



# Getting Today's Workforce Future-Ready

**Manufacturing Summit 2019**

*Preparing Philippine Manufacturing for the Future of Production*

**3 December 2019**

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SkillsFuture Singapore

# About SKILLSFUTURE SINGAPORE and the SKILLSFUTURE movement

## SKILLS*future* SG

- Drive and coordinate the SkillsFuture movement
- Strengthen ecosystem of quality education and training, including adult training infrastructure and adult educators
- Raise quality of private education institutions and training providers

### Vision

A nation of lifelong learners; a society that values skills mastery

### Mission

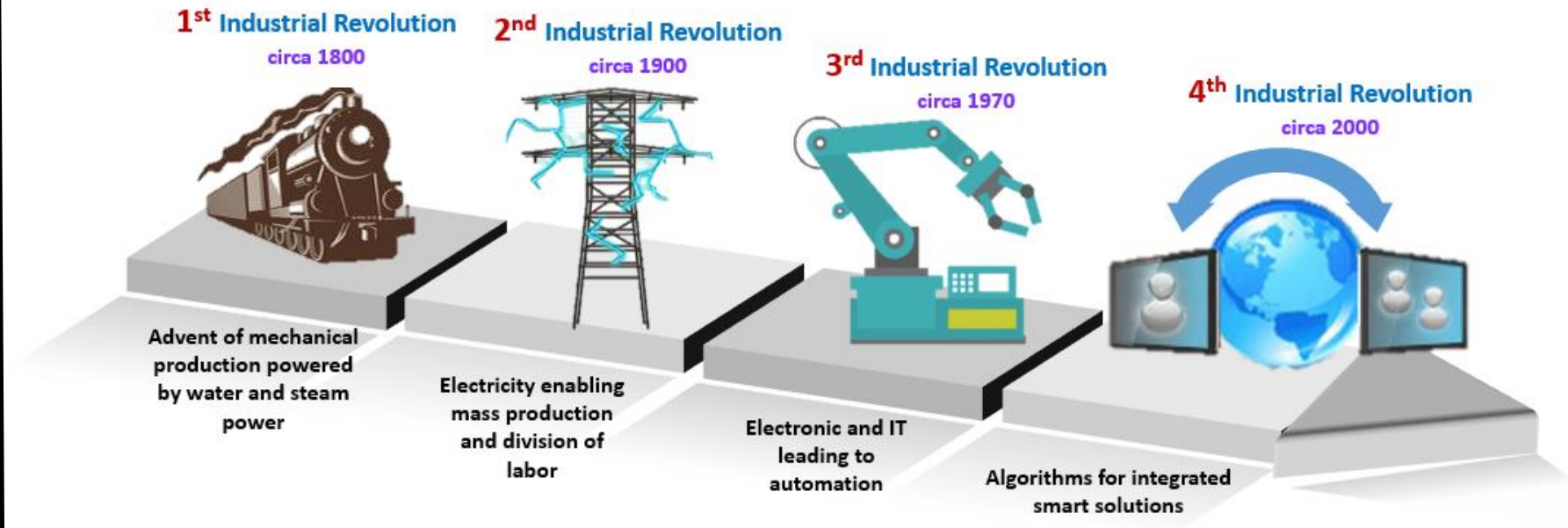
Enable individuals to learn for life, pursue skills mastery and develop fulfilling careers, for a future-ready Singapore

*Build a better future based on skills*



SkillsFuture is a national movement that started in 2015 to provide Singaporeans with the opportunities to develop to their fullest potential throughout life through skills mastery and lifelong learning.

