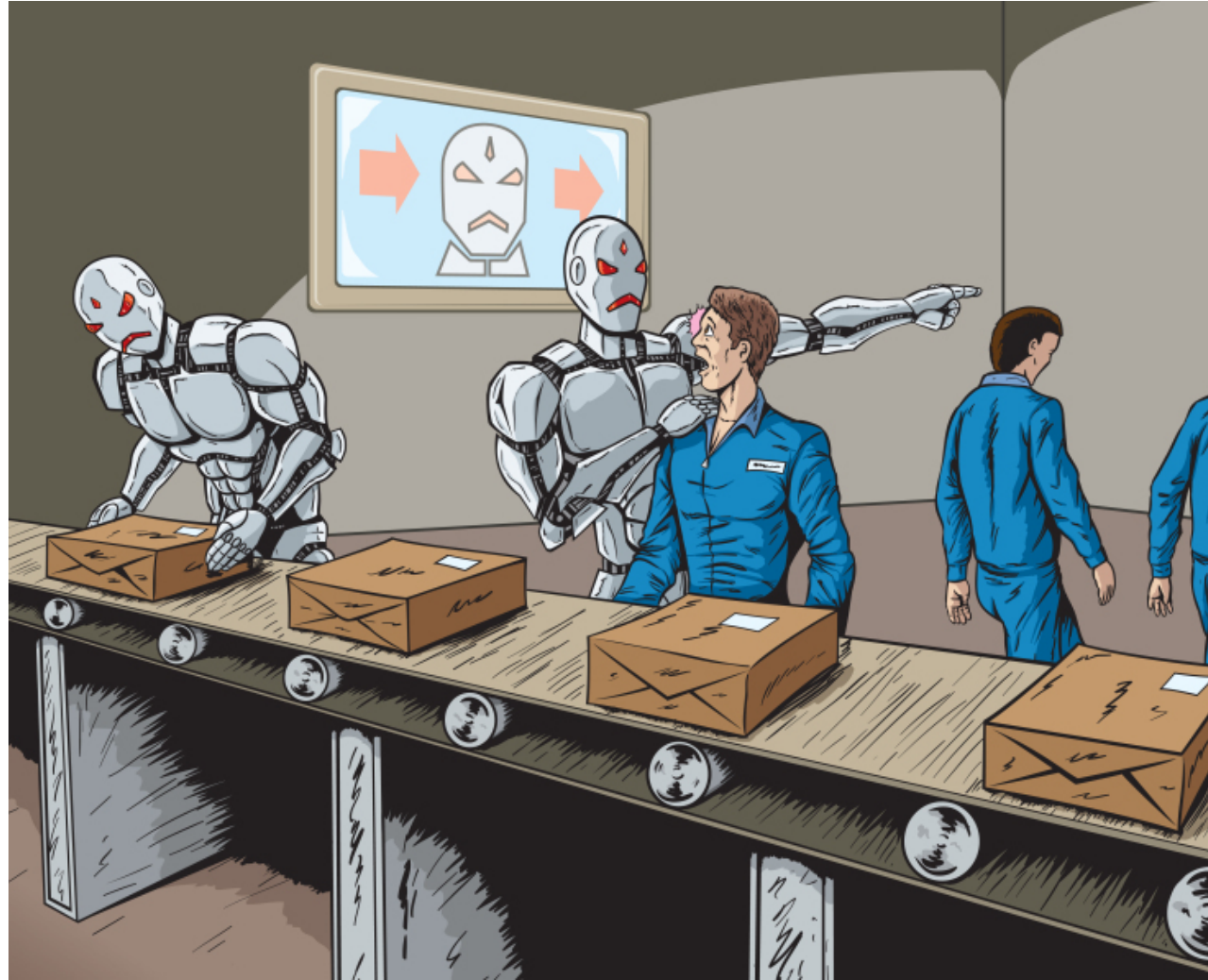
New jobs are going to be created as we shift towards the digital automation landscape.

According to the WEF Report 2016,

65% of children entering primary schools today will ultimately work in new job types and functions that currently do not yet exist.

According to the report *The Next Era of Human-Machine Partnerships* by the Institute of the Future (IFTF),

85% of jobs that will exist in 2030 have not yet been invented.

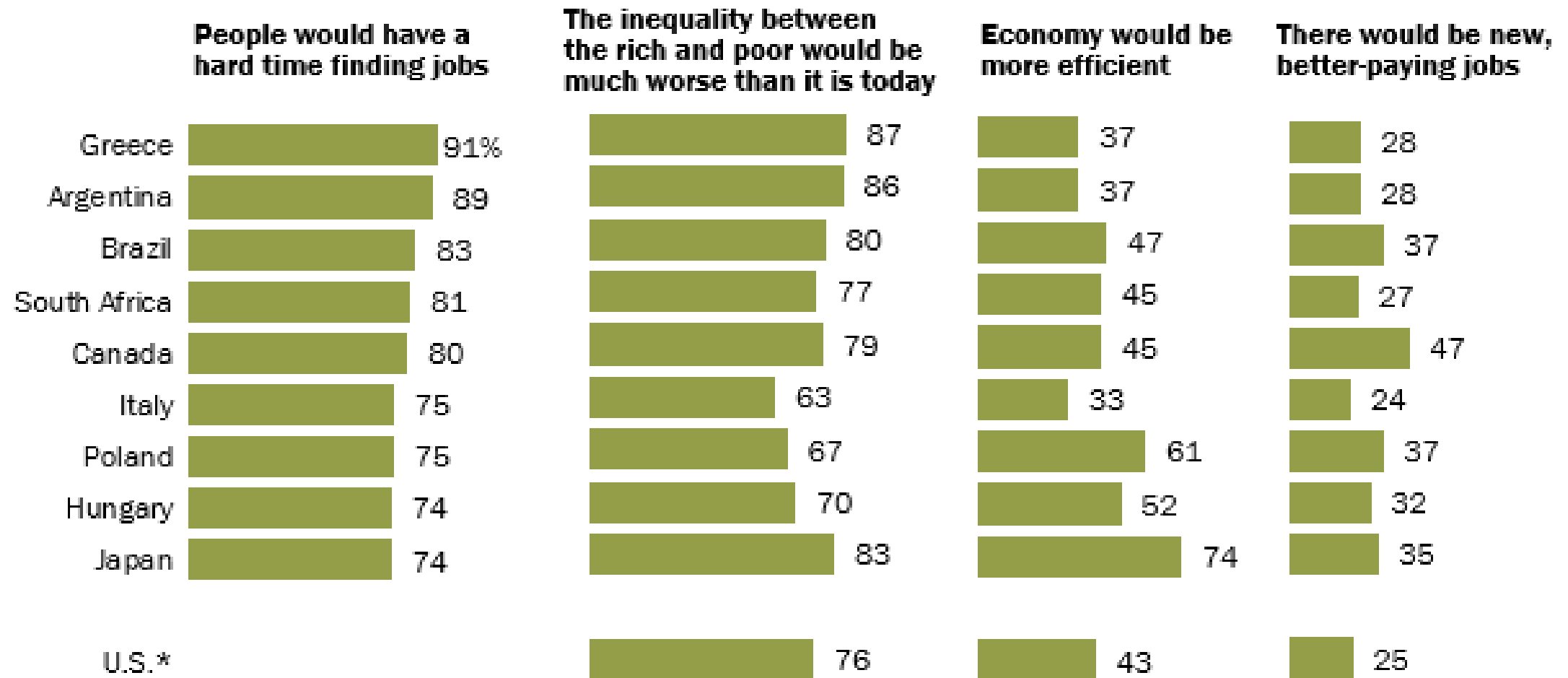


Many are less optimistic...

IMPACT ON OUR JOBS

Publics more convinced of the downsides than potential upsides of job automation

% of adults who think it is likely that ___ if robots and computers were able to do much of the work currently being done by humans



Note: U.S. data from Pew Research survey conducted May 1 – 15, 2017.

