



RAVTE
Regional Association of Vocational
and Technical Education in Asia



RMUTT
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TVET

TVETCONFERENCE
The 7th UPI International Conference on Technical and Vocational
Education and Training

Thailand's Digital Transformation and TVET Education forwarding ASEAN Economics 4.0

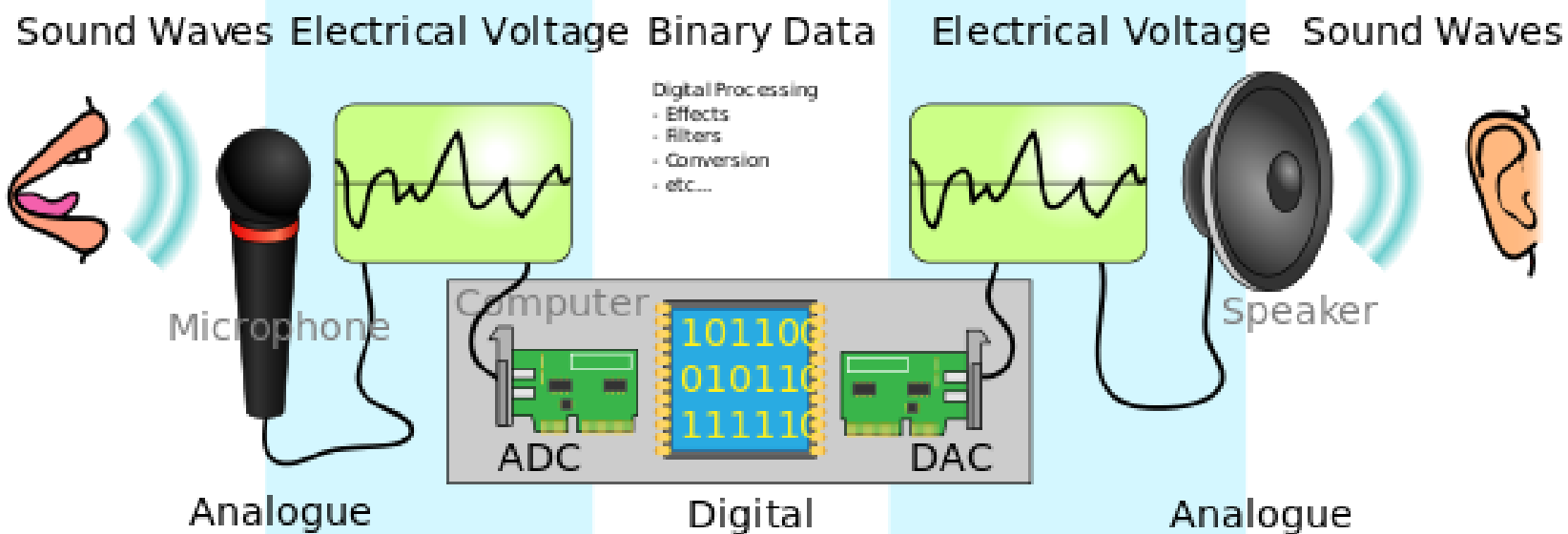
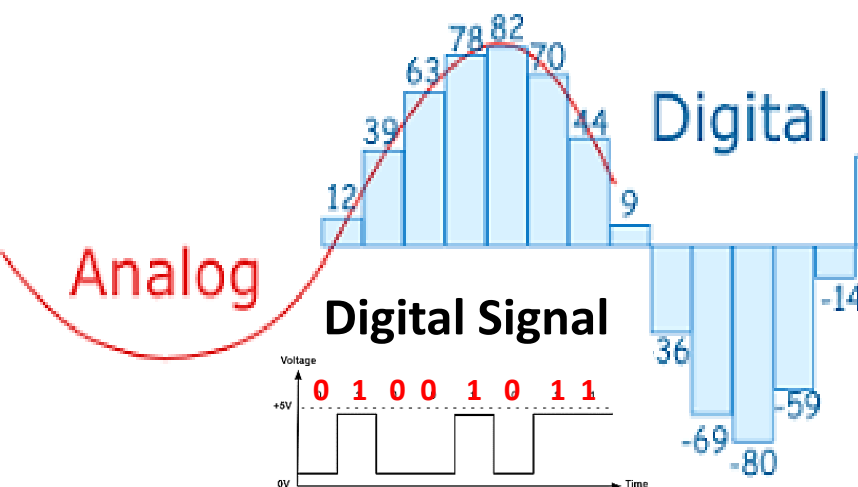
Pakornkiat Sawetmethikul

Rajamangala University of Technology Thanyaburi (RMUTT), Pathum Thani, Thailand
Regional Association of Vocational and Technical Education (RAVTE) in Asia



What Is Digital?