**TECHNOLOGY**  
has been  
constantly  
changing the way  
we work

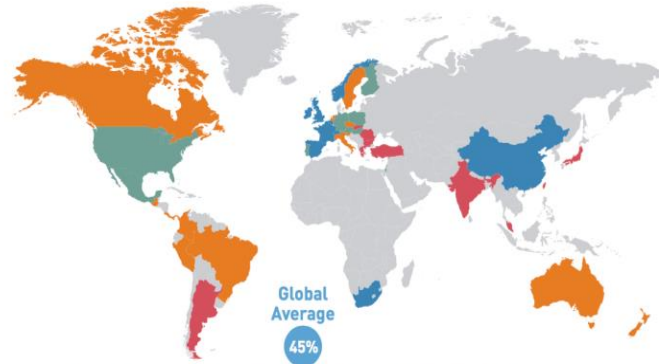


Source: Brynjolfsson & McAfee, 2014; Victor & Boynton, 1998

# Skills gaps faced across the world ...

*Need to refresh current skillsets and learn new skills*

## TALENT SHORTAGES ARE GROWING AROUND THE WORLD



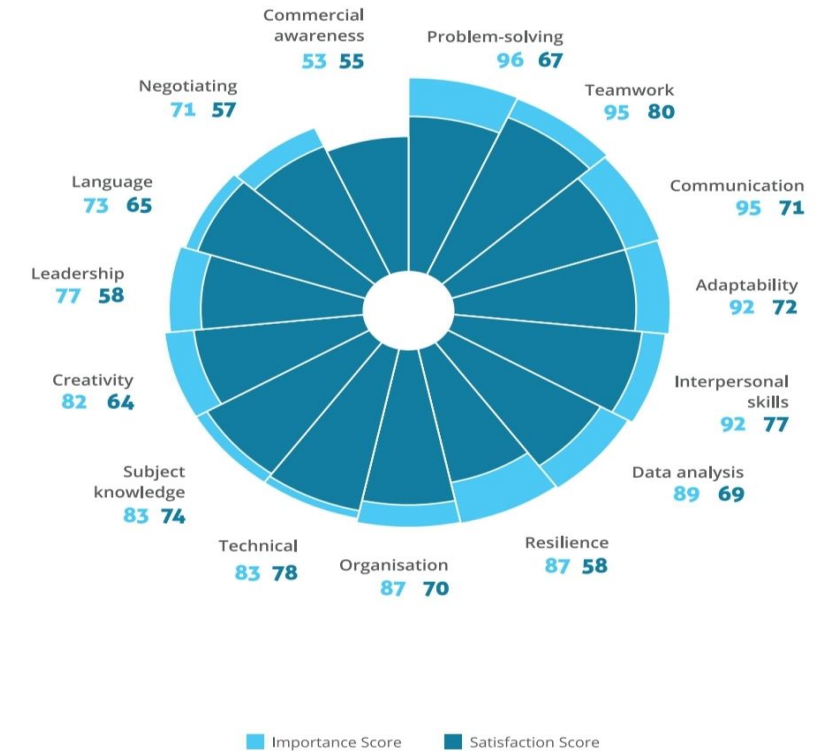
Countries and Territories Facing Difficulty Hiring

Least Difficulty		Below Average Difficulty		Above Average Difficulty		Most Difficulty	
China	13%	Australia	34%	Finland	45%	↓ Argentina	52%
Ireland	18%	↓ Brazil	34%	↑ Austria	46%	↑ Slovakia	54%
UK	19%	Belgium	35%	USA	46%	India	56%
Netherlands	24%	Costa Rica	35%	↑ Portugal	46%	Singapore	56%
Spain	24%	Panama	35%	↓ Israel	49%	Greece	61%
Norway	25%	Czech Republic	36%	↑ Mexico	50%	Turkey	66%
France	29%	Italy	37%	Germany	51%	Bulgaria	68%
South Africa	32%	Guatemala	38%	↓ Hungary	51%	Hong Kong	76%
↑ Switzerland	33%	Slovenia	40%	Poland	51%	Taiwan	78%
		Canada	41%			Romania	81%
		↓ Colombia	42%			Japan	89%
		Sweden	42%				
		Peru	43%				
		New Zealand	44%				