Source: Spring 2018 Global Attitudes Survey. 122

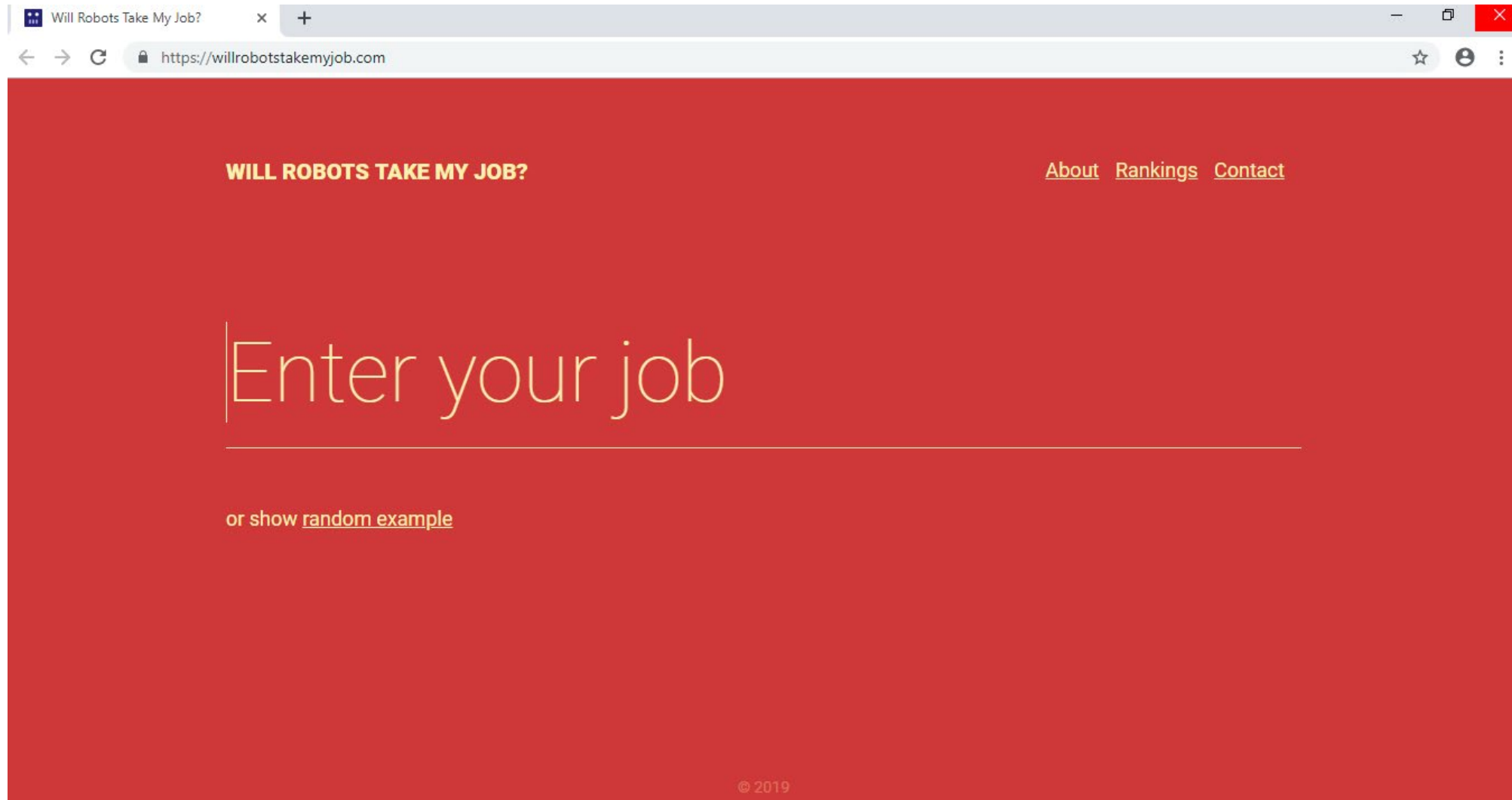
Image: Pew Research Center

Business

'What happens tomorrow, who knows': Deutsche Bank employees brace for more bad news



Deutsche Bank Plan to Cut 18,000 jobs in 5 Years



<https://willrobotstakemyjob.com>

WILL ROBOTS TAKE MY JOB?

[About](#) [Rankings](#) [Contact](#)

88%

Ad closed by Google

Construction Laborers

98%

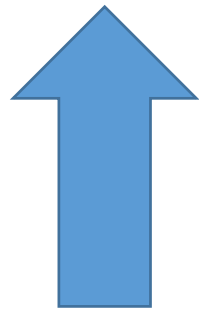
Bookkeeping, Accounting,
and Auditing Clerks

0.4%

Elementary School Teachers,
Except Special Education

SOC CODE: 25-2021

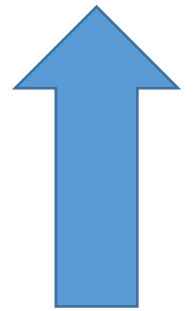
A More Realistic Scenario – Job Skill Shift



Unemployment of Displaced
Workers

Repetitive Physical and Cognitive Jobs will be
gradually Automated

Shortage of Labor who
Possess the skills required
by the new Jobs



New Jobs will be Created
Data Analytics

New Pedagogies and Curricula

Interdisciplinary Collaboration is the KEY!!

The screenshot shows the website for the MSc in Financial Technology program. The top navigation bar includes links for Home, FAQ, Enquiry, Download Brochure, Apply Now, HKUST, Follow us, and Share. The main header features the university's logo and name, the program title 'MSc in Financial Technology', and a search icon. Below the header is a large banner with a colorful background of binary code and various fintech-related hashtags like #Investment & Finance, #Innovation, #Data Security, #Robo-Advisory Service, and #Internet. The banner text reads 'MASTER OF SCIENCE IN FINANCIAL TECHNOLOGY'. At the bottom, there is a 'Program Design' button and the text 'Program Curriculum'.

Home FAQ Enquiry Download Brochure Apply Now HKUST Follow us Share

香港科技大學 THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY MSc in Financial Technology

WHAT'S NEW ABOUT US PROGRAM AND COURSES STUDENT AND ALUMNI ADMISSIONS

#Investment & Finance #Innovation #Data Security #Robo-Advisory Service #Internet

MASTER OF SCIENCE IN FINANCIAL TECHNOLOGY

Program Design Program Curriculum

MSc Fintech jointly offered by Science, Engineering and Business Schools

International Collaboration Deepening Cultural, Work, and Academic Experience



a partnership of



Università Commerciale
Luigi Bocconi

Home

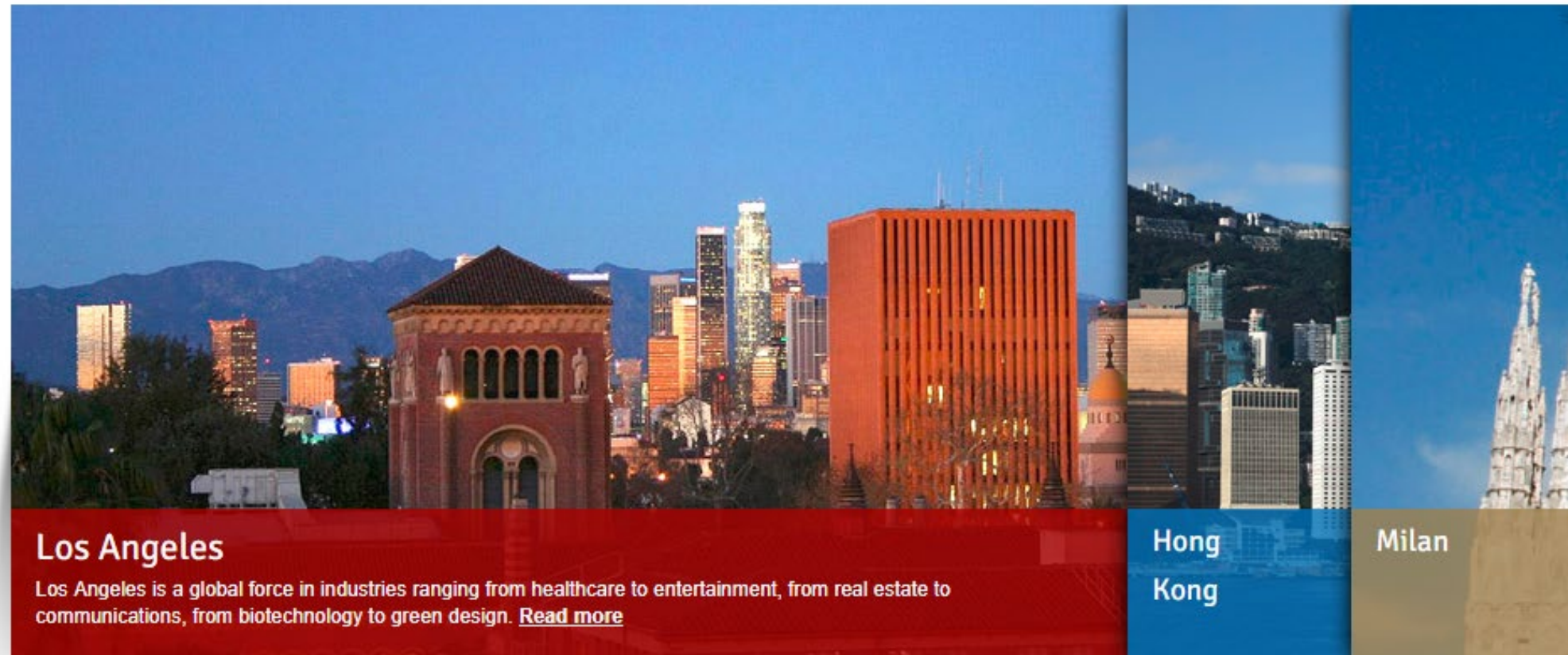
Overview

Curriculum

Student Experience

Admission

Contact us



Los Angeles

Los Angeles is a global force in industries ranging from healthcare to entertainment, from real estate to communications, from biotechnology to green design. [Read more](#)

Hong Kong

Milan

HKUST × MINERVA®

SCHOLARS PROGRAM

[About Us](#)

[The Program](#)

[Application](#)

[Other Matters](#)

[Enquiry](#)

[Previous Cohorts](#)

HKUST × MINERVA®

SCHOLARS PROGRAM

[READ MORE](#)

A new delivery mode...

42 School Free Coding Training for All



INNOVATION ▾

PROGRAMS ▾

CAMPUS LIFE ▾

ADMISSIONS ▾

CORPORATE & PARTNERS ▾

ABOUT ▾

APPLY NOW

ZERO TUITION
ZERO TEACHERS
ZERO CLASSES
100% CODING

Become a Software Engineer, for free, with 42 Silicon Valley's innovative, disruptive, peer-learning school.

[VIEW OUR PROGRAM](#)



"The really awesome thing about going to 42 is you feel like you're walking into a school from the future."



"It was SO cool to see. It's really unique and I haven't seen anything else like it in the world."



"42 is very much in line with our philosophy of building meritocracy and allowing more people to have opportunity."



"I think it's a completely 21st century concept of education."

Academic Industry Collaboration

Business School Partners with Technology Firm

- Invest in computational infrastructure
- Strengthen technical support
- Incorporate popular open-source software into the curriculum



Cooperate with Industry in Curriculum Design and Delivery



Collaboration with KPMG on
MSc in Accounting Analytics

IBM launches Collaborative Innovation Program to accelerate industry platform creation using open technologies for the Greater Bay Area

Advisory panel also established to support digital transformation across banking and other key industries

News

Previous stories

Hong Kong – July 9, 2019 - IBM today announced the launch of a Collaborative Innovation Program and advisory panel to facilitate the creation of industry platforms using open technologies in the Greater Bay Area. The Program will focus on the research and development of open application programming interface (API) frameworks and technologies, establishing industry standards for API, creating accelerators based on open technologies such as blockchain, and supporting cross industry co-creation projects that exhibit high potential for commercialization and market success.