Analog-to-Digital Conversion

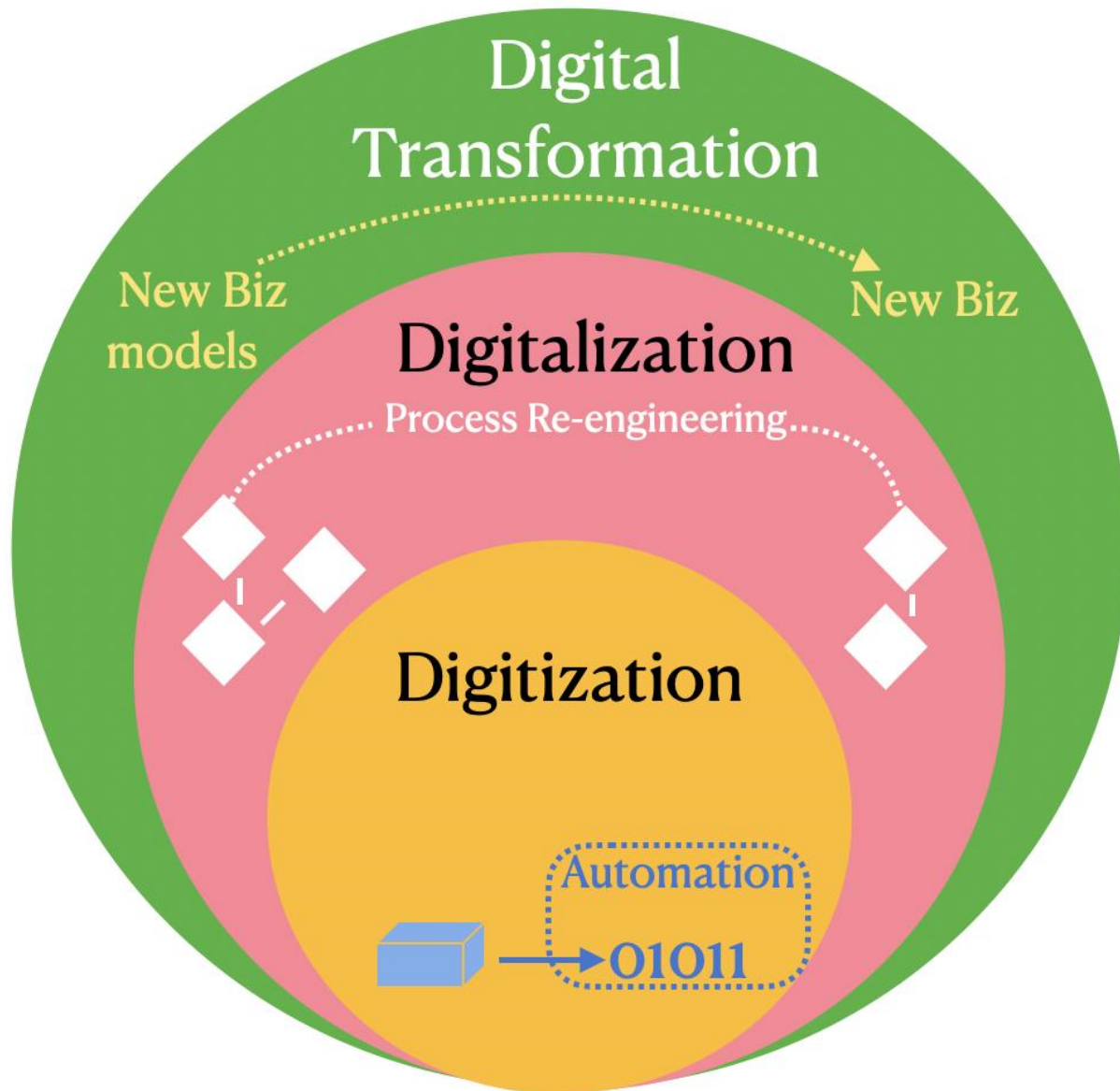


Why Digital instead of Analog?

- Quality of signals with analog systems varies as overall distance of the circuit varies since noise increases as the circuit becomes longer.
- Amplifiers used in analog systems amplify the noise along with the original signal.
- With digital systems only one of certain number of possible states exist (1 or 0) which if identified can be used to recreate the original signal from an degraded input.



Roadmap of Digital Transformation



Initiative (Digitization) :

The process of making information available and accessible in a digital format

Adaptation (Digitalization) :

The process of considering how best to apply digitized information to simplify specific operations.

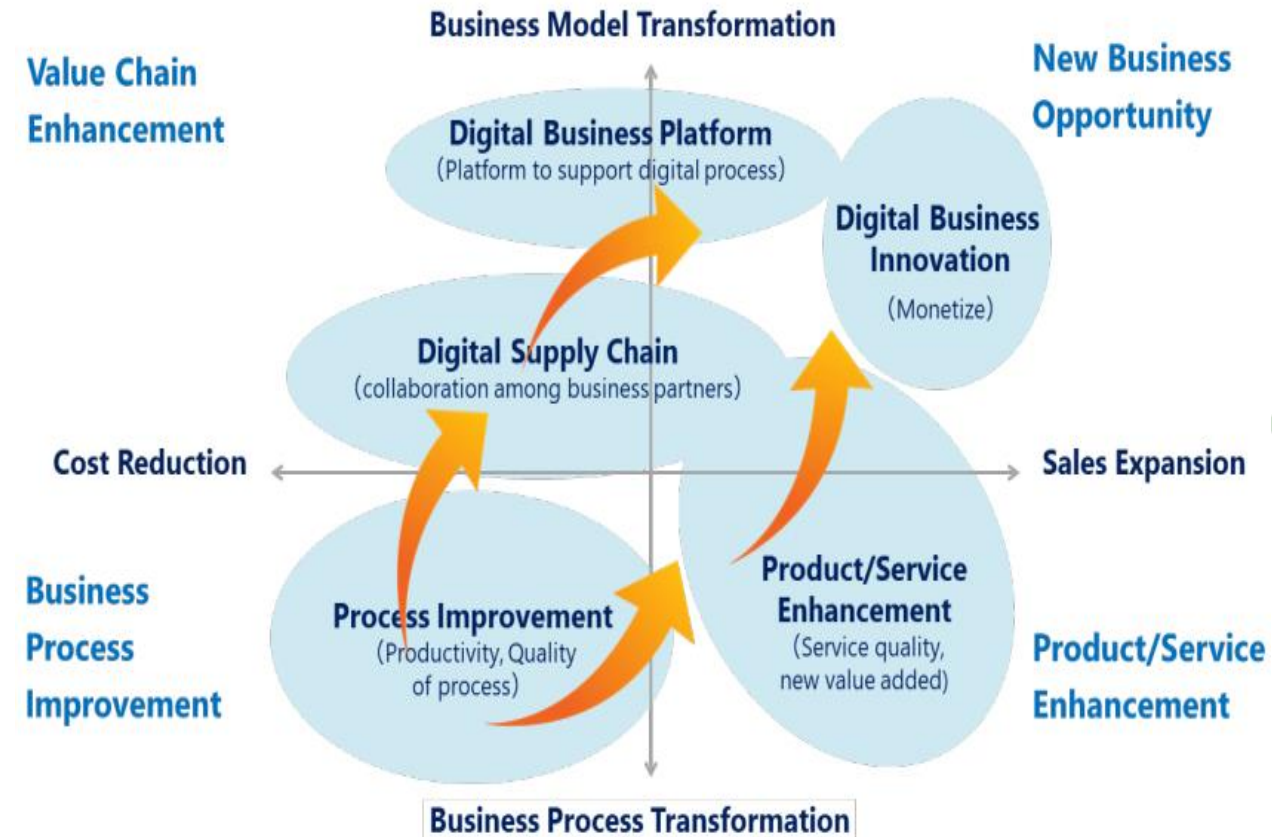
Futuristic (Digital Transformation) :

The process of devising new business applications that integrate all the digitized data and digitalized applications.