↑ Greatest INCREASE since 2016    ↓ Greatest DECREASE since 2016

Source: ManpowerGroup's 2018 Talent Shortage Survey

## GLOBAL OVERVIEW OF CORE SKILLS: IMPORTANCE VERSUS SATISFACTION

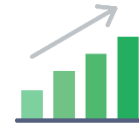


Source: QS Global Employer Survey 2018



# Supporting MANUFACTURING in Singapore through the INDUSTRY TRANSFORMATION MAPS

An Industry Transformation Map (ITM) consists of a growth and competitiveness plan, supported by four pillars:



Productivity



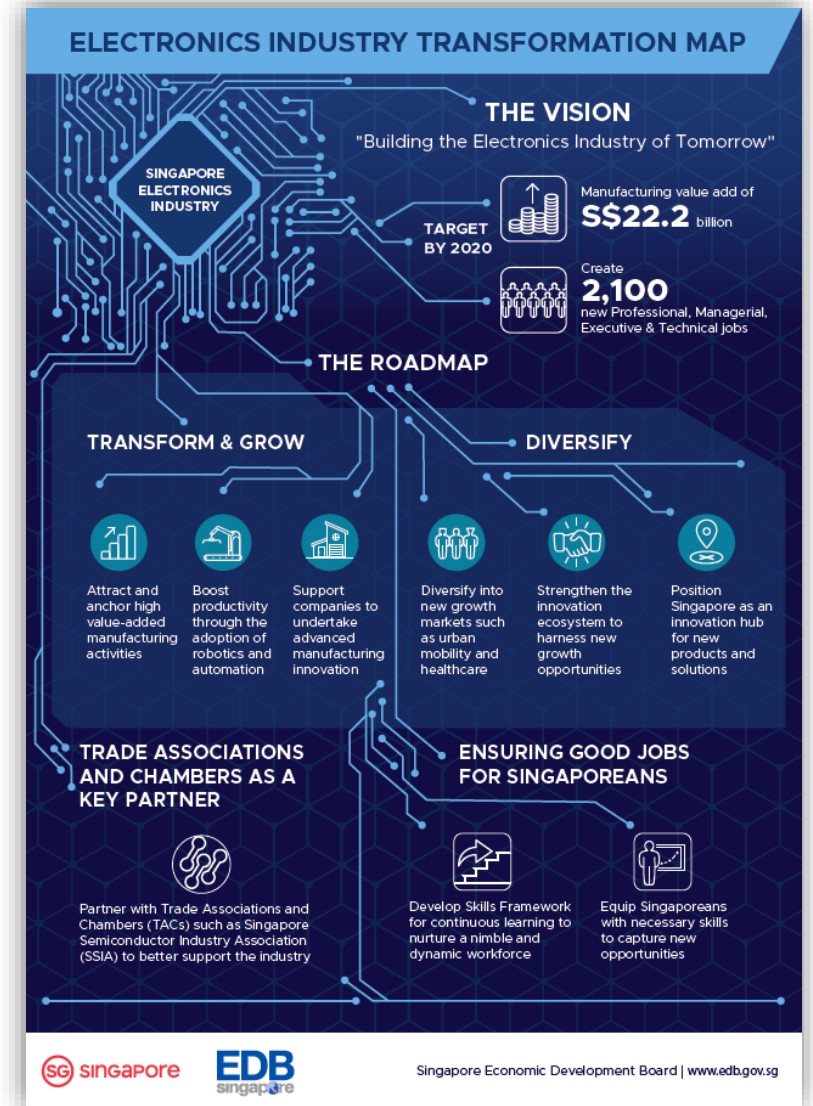
Jobs and Skills



Innovation and Trade



Internationalisation



Source: Ministry of Trade and Industry, Singapore

# ENABLE skills development and lifelong-learning with SkillsFuture

Help individuals to make well-informed choices in education, training and careers