Participate in IBM initiative in developing an academic-industry
Innovation platform

Professional Qualification – Co-develop a Fintech Qualification for Banking and Finance Professionals
With China Banking Association and China Construction Bank



Working with Government and Industry Sector on
Retraining and Professional Qualification Setting

Enhancement Measures of Continuing Education Fund and Implementation Time

Attention: The enhancement measures of the Continuing Education Fund have yet to be implemented. For learners enrolling on courses that commence before the implementation date (i.e. 1 April 2019), reimbursement claims under the Continuing Education Fund will be processed in accordance with the existing requirements and arrangements (including the subsidy ceiling of \$10,000).

The Government has obtained approval from the Finance Committee of the Legislative Council for funding injection into the Continuing Education Fund (CEF) to support the implementation of various enhancement measures proposed earlier.

The enhancement measures will be implemented with effect from 1 April 2019, with details as follows –

- increasing the CEF subsidy ceiling from the current level of \$10,000 to \$20,000 per applicant;
- closed CEF accounts to be re-activated, so that the account holders can make use of the unused balance (if any) under the original subsidy of \$10,000 as well as the additional subsidy of \$10,000;
- regarding the co-payment ratios by learners (i.e. the percentage of course fee to be borne by learners), the ratio for the first \$10,000 subsidy is 20% of the course fee and that for the second \$10,000 subsidy is 40% of the course fee;
- relaxing the upper age limit for applicants from 65 to 70;
- expanding the scope of CEF courses to all eligible courses registered in Qualifications Register (QR);
- lifting the restrictions on the validity period or the number of claims for CEF accounts, namely, applicants may submit an unlimited number of reimbursement claims for a total subsidy up to \$20,000 before reaching the upper age limit (i.e. before the date they reach the age of 71);
- an applicant may submit an application to open a CEF account together with an application for the first reimbursement claim after successful completion of the first CEF course, instead of the current requirements of submitting the application to open a CEF account before the commencement of the CEF course. Moreover, applicants are required to submit their reimbursement claims within one year upon the successful completion of a CEF course; and

Policy to Encourage Banks to Share Data with Trusted Third Parties



HONG KONG MONETARY AUTHORITY
香港金融管理局

RSS | MY COLOUR | PRINT

ABOUT
THE HKMA

KEY
FUNCTIONS

PUBLICATIONS
& RESEARCH

MARKET DATA
& STATISTICS

[Home](#) / [Key Information](#) / [Press Releases](#)

Press Releases

Open API Framework for the Banking Sector and the Launch of Open API on HKMA's Website

The Hong Kong Monetary Authority (HKMA) published today (18 July) the Open Application Programming Interface (API) Framework (Framework) for the Hong Kong banking sector. At the same time, the HKMA announced the launch of Open API on its official website on 23 July 2018 to provide convenient access by the public.

The formulation of the Open API Framework is one of the seven initiatives announced by the HKMA in September 2017 to prepare Hong Kong to move into a new era of Smart Banking. Open API can help to ensure the competitiveness of the banking sector, encourage more parties to provide innovative and integrated services that improve customer experience, and keep up with worldwide development on the delivery of banking services.

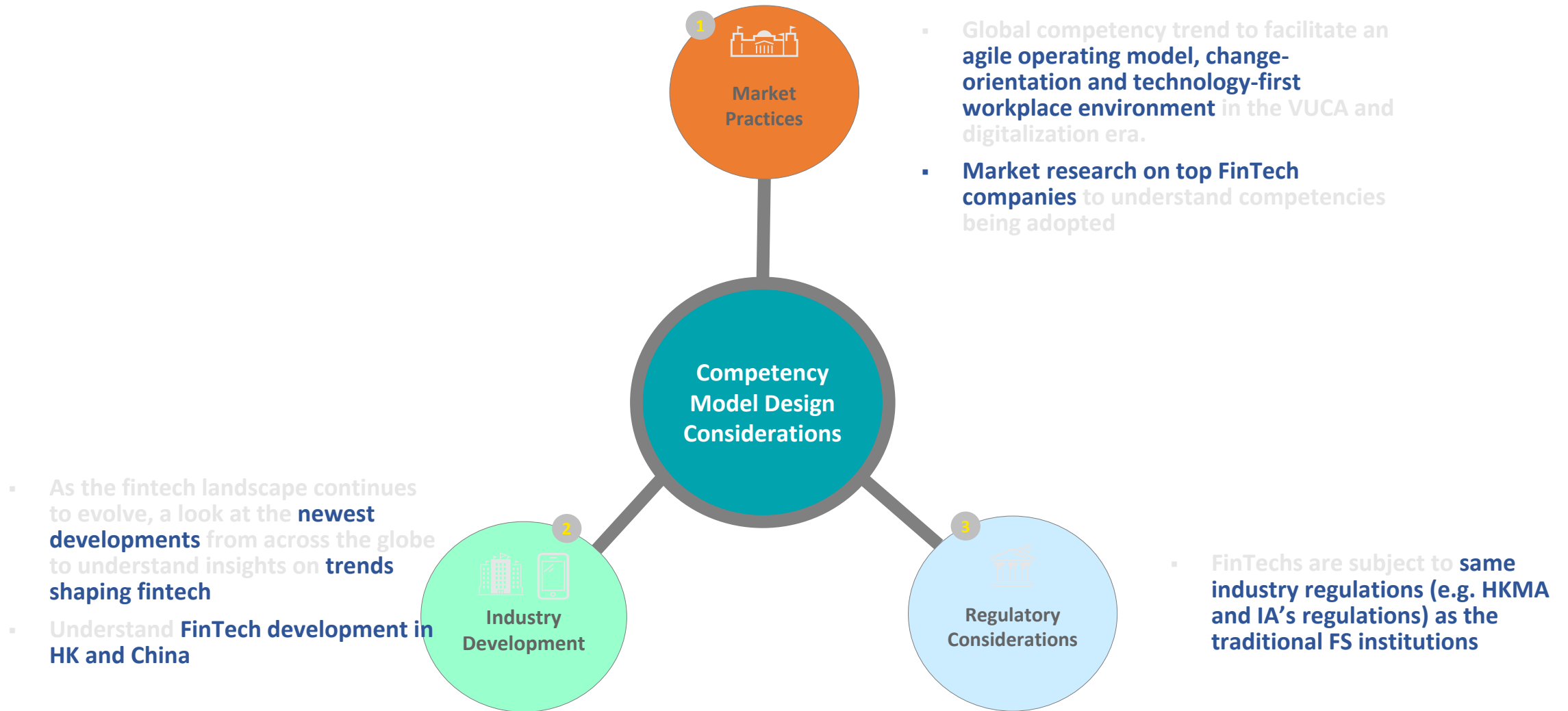
During the consultation, the HKMA received 41 responses from banks, technology/fintech firms, industry associations, consulting firms, payment card scheme operators, individuals and other interested organisations. All respondents were supportive of the HKMA's policy direction in developing an Open API Framework. Some respondents have sought clarification or requested more details on the Framework particularly on the engagement with Third Party Service Providers (TSPs). A summary of the comments received during the public consultation and the HKMA's responses can be found in the Summary of Consultation at [Annex A](#). Taking into consideration the comments received, the HKMA has revised and published today the Framework as [Annex B](#).



HKUST

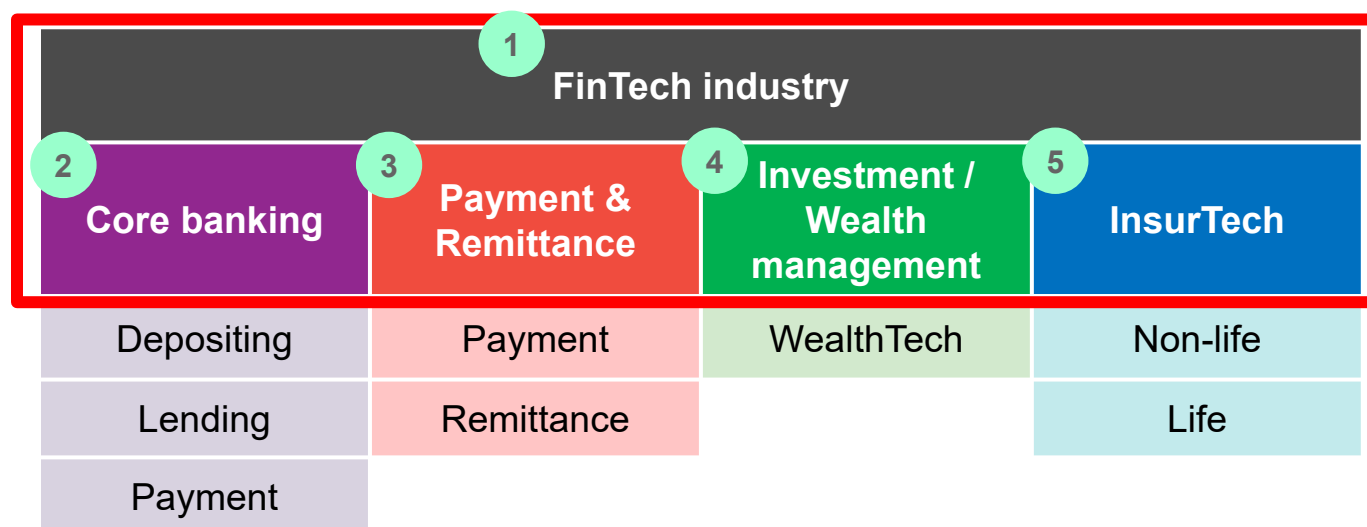
The Fintech Competency and Manpower Study

Kick-off meeting
8 July 2019



1 How we plan to segment the FinTech industry

- ▶ In addition to identifying the common competency requirements across the whole industry, we will identify the competencies specific to the 4 main segments



Breadth of the competency framework

- ▶ (1): A set of FinTech Industry Competency to capture the common observable behaviors across the 4 segments. There will be overlapping in job functions and competencies between different segments.
- ▶ (2), (3), (4), (5): A set of Segment Competency for each major segment in FinTech.
- ▶ **Investment banking** will not be covered because its nature of business is much more personalized on client-to-client basis.
- ▶ Other niche applications such as **comparison services, cybersecurity and RegTech** may not have sufficient scale or representation in the market at this juncture.