Digital Transformation

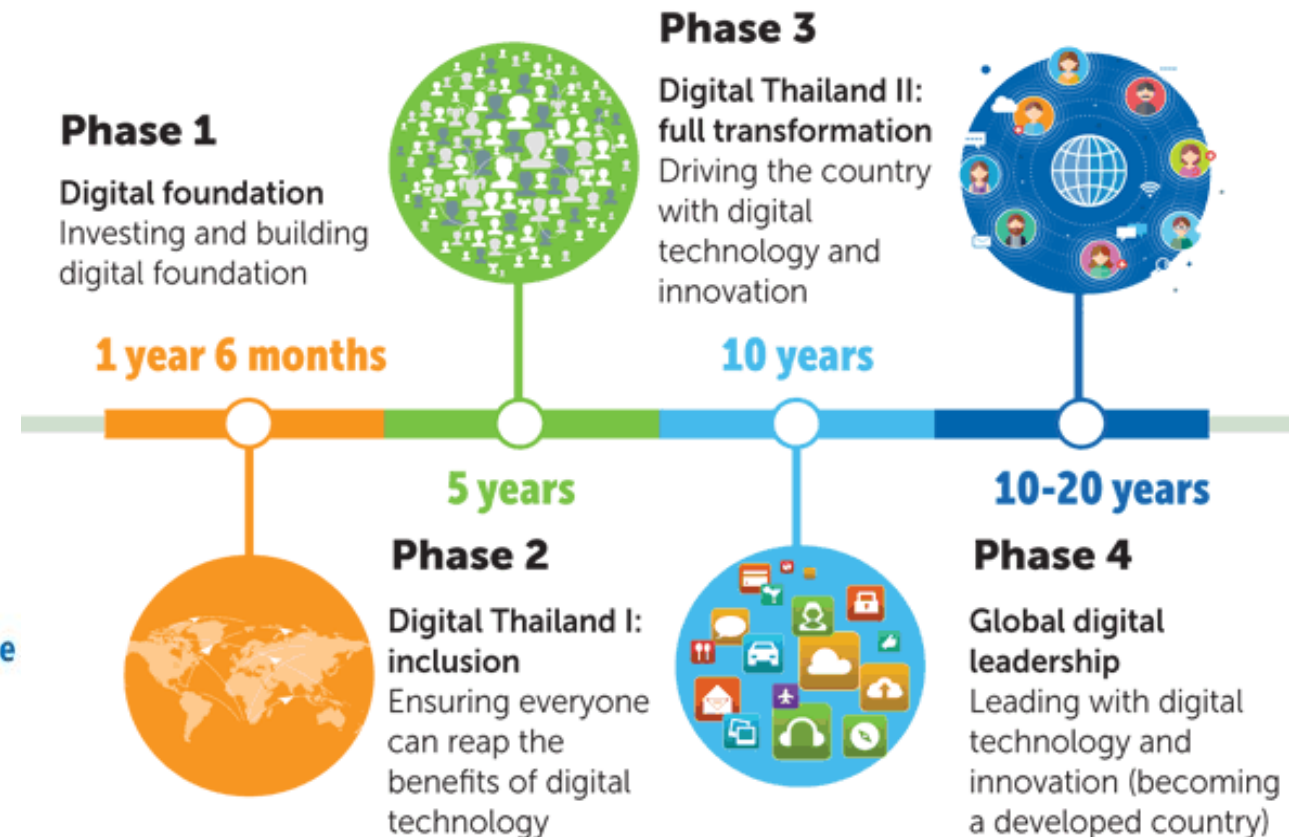
“**Digital Transformation**” means adaptation of digital technologies in the eco-systems as well as organization, in order to strategically enhance processes and services effectively.

Ideation of Digitalization



Source: ABeam consulting, 2020.

20-YEAR THAILAND DIGITAL LANDSCAPE



Source: Ministry of Digital Economy and Society

Thailand Industry (Revolution) 4.0 Model

TARGETED INDUSTRIES



High Wealth and Medical Tourism Industries



Biofuel and Biochemical Industries



The Food Processing Industry



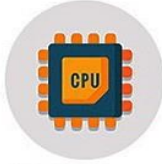
Comprehensive Healthcare Industry



The Advance Agriculture and Biotechnology



Aviation and Logistics Industry



The Intelligent Electronics Industry



The Robotics Industry



The Next-Generation Automotive Industry



Digital Industry



1.0	2.0	3.0	4.0
18 th century	19 th century	1970s	Today
• Steam power • Water power	• Electricity • Assembly line	• IT • Technology	• Cyber-Physical Systems
• Mechanisation	• Mass production	• Automation	• Digitisation

Thailand's Eastern Economic Corridor

Initiative Mega Project



Description	Period
	Enablers
	Characteristics

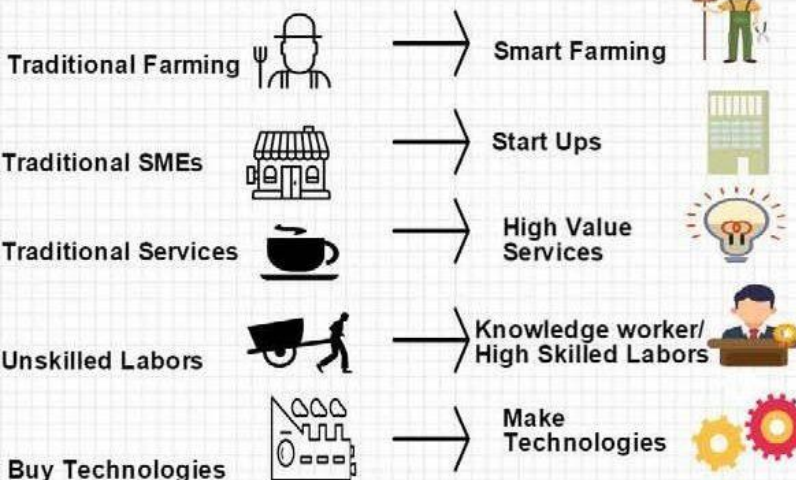
New Engine of Growth

S-CURVE

Next-Generation Automotive
Smart Electronics
Affluent, Medical and Wellness Tourism
Agriculture and Biotechnology
Food for the Future



Transformative Shift



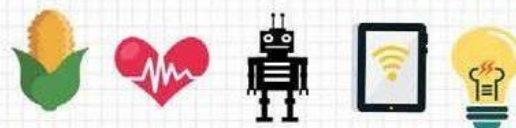
NEW S-CURVE

Robotics
Aviation and Logistics
Biofuels and Biochemicals
Medical Hub
Digital



Clusters for Innovation & Start Ups

Food Agriculture & Bio-Tech
Health, Wellness & Bio-med
Smart Devices, Robotics & Mechatronics
Digital, IoT & Embedded Technology
Creative, Culture & High Value Services



What to do and How?

1. Active Role of Private Sector
2. Demand-driven Policy
3. Offer Tailored Support Fund
4. Build a Global, Regional & Nationwide R&D Networks
5. Strengthen Vocational Training & Education System
6. Develop Infrastructure
7. Introduce Capability-Based Investment Promotion Scheme & Performance Based Conditional Grants & Incentives

Source: Dr. Suvit Maesincee, Deputy Minister of Commerce

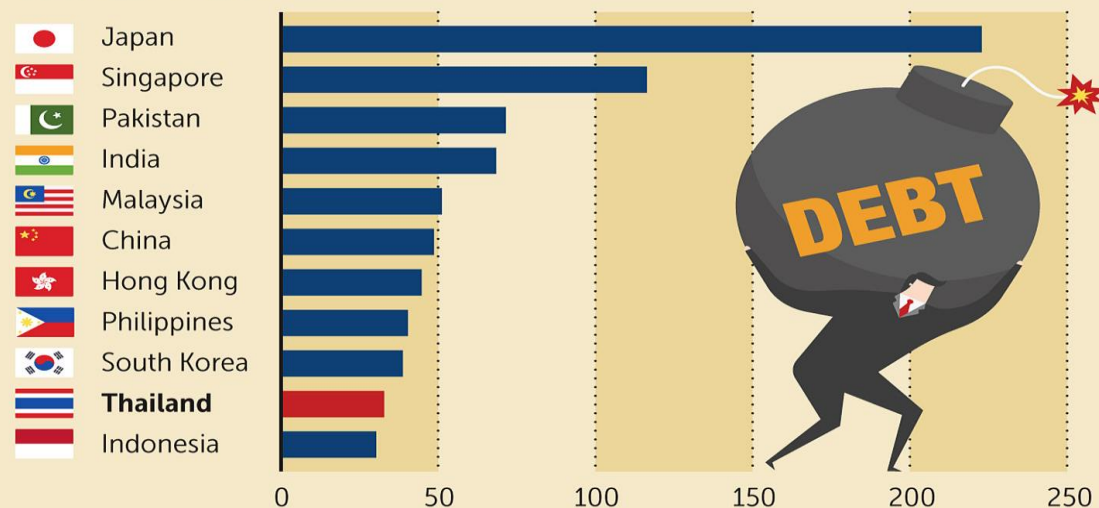
Division of Economic Information
Department of International Economic Affairs
Ministry of Foreign Affairs, Thailand.