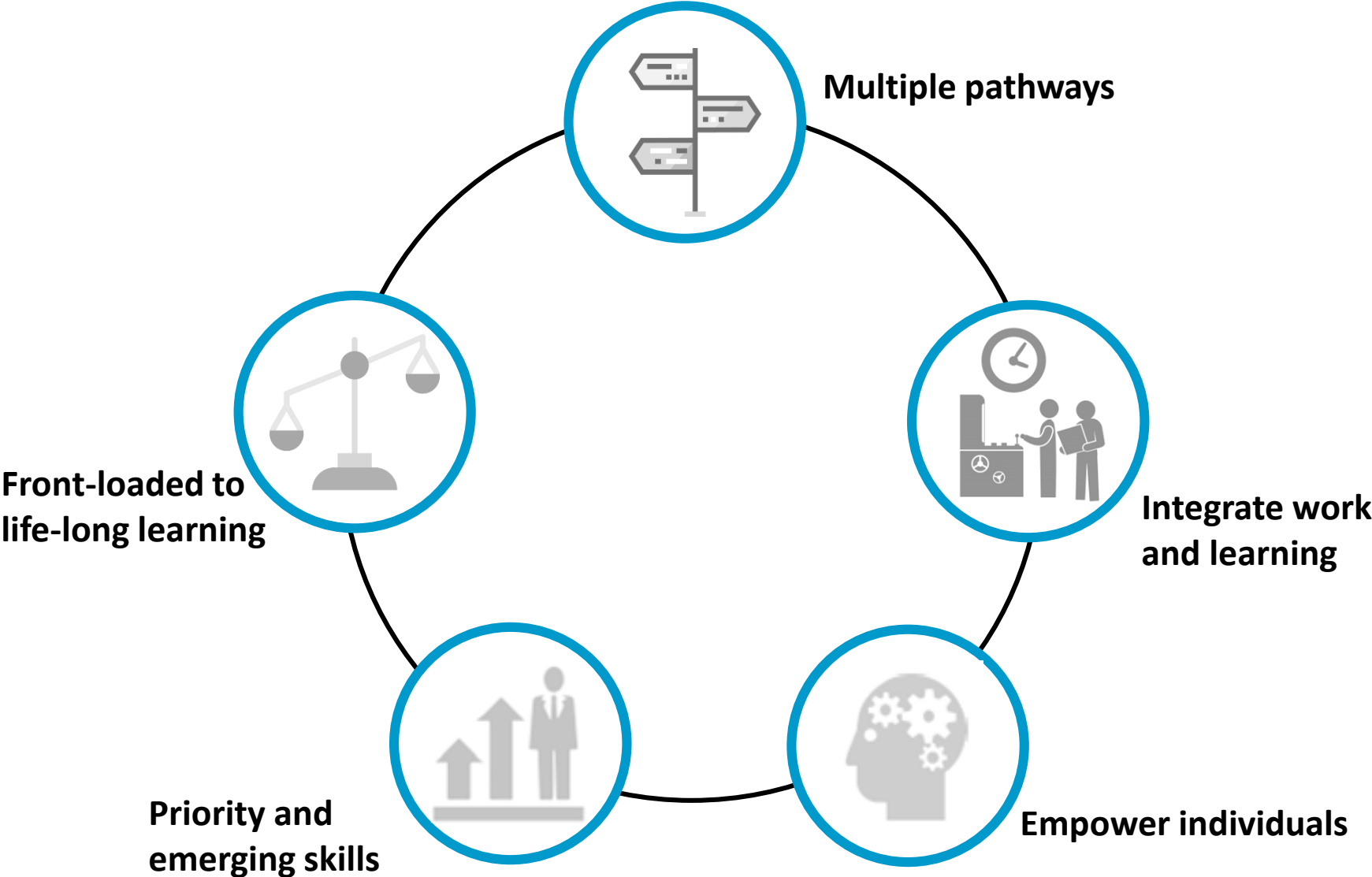
Develop an integrated high-quality system of education and training that responds to constantly evolving needs



Promote employer recognition and career development based on skills and mastery

Foster a culture that supports and celebrates lifelong learning

New paradigm  
needed for  
**EDUCATION**  
and  
**EDUCATIONAL**  
**INSTITUTIONS**