2 How we plan to structure the competency framework

Updated

- ▶ Competency requirement for 21st century professionals is multi-faceted in the digital transformation era. Below are some examples of competencies in the digital age grouped in **4 domains**.
- ▶ Potential domains are:

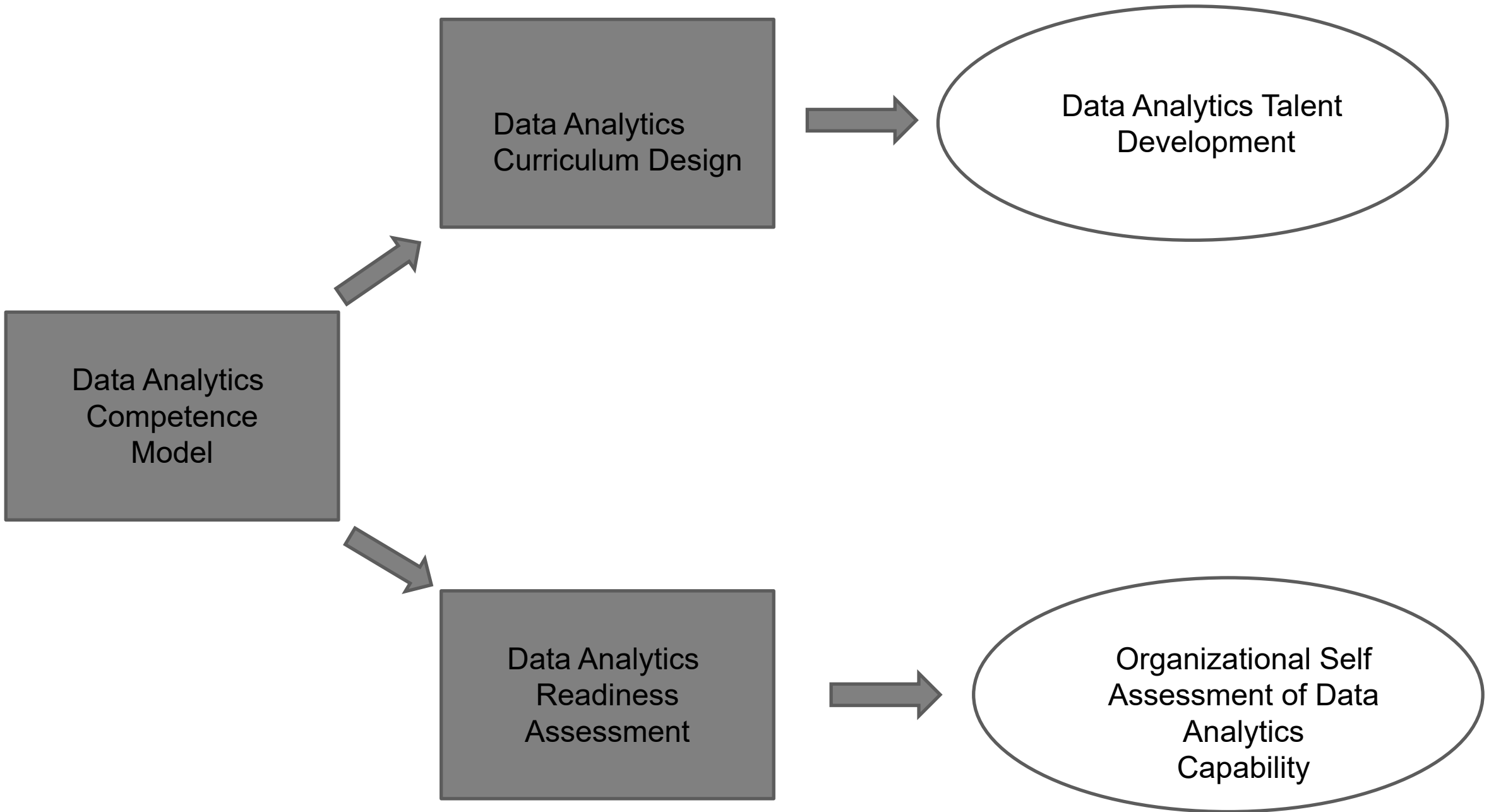
Core competencies

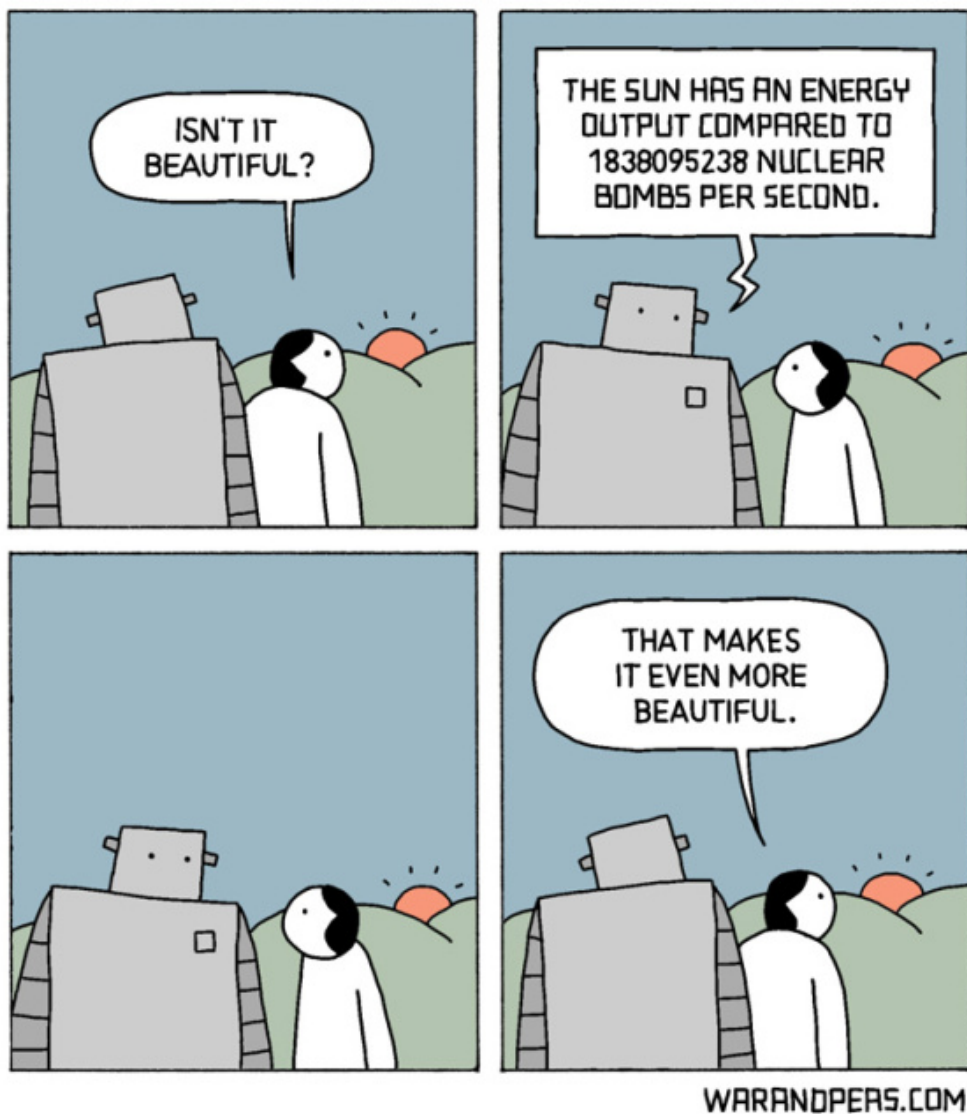
Self Management	Interpersonal	Business management	Segment-specific (e.g. Investment / Wealth management)
<ul style="list-style-type: none">▪ Agility▪ Build trust in DnA insight▪ Intellectual innovation▪ Results driven	<ul style="list-style-type: none">▪ Communication▪ Culturally connected▪ Virtual collaboration▪ Global perspectives▪ Stakeholder engagement	<ul style="list-style-type: none">▪ Compliance▪ Solution/ Product development▪ Creating demand through insight▪ UX design▪ Data and analytics▪ Intelligent automation▪ Cybersecurity▪ Cloud computing▪ Open API▪ Ecosystem management▪ Vendor management	<ul style="list-style-type: none">▪ Portfolio management▪ Creating a personalized service reputation

Identify and agree on potential executive interview participants (~ 30)

Updated

	HKUST as the first point of contact	EY to reach out
Virtual banks	<ul style="list-style-type: none"> • WeLab • Zhong An Virtual Finance • Ping An One connect 	<ul style="list-style-type: none"> • Livi VB • SC Digital Solutions
Traditional banking	<ul style="list-style-type: none"> • DBS • Citibank • Standard Chartered • Chong Hing • BankComm • CCBA • CITIC • BEA 	<ul style="list-style-type: none"> • HSBC • BoCHK • ICBC
Investment banks		<ul style="list-style-type: none"> • Goldman Sachs • JP Morgan • Morgan Stanley
Insurance		<ul style="list-style-type: none"> • FWD • AIA • AXA • Prudential • AIG • Allianz • Generali
Internet and E-commerce companies	<ul style="list-style-type: none"> • Google • Tencent • Alibaba 	<ul style="list-style-type: none"> • LinkedIn • JD.com
FinTech Companies	<ul style="list-style-type: none"> • HKUST will provide a list of FinTech startups within their network 	<ul style="list-style-type: none"> • Bowtie • TNG Wallet • BLUE
Payment Companies		<ul style="list-style-type: none"> • VISA • MasterCard





Thank You

Transformation of Work in Asia Pacific in the 21st Century

Project Vision

- Analyze how digital future will transform the future of work
- Address economic risks and fears
- Fill gaps in existing research
- Develop new thought leadership to empower policy-makers, civil society and other





Six Chapters

1. Coming Age of Digital Automation
2. Technological Change and Its Consequences
3. The Social Benefits of Automation and Facilitating Policies for Realizing Them
4. The Cultural Impact of Automation
5. Automation and the Future of Work in Developing Countries
6. Preparing the Future Workforce

Final Chapter

Digital Transformation in the 21st Century

Download the Full Report at www.apru.org/resources/

Report on
Promotion of STEM Education
Unleashing Potential in Innovation



教育局
Education Bureau

December 2016

Advancing Computing Education Globally

Oracle Academy offers educational institutions and educators the computing resources they need to engage, inspire and prepare students to become tomorrow's innovators and leaders and achieve their dreams.