Priorities for Innovation

Smart City Low-carbon Society
Medical Hub Food Innopolis
Water Management & Technology

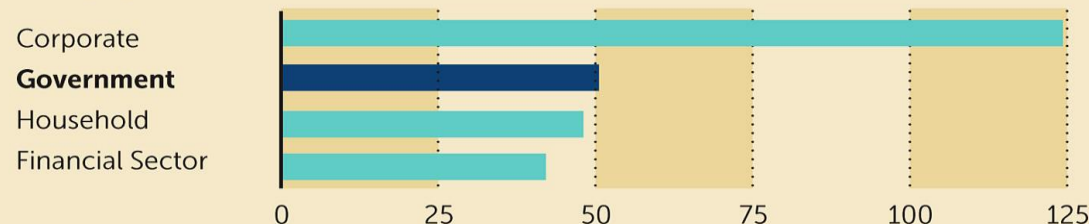
GOVERNMENT DEBT

% of GDP, as of Q3 2018



DEBT TYPES

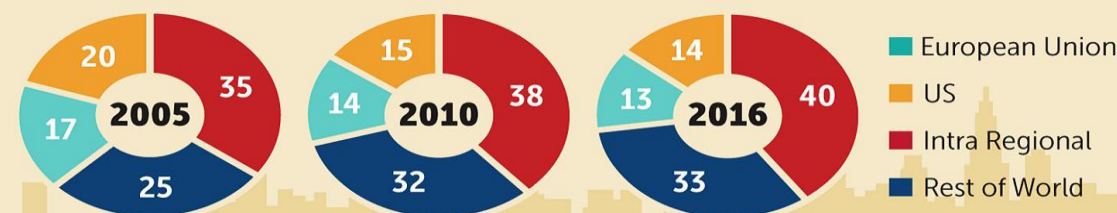
Emerging Asia, % of GDP



Source: Institute of International Finance

ASEAN VALUE-ADDED EXPORTS

% share, by major destinations



Source: OECD, Amro staff calculations/estimates

BANGKOK POST GRAPHICS

PRIORITY ECONOMIC DELIVERABLES FOR THAILAND'S ASEAN CHAIRMANSHIP IN 2019

Under advancing partnership for sustainability concept

4IR



**Equip Asean
in preparation for the
Fourth Industrial Revolution**



**Enhance Asean's
connectivity through trade,
investment and tourism**



**Enable sustainable
economic development
in Asean**

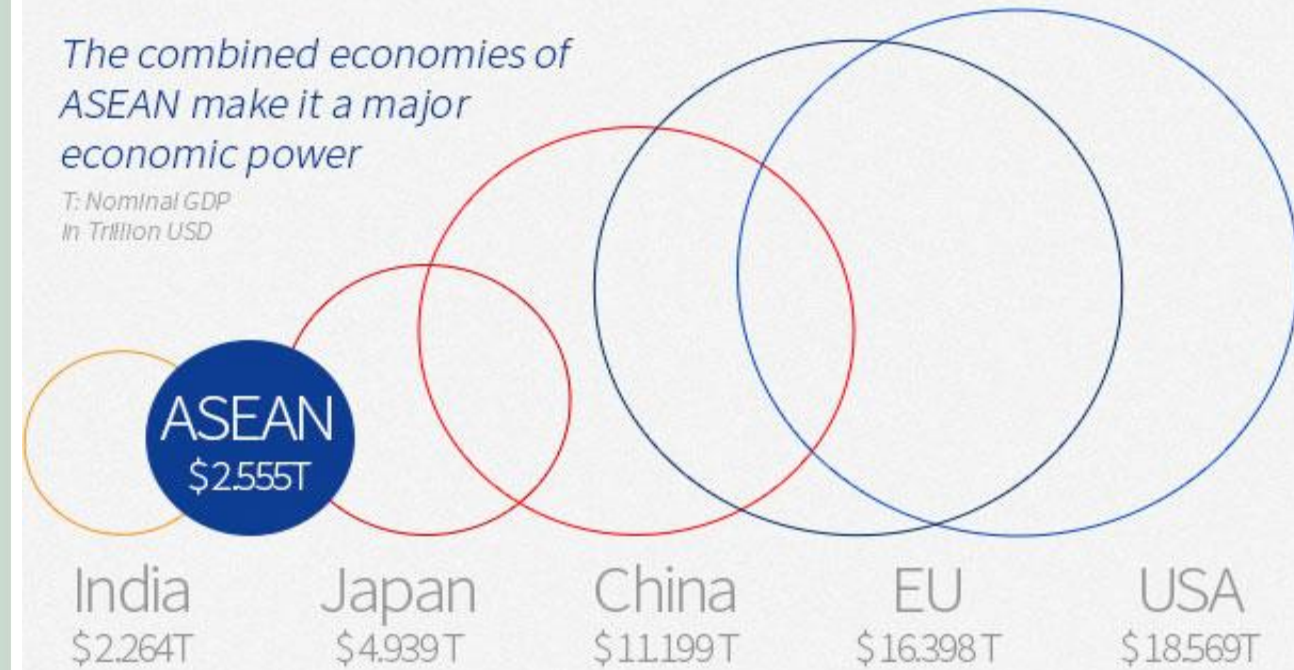
- 1 Asean digital integration framework action plan, 2019-25
- 2 Asean innovation roadmap, 2019-25
- 3 Guideline on skilled labour/professional services development in response to 4IR
- 4 Asean Declaration on industrial transformation to Industry 4.0
- 5 Digitalisation of Asean micro enterprises
- 6 Asean single window
- 7 Local currency settlement framework
- 8 Asean infrastructure financing mechanisms
- 9 Asean gastronomy tourism master plan
- 10 Conclusion of RCEP in 2019
- 11 Promoting sustainable fisheries through Asean cooperation
- 12 Roadmap for Asean sustainable capital market
- 13 Conclude the MoU between the Asean centre for energy and an Asean partner university/institution to support the work towards the establishment of an Asean biofuels and bioenergy R&D network centre