# STRONG COLLABORATION between institutions and industry



in collaboration with



## Industry – Education Institutions Collaborations



PCP for Biopharmaceutical  
Manufacturing

## Co-creating Professional Conversion Programmes (PCPs)



in collaboration with



Singaporean-German  
Chamber of Industry and Commerce



**SFIVET**

SWISS FEDERAL INSTITUTE FOR  
VOCATIONAL EDUCATION AND  
TRAINING

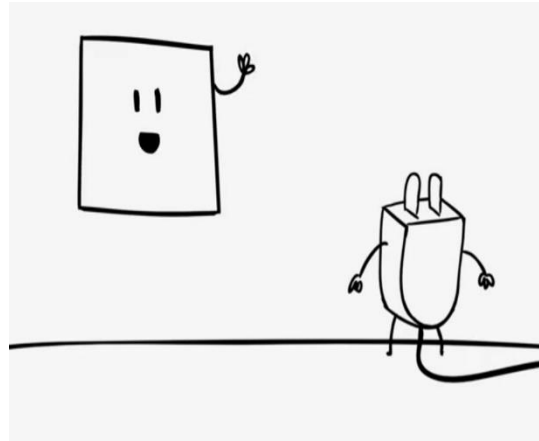
## Helping SMEs build capabilities



# EMPLOYERS encouraged to invest in workforce development

*Enterprise transformation and workforce transformation go hand-in-hand*

## 1. Move away from “plug & play” mindset towards manpower and skills



Enhance businesses' competitiveness



Improves operating efficiency



Longer-term revenue benefits

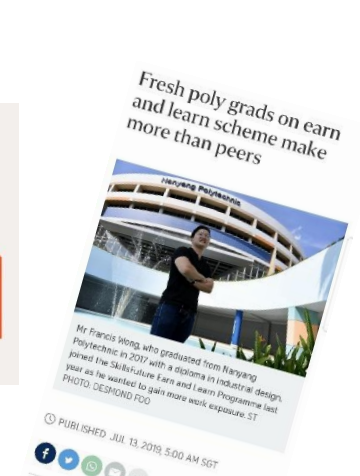
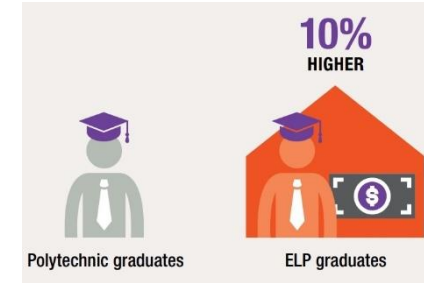
## 2. Working with institutions to co-deliver education and training



Nurture **INDIVIDUALS** to embrace culture of lifelong learning

**1.** Make informed learning choices – focus on skills, not paper chase

SkillsFuture work-study programmes enjoy good outcomes - Wage premium after 18 months from ELP graduation

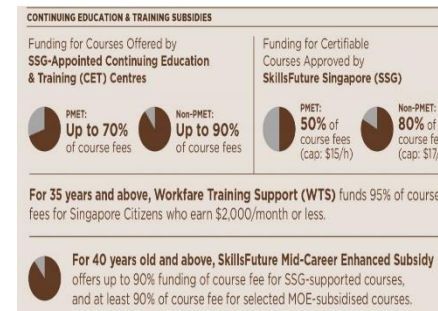


Source: Singapore Ministry of Trade & Industry; The Straits Times (13 Jul 2019)

**2.** Value and take ownership of learning as a lifelong endeavor

SkillsFuture empowers individuals to take charge of their learning through incentives

**Course Fee Subsidies**



**SkillsFuture Credit**



Provide  
**INFORMATION**  
and  
**FRAMEWORKS**  
to support lifelong  
education and  
training



Self-assessment tools



Community feedback

Skills Passport



Link to jobs portal



Course directory

Industry insights



## Skills Framework



<http://www.skillsfuture.sg/skills-framework>

# Future of the **MANUFACTURING** industry



## **Robotics and Automation**

As robots become smarter, more versatile and more affordable, manufacturers are moving towards integrated automation in daily operations. A new generation of collaborative robots working alongside humans will improve productivity and cost efficiency.