Free Computing Education Resources

Oracle Academy is recognized worldwide for high-quality, academic computer science curriculum.



We advance computer science education globally to drive knowledge, innovation, skills development, and diversity in technology fields.



FREE program for educational institutions, educators, and students.



We support more than **15,000 educational institutions** and **6.3 million students** across **128 countries**.

Who Is Oracle Academy For?



GOVERNMENT MINISTRIES OF EDUCATION

- Need industry-literate graduates to grow economy
- Countries are challenged to fill job demand for employees with in-demand tech skills



EDUCATORS

- Need computer science curriculum that is engaging, hands-on and practical, created by educators for educators
- Need computer science training and professional development options



EDUCATIONAL INSTITUTIONS

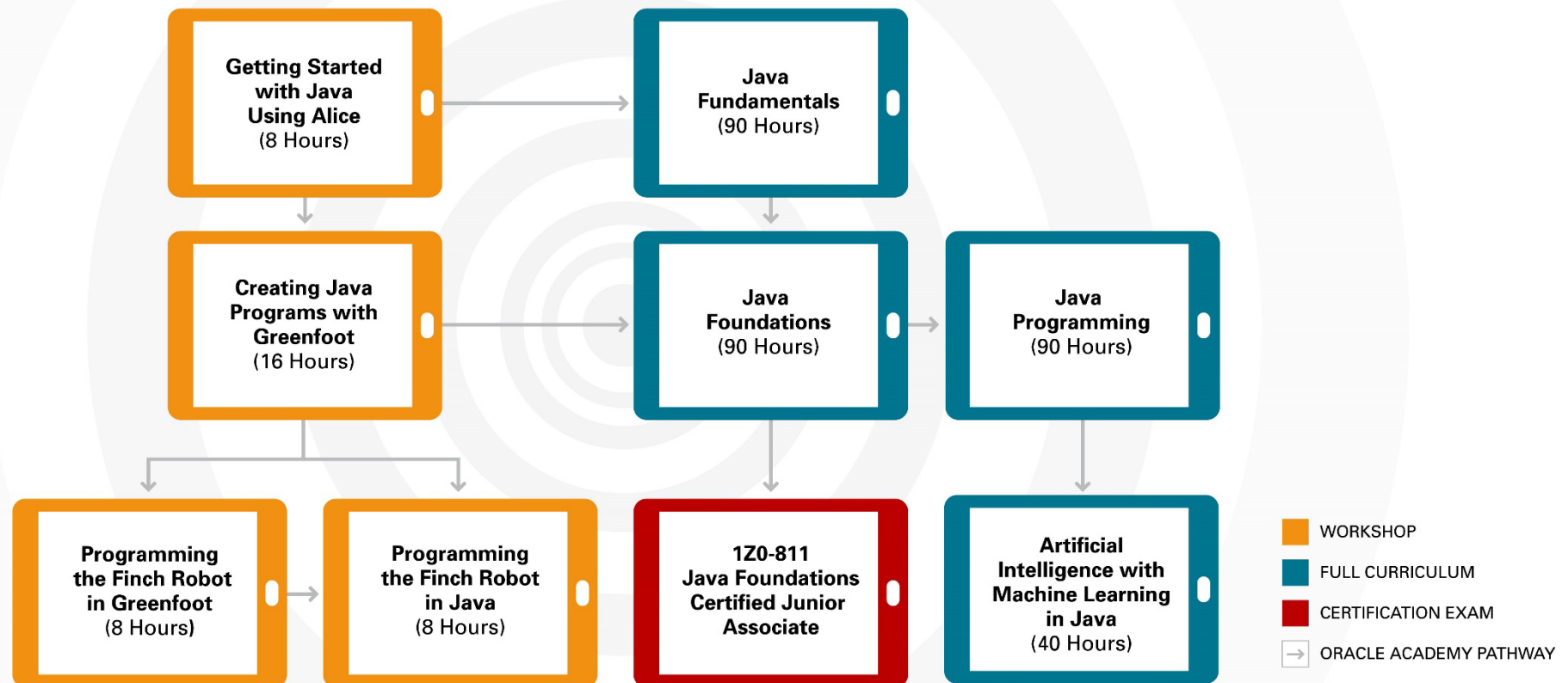
- Need to prepare students for higher education, further education, and careers with core computing literacy
- Have limited funding to purchase new curriculum and resources
- Need curriculum mapped to standards



STUDENTS

- Get hands-on exposure to relevant current technologies in the classroom
- Helps them become college and career ready with industry-relevant skills
- Start path to industry certifications for a competitive career edge

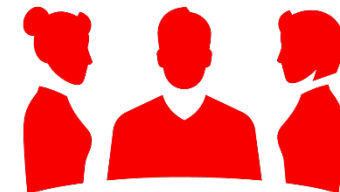
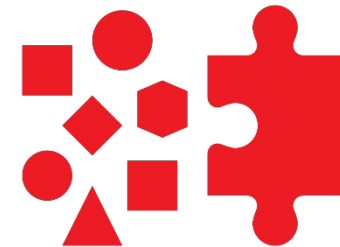
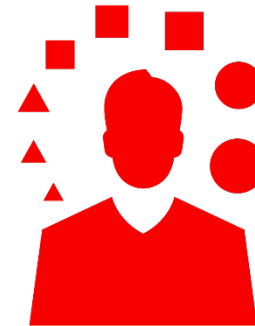
Curriculum—Java Pathway



Industry Leadership

#1 in:

Banking
Communications
Engineering and construction
Financial services
Healthcare
Insurance
Public sector
Retail
Utilities





**CLOSING THE DIGITAL
SKILLS GAP FORUM**

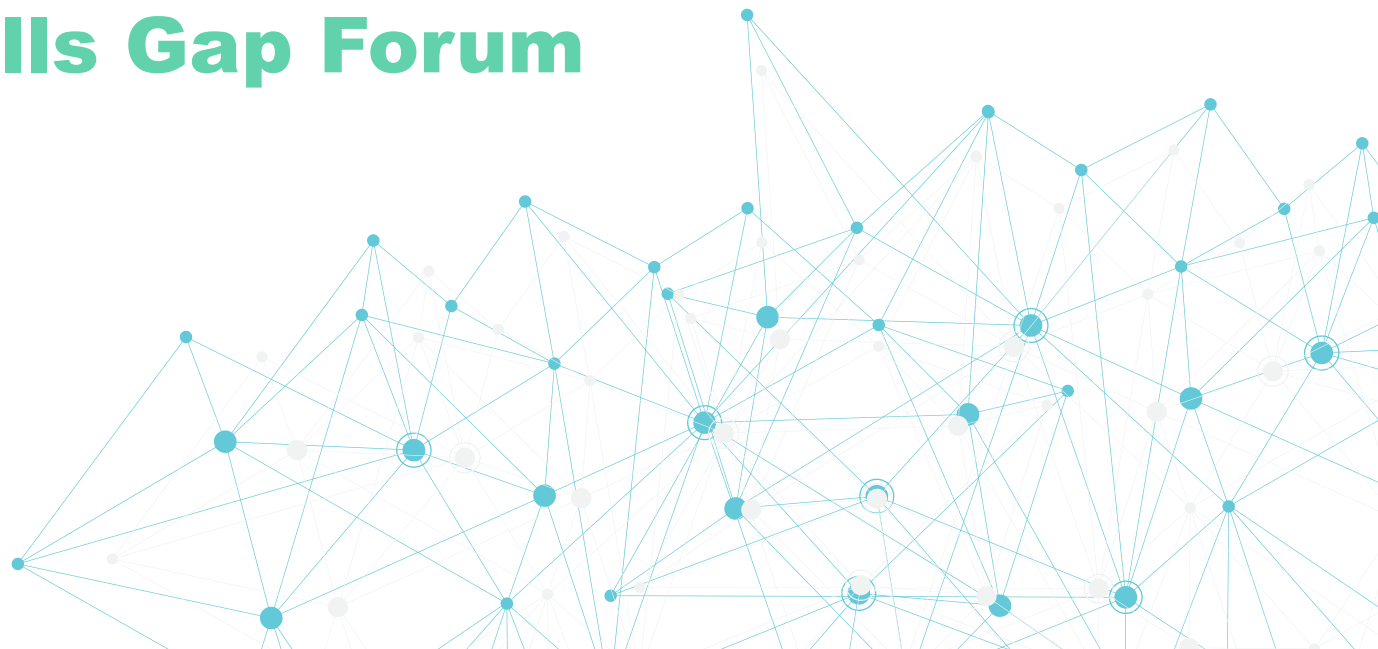


APEC

Closing the Digital Skills Gap Forum

Singapore | 15 – 16 July 2019

#MindTheDigitalSkillsGap



Roadmap Element 7

Moderated by:

- **Mr. Andrew Tein**, Wiley, *APEC Closing the Digital Skills Gap Forum Co-Chair*

Discussants:

- **Dr. Ethel Agnes P Valenzuela**, Southeast Asian Ministers of Education Organization (SEAMEO)
- **Dr. Lim Lai Cheng**, SMU Academy, Singapore Management University
- **Ms. Debbie Hughes**, Senior Advisor, Entangled Solutions





Digital Skills in Southeast Asia: Status and Direction

Dr Ethel Agnes P Valenzuela
SEAMEO Secretariat Director



Southeast Asian Ministers of Education Organization (SEAMEO)



A Southeast Asian intergovernmental organization promoting regional cooperation in **education, science and culture**

Vision:

The leading organization for enhancing **regional understanding and cooperation in education, science and culture for a better quality of life in Southeast Asia.**