The ASEAN ECONOMY



*The combined economies of
ASEAN make it a major
economic power*

*T: Nominal GDP
in Trillion USD*

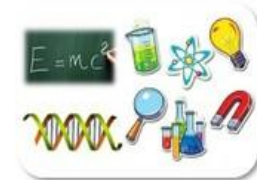
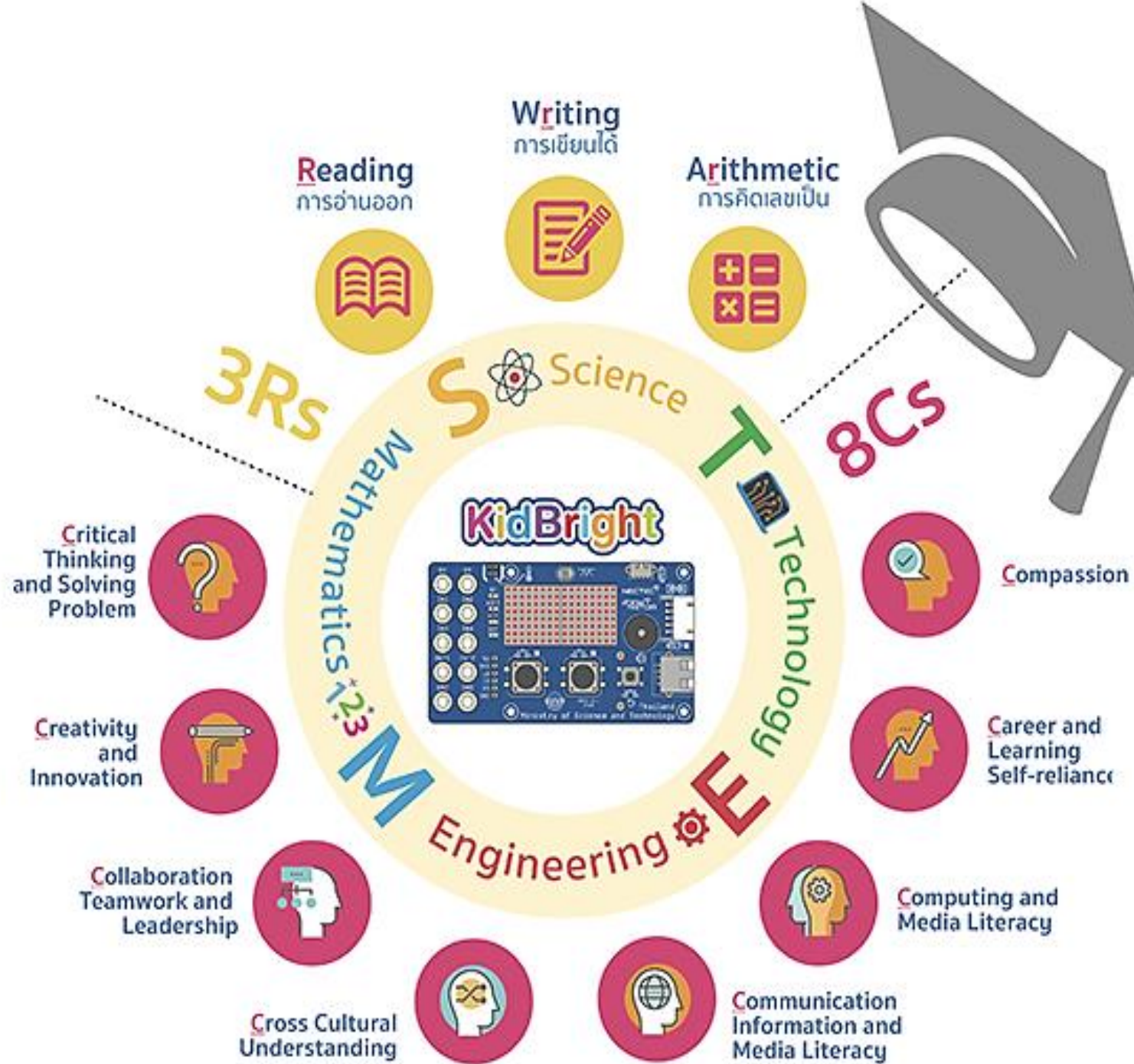