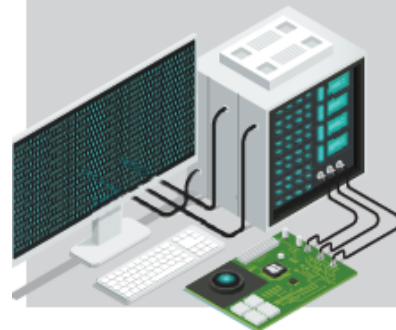
## **Additive Manufacturing and Advanced Materials**

Additive manufacturing and advanced materials will challenge the boundaries of conventional manufacturing. New product designs that were once considered impractical are now possible, with shorter time-to-market for new and exciting innovations.



## **Digital Manufacturing**

By enabling companies to analyse customer orders and optimise loads, digital technologies can help PE companies drive customisation and profitability. This will create new products, services and business models, with positive spill-over to the manufacturing ecosystem via the supply chain.



## **Data Analytics**

Advanced analytics help PE companies uncover new trends to improve yields, reduce defects, and optimise supply chain and market services.

Source: Skills Framework for Precision Engineering

# Skills-in-demand for **MANUFACTURING** industry



## Robotics and Automation

- Automated Operation Monitoring
- Automated System Design
- Automation Process Control
- Automation System Maintenance

## Advanced Manufacturing

- Additive Manufacturing
- Metal-based Additive Manufacturing
- Polymeric Additive Manufacturing
- Laser and Optics

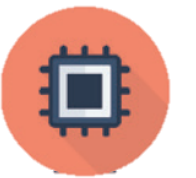


## Digital Manufacturing

- Augmented Reality Application
- Internet of Things Management
- User Interface & User Experience Design
- Virtual Reality Application