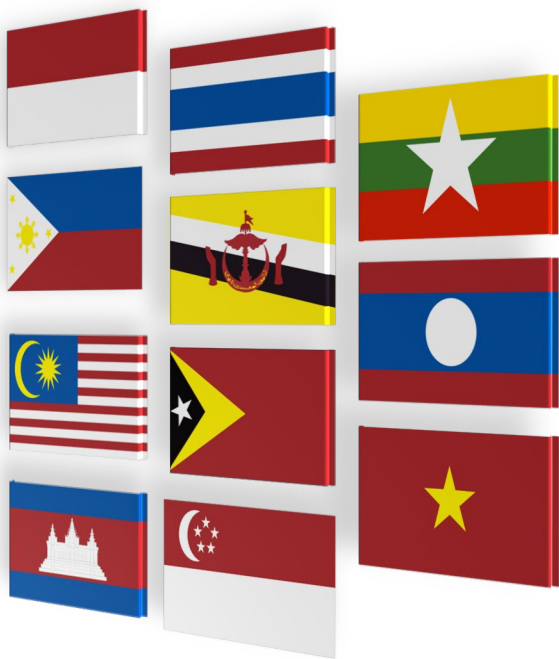


Est. 30 Nov 1965



SEAMEO Membership

11 Member Countries in Southeast Asia



Indonesia (1965)
Malaysia (1965)
Singapore (1965)
Cambodia (1971)
Vietnam (1992)
Timor Leste (2006)

Lao PDR (1965)
Philippines (1965)
Thailand (1965)
Brunei Darussalam (1984)
Myanmar (1998)

8 Associate Member Countries



Australia (1973) France (1973)
New Zealand (1974)
Canada (1988) Germany (1990)
Netherlands (1993) Spain (2007)
United Kingdom (2013)

5 Affiliate Members



International Council for Open and Distance
Education (1999)



University of Tsukuba (2009)



British Council (2010)



UNESCO APCEIU (2018)



China Education Association for
International Exchange (2015)



SEAMEO Organization



SEAMEO Council

(Ministers of Education of Southeast Asian Countries)

SEAMEO Secretariat

25 SEAMEO Regional Centres
1 Network

- Training and HRD
- Technical Assistance and Consultancy
- Forum for Policy Dialogue and Regional Cooperation
- Research and Development
- Partnership and Networking

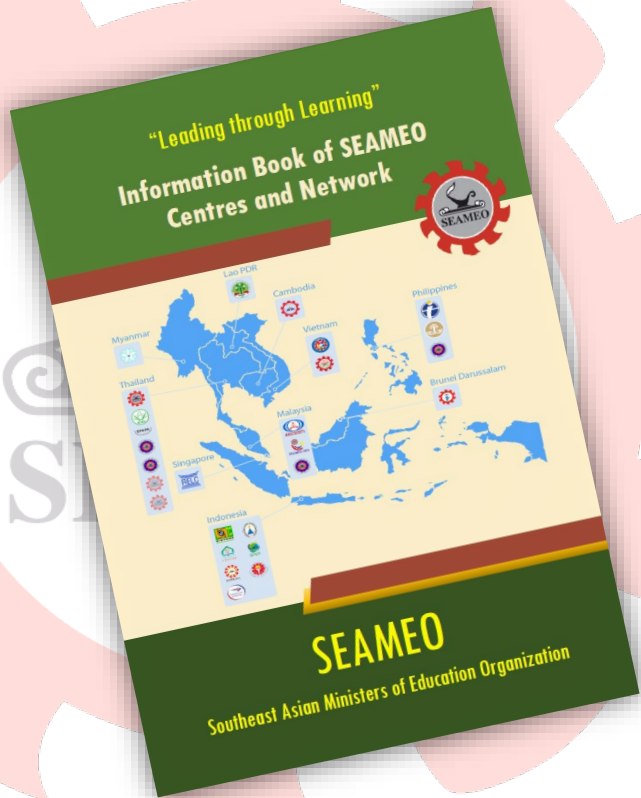
26

Centres across Southeast Asia

New: CED, TED, CECCEP

Upcoming: STEM-ED, SEPS

Roles of SEAMEO Regional Centres



Download at: <http://seameo.org>



1

Training & Human Resource Development

2

Technical Assistance & Consultancy

3

Forum for Policy Dialogue & Regional Cooperation

4

Research & Development

5

Publications & Information Dissemination

6

Partnership & Networking

1. Early Childhood Care and Education

2. Addressing Barriers to Inclusion

3. Resiliency in the Face of Emergencies

4. Promoting TVET (Technical and Vocational Education and Training)

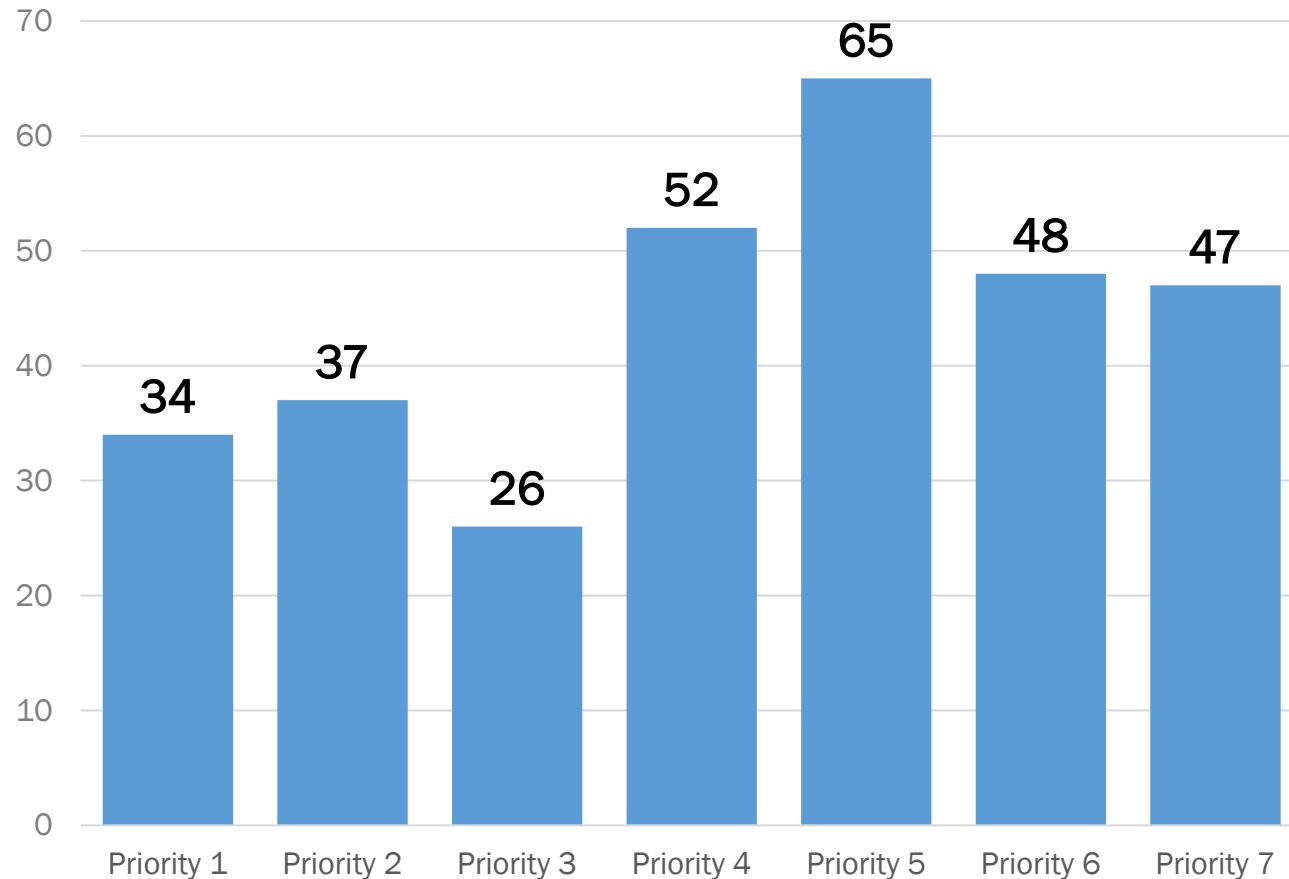
5. Revitalising Teacher Education

6. Promoting Harmonisation in Higher Education and Research

7. Adopting a 21st Century Curriculum



Implementation of the 7 priority areas by SEAMEO with MOEs (as of 23 Nov 2018)



SEAMEO 7 Priority Areas

Priority 1 - Early Childhood Care and Education

Priority 2 - Addressing Barriers to Inclusion

Priority 3 - Resiliency in the Face of Emergencies

Priority 4 - Promoting Technical and Vocational Education and Training (TVET)