2016 data

*Source:
World Bank data 2016*

ASEAN^{up}

*Empowering business
in Southeast Asia*



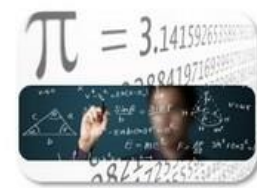
Science



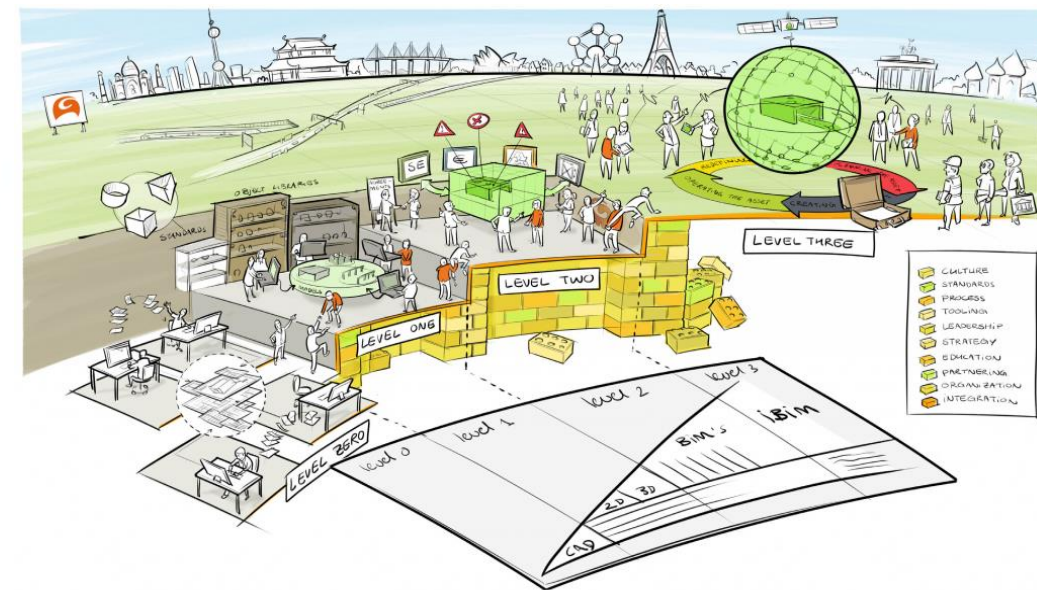
Technology



Engineering

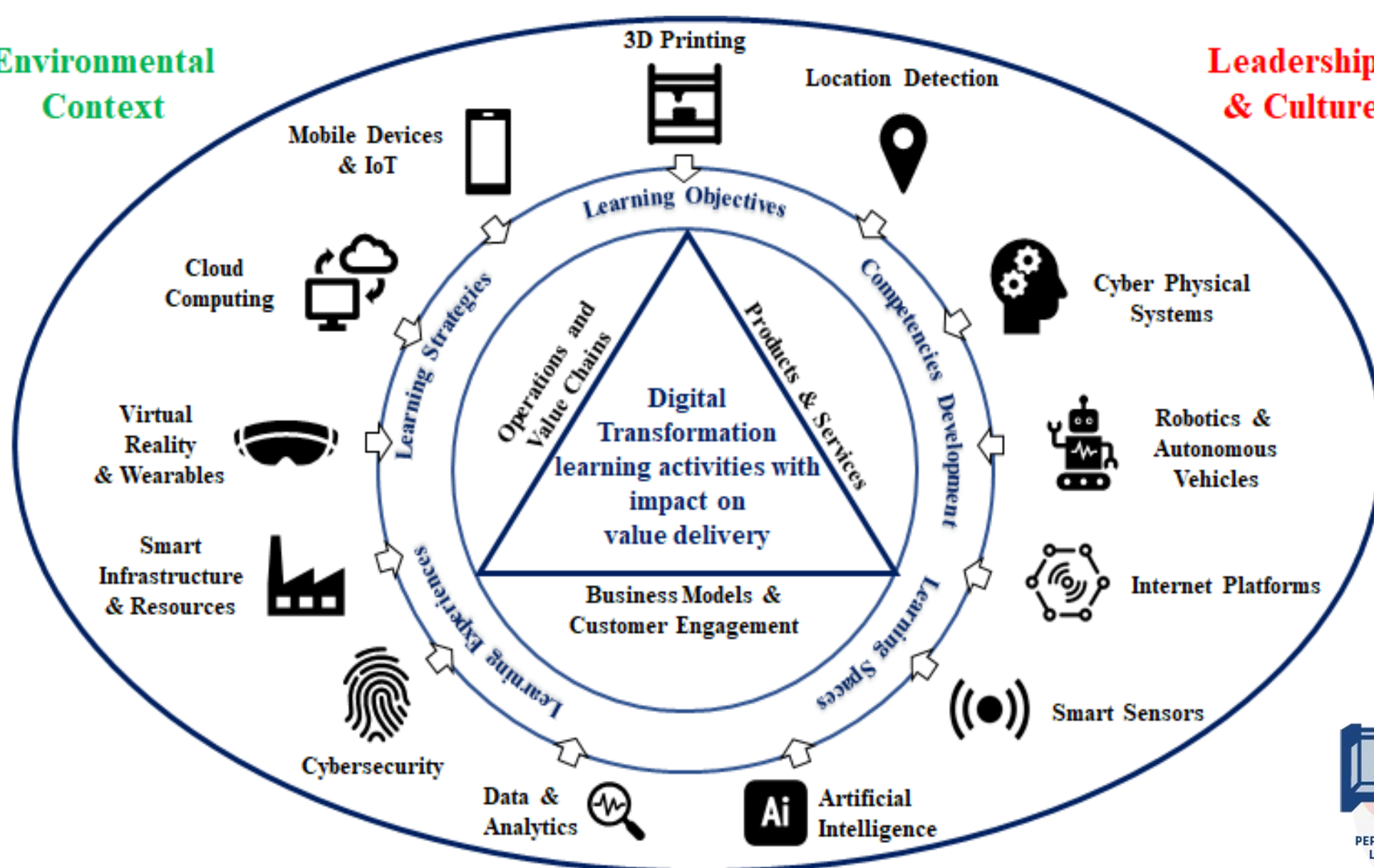


Mathematics

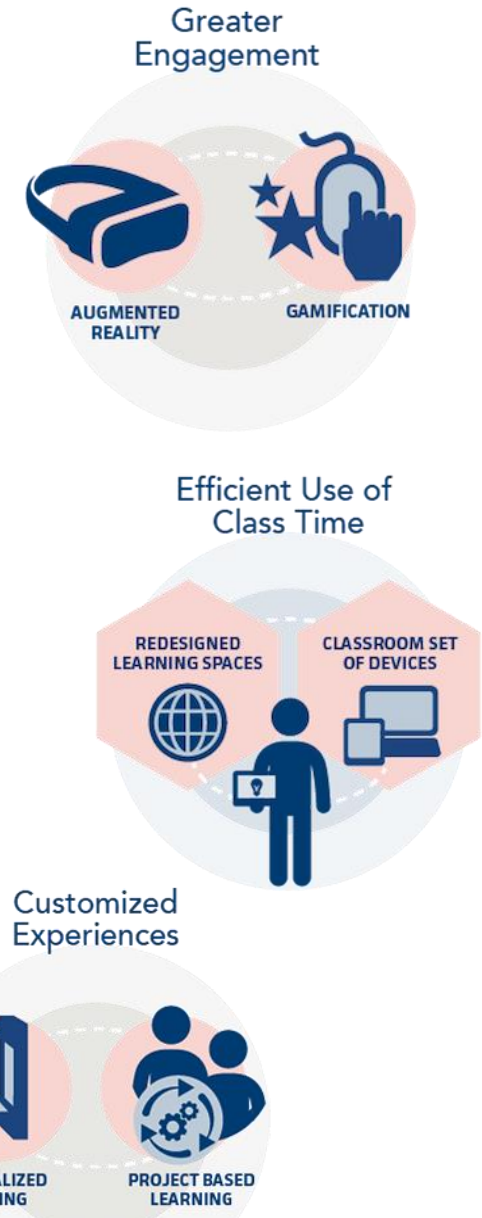


Digital Technology Affecting to the TVET People?