## Data Science

- Data Analytics System Design
- Data Synthesis



Source: Skills Framework for Precision Engineering



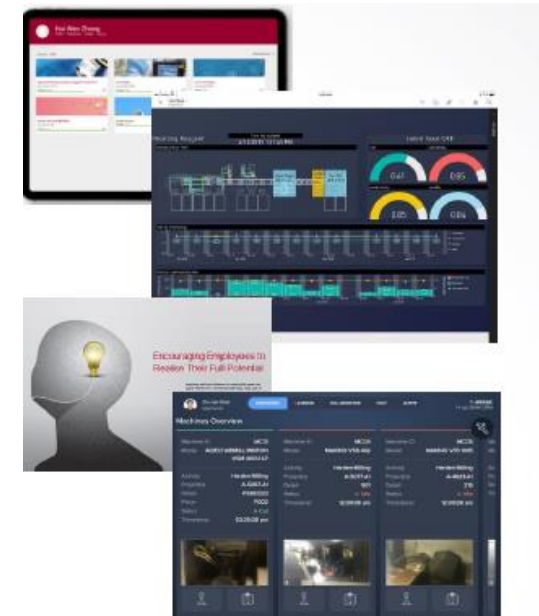
# MANUFACTURING

Case example of Singapore Firm

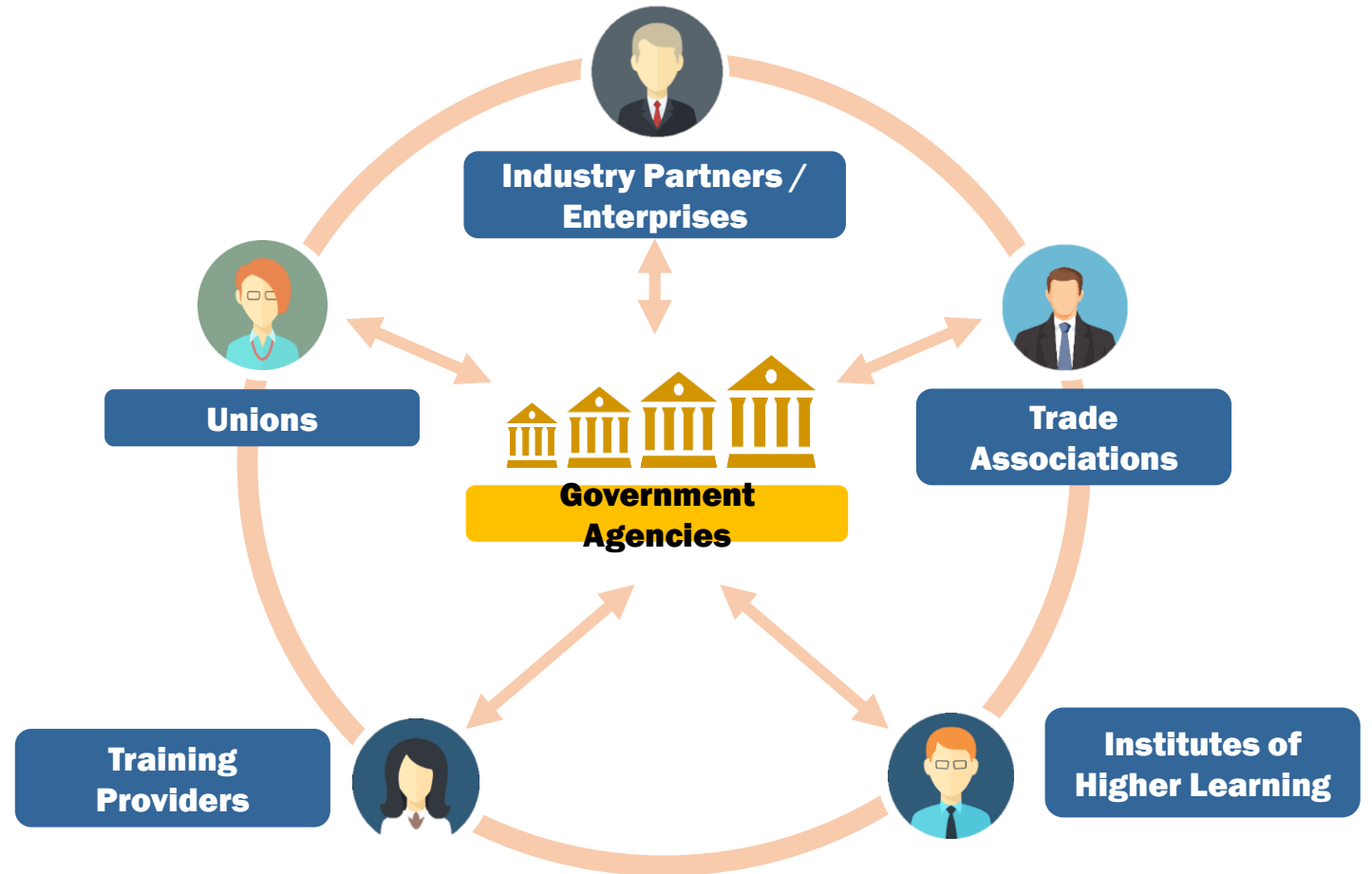


*Univac Precision Engineering* provides design and manufacturing of precision assemblies and consumables

- Committed User Champion of flexible workplace learning model to propel the Precision Engineering (PE) companies towards Industry 4.0 in partnership with Singapore Polytechnic
- Supports workplace learning through co-development of 10 micro-learning Advanced Manufacturing (AM) modules
- Provides training for Univac supervisors in workplace learning and coaching
- Proliferated the Workplace Learning Model and solutions to the PE sector as part of a “Queen Bee” strategy, to 13 other companies which have indicated higher business productivity and better application of competencies at the workplace



# Multi-agency **COLLABORATION** key to success



# Thank you.

For more information on SkillsFuture Singapore, please visit:

[www.skillsfuture.sg](http://www.skillsfuture.sg)