Priority 5 - Revitalising Teacher Education

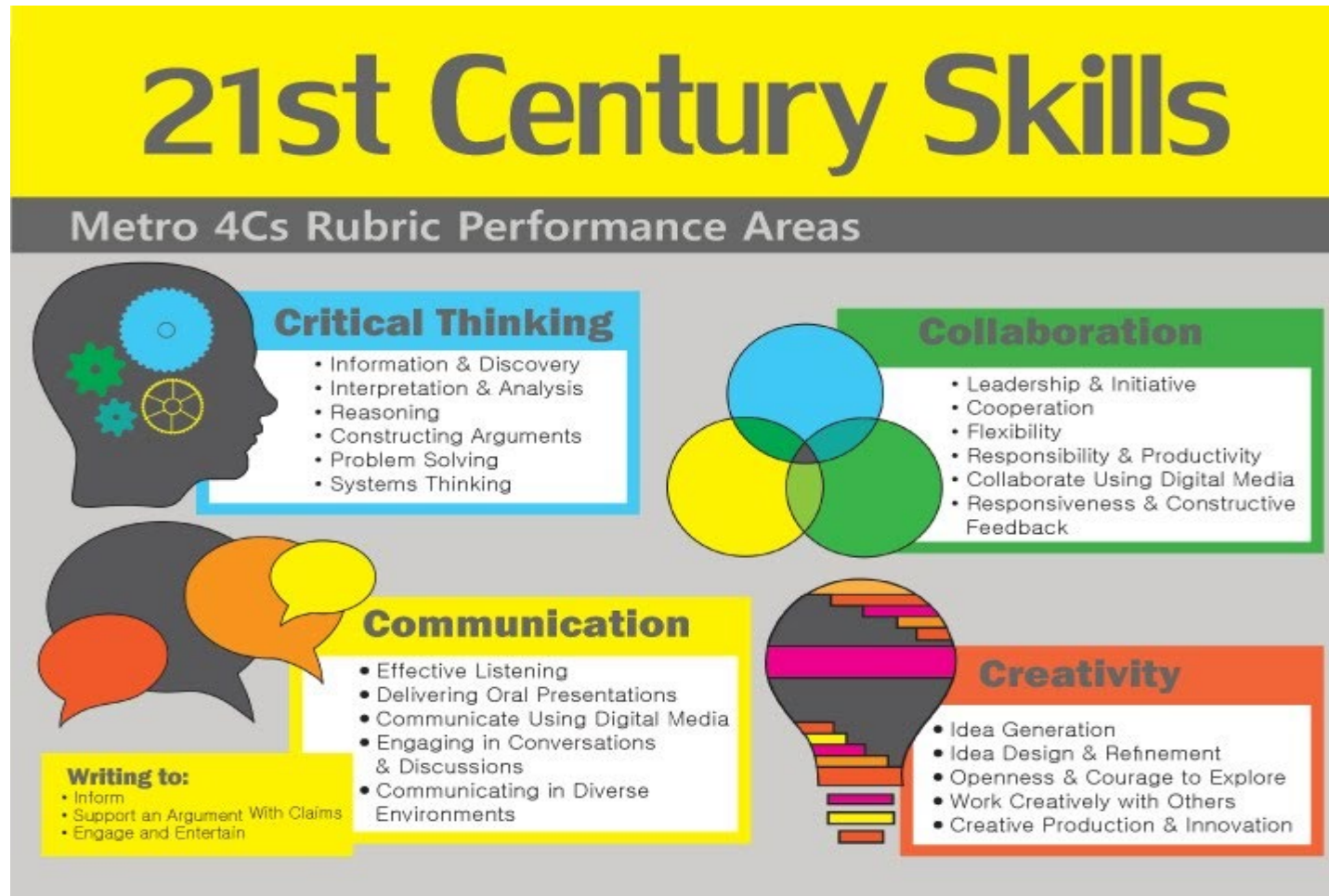
Priority 6 - Promoting Harmonisation in Higher Education and Research

Priority 7 - Adopting a 21st Century Curriculum

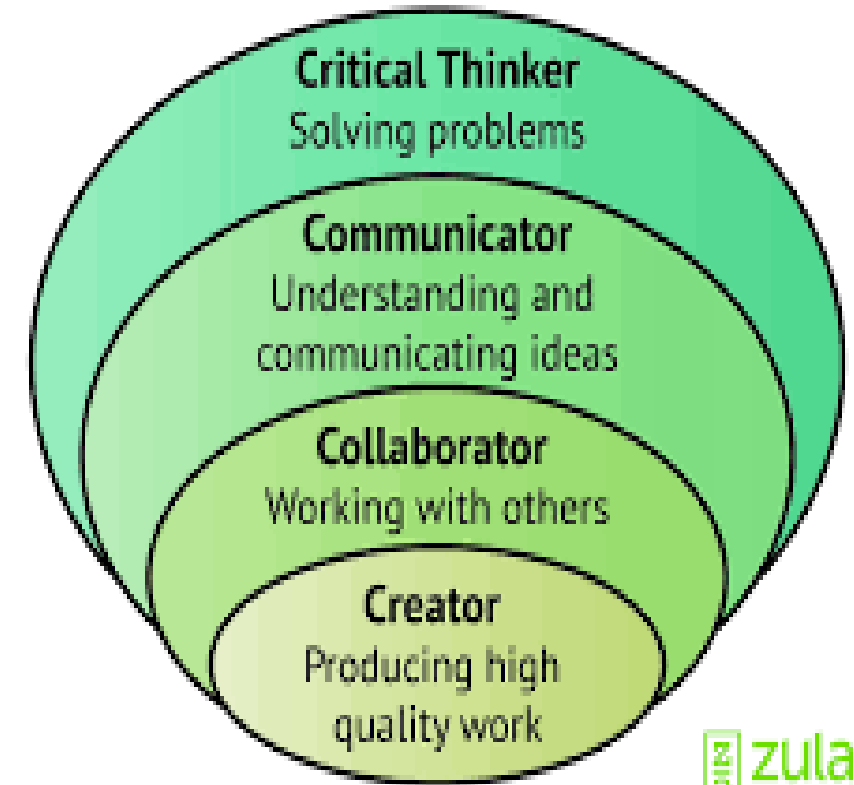
**Total 309
Activities/Projects**



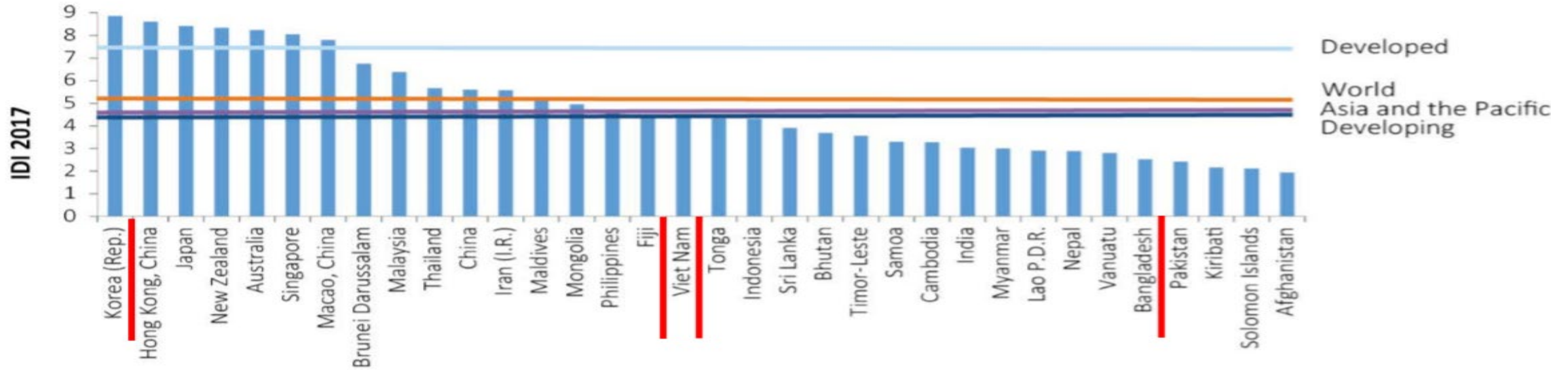
MOEs focus: 21st Century Skills



The Four Cs of 21st Century Skills



ICT Development in the Asia Pacific Region (2017)



Source: Measuring Information Society Report 2017, ITU.



Digital Skills in Southeast Asia Project

2000-2005 ICT
Competencies
Survey

2019-2020 Digital Kids in
Southeast
Asia (as part
of DKAP
UNESCO
project)

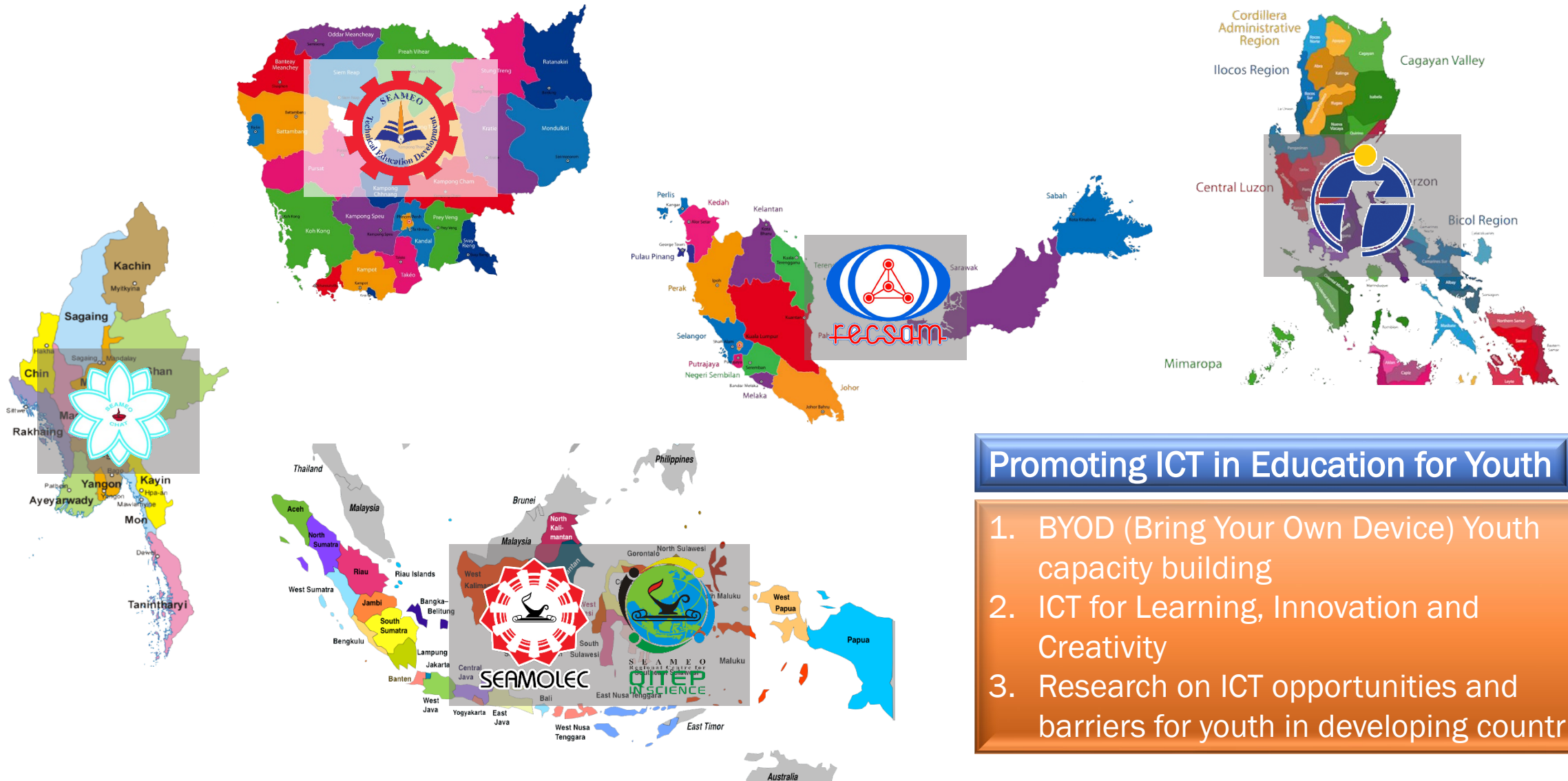


Highlights of some SEAMEO studies related to Digital Skills

- In SEAMEO study on Cyber ethics in Southeast Asia, member countries focus on policies related to ethics, risk and safety paradigms
- Less policies are seen on skills of kids to effectively participate, create and advance digital opportunities.
- The **definitions of digital skills and competencies** in the region should be further explored.
- Lack of research and baseline data in the region to understand skills and behaviors of kids in the digital environment