**Environmental
Context**

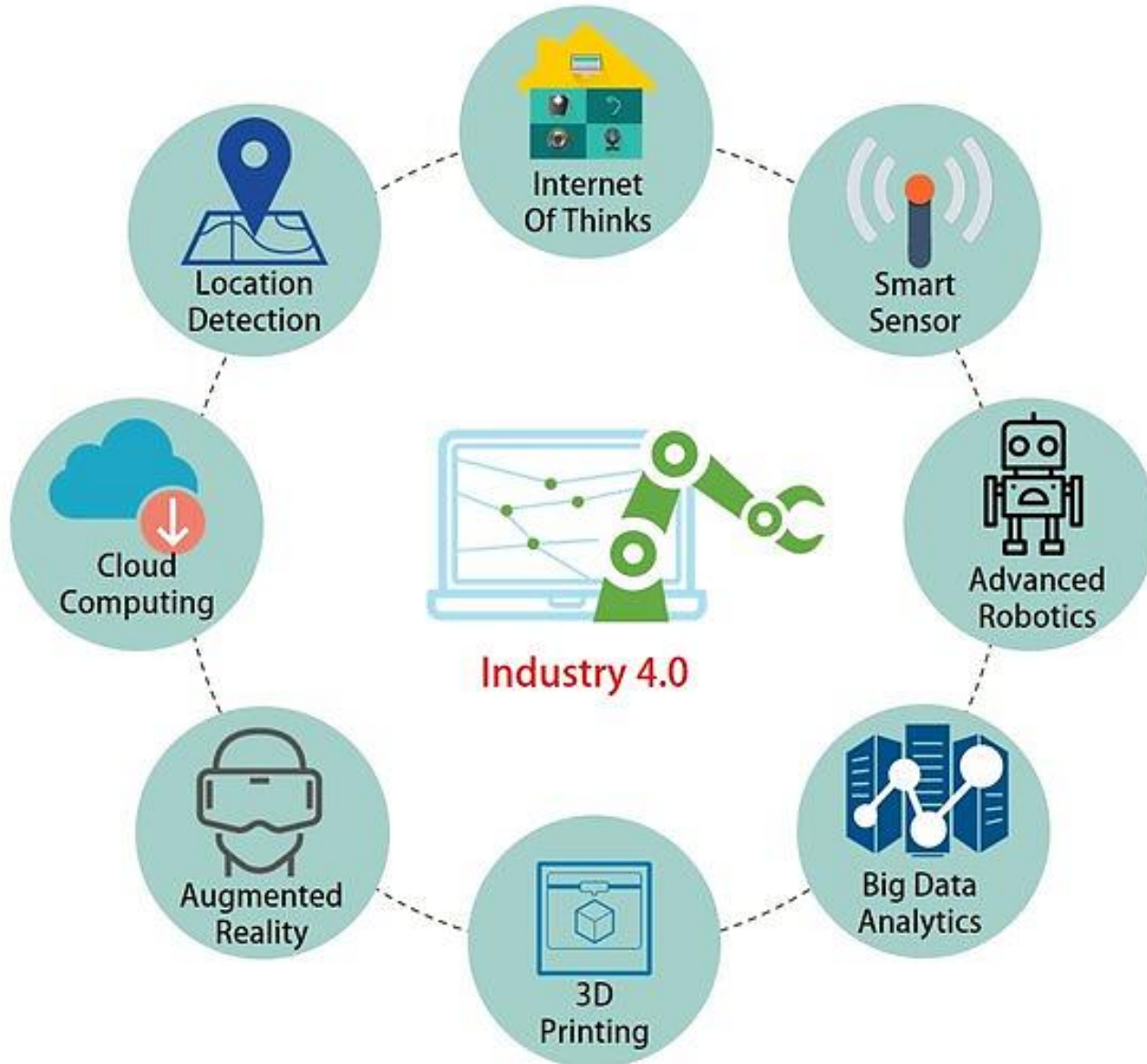


**Leadership
& Culture**



Digital Technology Affecting to the TVET People?

INDUSTRY 4.0 FRAMEWORK – THE DIGITAL TECHNOLOGIES



Challenges in TVET Education:

- **Students:**
 - Learning behavior
 - Individual requirements
 - Soft skill and New Skill for 21st Century
 - Reskill (Alumni)
- **Teachers:**
 - Upskill & New-skill
 - Teaching style: Coach, Facilitator
 - Teaching material updates
- **Courseware & Facilities:**
 - Content (courses) updates and revision
 - Industrial linkage (WBL) and networks
 - Employability and opportunities
 - Learning facilities and reproduction (LLL)

Digital Literacy

Digital Citizen Identity
Ability to build and manage a healthy identity online and offline with integrity

Privacy Management
Ability to handle with discretion all personal information shared online to protect one's and others' privacy

Screen Time Management
Ability to manage one's screen time, multitasking, and engagement online with self-control

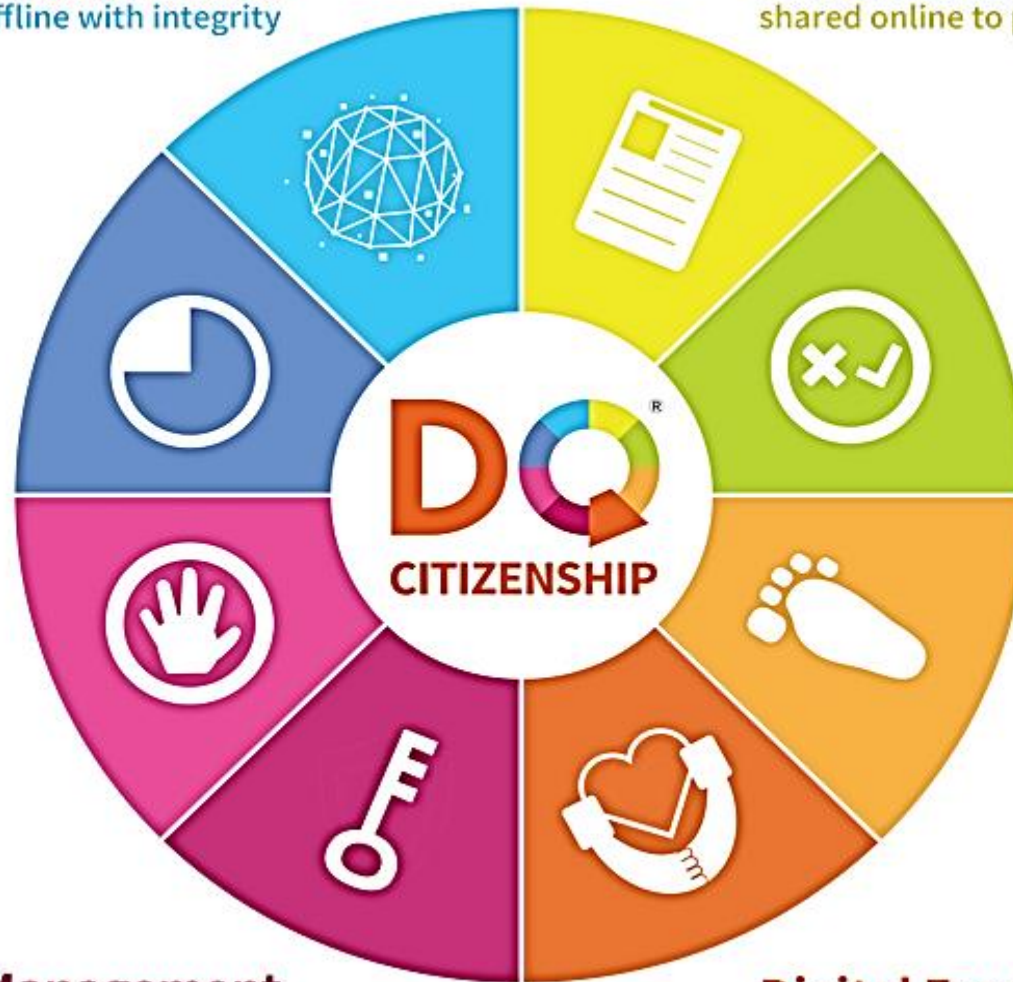
Critical Thinking
Ability to distinguish between true and false info, good and harmful content, and trustworthy and questionable contacts online

Cyberbullying Management
Ability to detect cyber-bullying situations and handle them wisely

Digital Footprints
Ability to understand the nature of digital footprints and their real-life consequences and to manage them responsibly

Cyber Security Management
Ability to protect one's data by creating strong passwords and to manage various cyber attacks

Digital Empathy
Ability to be empathetic towards one's own and others' needs and feelings online





COMPARING DIGITAL TRANSFORMATION GLOBALLY WITH THAILAND

Digital laggard

This business does not have a digital plan; it has limited initiatives and investment in place