SEAMEO Centres Participating in DKAP



DKAP Study 2019-2020 for UNESCO and SEAMEO

Indonesia

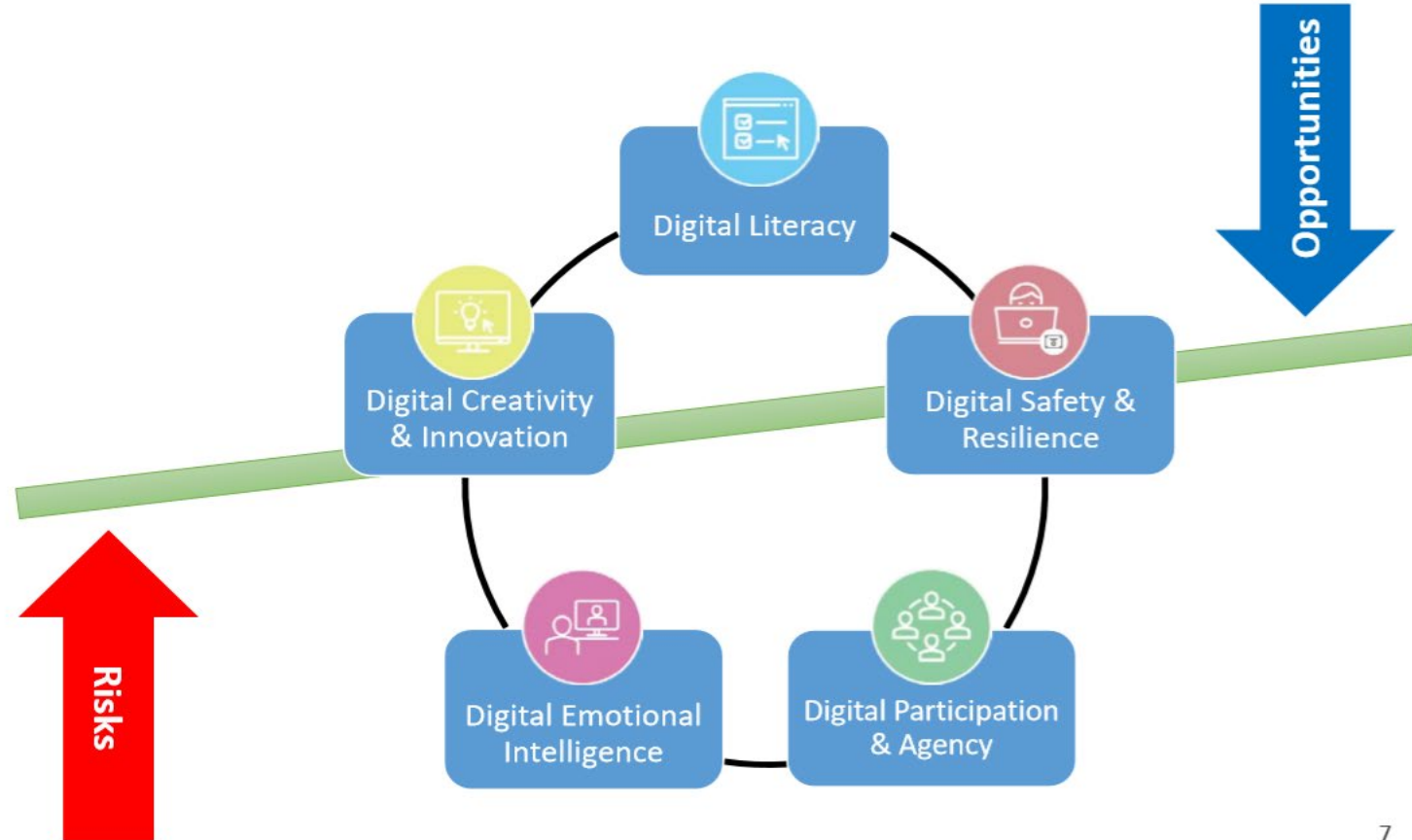
Malaysia

Philippines

Lao PDR

Thailand

Five domains to measure



DKAP Project 2019-2020

- DKAP SURVEY (Sept- Nov 2019)
 - 104-question self-assessment
 - Targets 15 years old students in 4 countries
 - 5,129 responses (min. 1,000 from each country with gender/geographic balance)
- DKAP Survey (for 15 yrs old)
 - ICT Practices
 - ICT Attitudes
 - ICT Behaviors
- Other data: age, gender, ICT use, roles of parents, teachers and schools



Digital Citizenship Competencies

Digital
Literacy

Digital Safety
and
resilience

Digital
participation

Digital
emotional
intelligence

Digital
creativity and
innovation



DKAP Project 2019-2020

- Output
 - Policy intervention of MOES
 - Identifying Digital competencies of Kids
 - Regional Collaboration
- Opportunities to collaborate in terms of contributing to APEC Project on the Compendium of Digital Skills Definition
- Meta Analysis of existing studies





Thank you

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Roadmap Element 8

Moderated by:

- **Mr. Christopher Watson**, International Labor Affairs Bureau, U.S. Department of Labor, *APEC Closing the Digital Skills Gap Forum, Project Overseer*

Discussants:

- **Dr. Sintia TEDDY ANG**, AI Singapore
- **Dr. Meri Rosich**, Data Science APAC, Visa
- **Mr. Raju Chellam**, Fusionex



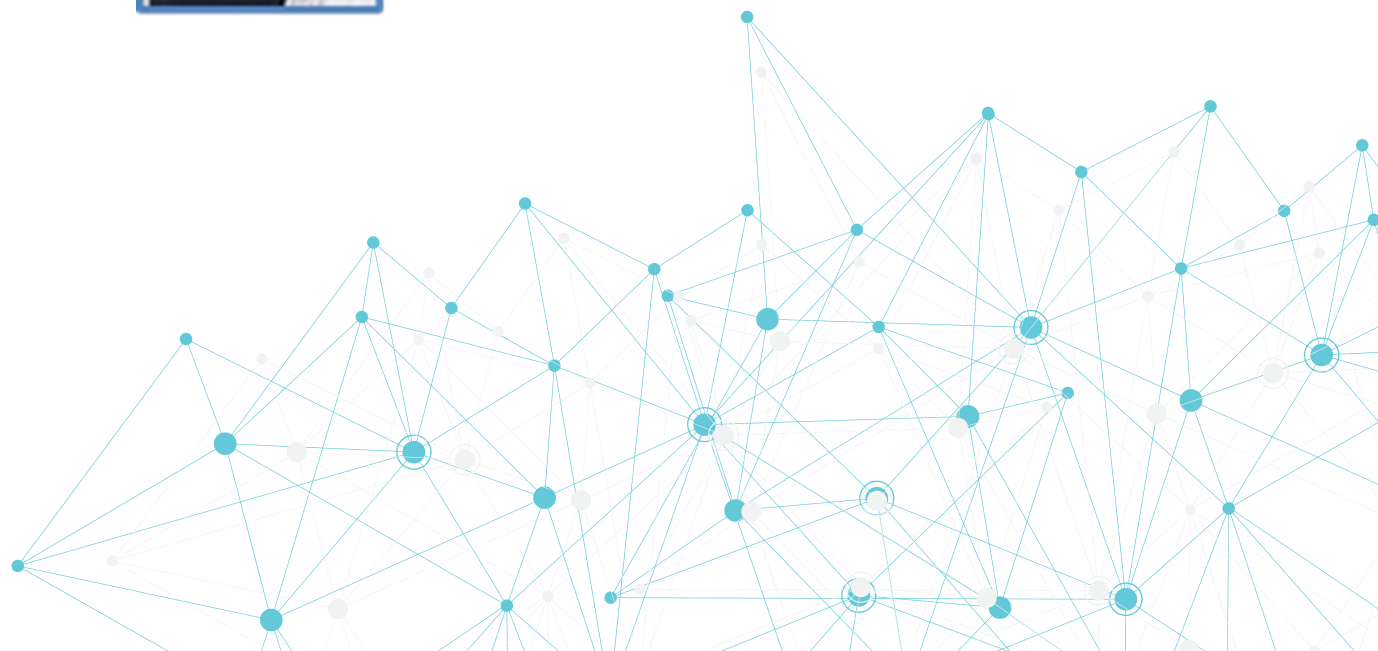


Day 2 Conclusion: Reviewing / Updates to Roadmap

- **Mr. Christopher Watson**, International Labor Affairs Bureau, U.S. Department of Labor, *APEC Closing the Digital Skills Gap Forum*, Project Overseer
- **Mr. Andrew Tein**, Chief of Staff to the CEO, Vice-President of Global Government Affairs, Wiley, *APEC Closing the Digital Skills Gap Forum Co-Chair*
- **Dr. L. Isabel Cárdenas-Navia**, The Business-Higher Education Forum (BHEF) *APEC Closing the Digital Skills Gap Forum Co-Chair*



#MindTheDigitalSkillsGap





**CLOSING THE DIGITAL
SKILLS GAP FORUM**



APEC

Closing the Digital Skills Gap Forum

Singapore | 15 – 16 July 2019

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