Digital follower

This business makes very few investments; is tentatively planning for the future

Digital evaluator

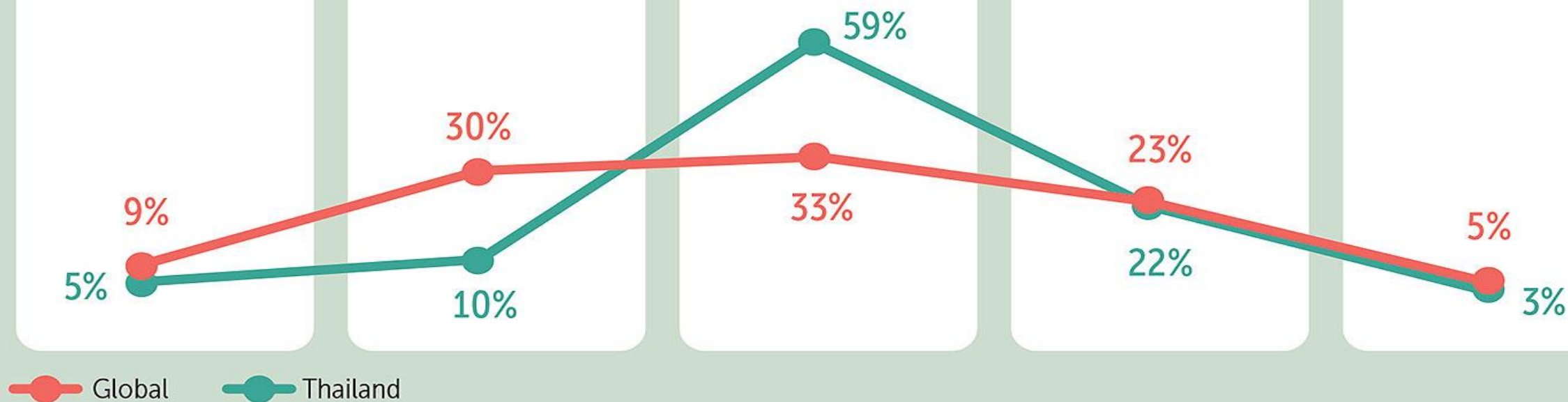
This business gradually embraces digital transformation; planning and investing for the future

Digital adopter

This business has a mature digital plan, investments and innovation in place

Digital leader

This business has digital transformation ingrained in its DNA



1 NO
POVERTY



2 NO
HUNGER



3 GOOD
HEALTH



4 QUALITY
EDUCATION



5 GENDER
EQUALITY



6 CLEAN WATER
AND SANITATION



7 CLEAN
ENERGY



8 GOOD JOBS AND
ECONOMIC GROWTH



9 INNOVATION AND
INFRASTRUCTURE



10 REDUCED
INEQUALITIES



11 SUSTAINABLE CITIES
AND COMMUNITIES



12 RESPONSIBLE
CONSUMPTION



13 PROTECT THE
PLANET



14 LIFE BELOW
WATER



15 LIFE
ON LAND



16 PEACE AND
JUSTICE



17 PARTNERSHIPS
FOR THE GOALS

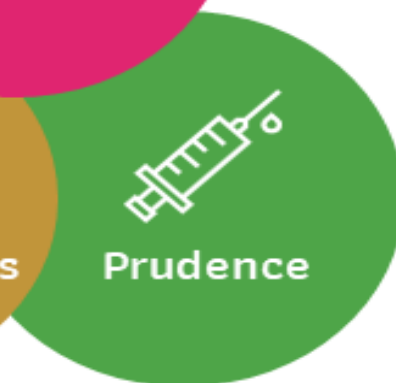
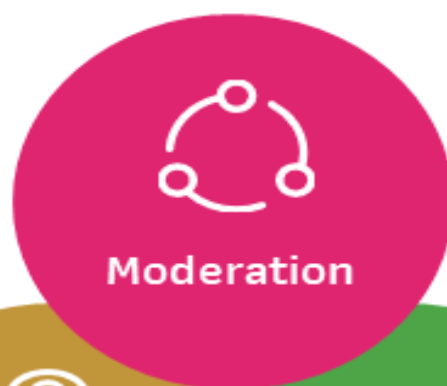


THE GLOBAL GOALS

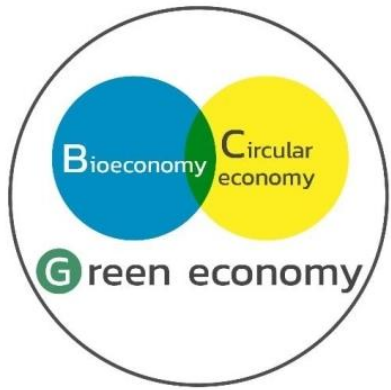


Sufficiency for Sustainability

Sufficiency Economy Philosophy for Sustainable Development Goals



เป้าหมายความยั่งยืนของประเทศไทย



Bio Economy

ต่อยอดจากฐานความเข้มแข็ง
ด้านทรัพยากรชีวภาพ / ผลิต
ทางการเกษตรเพื่อเพิ่มมูลค่า เช่น พัฒนา
พันธุ์ข้าวที่มีธาตุอาหารสูง หรือนำสารสกัด
จากพืชมาเป็นผลิตภัณฑ์บำรุงผิว

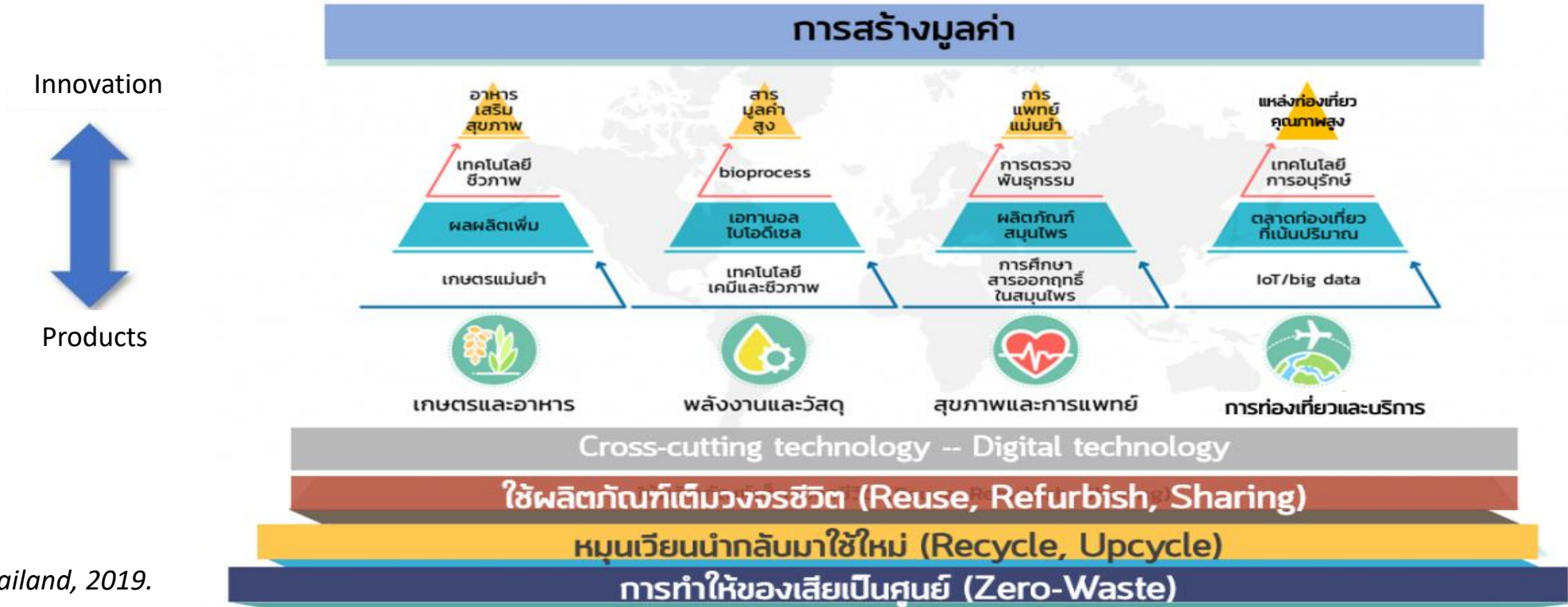
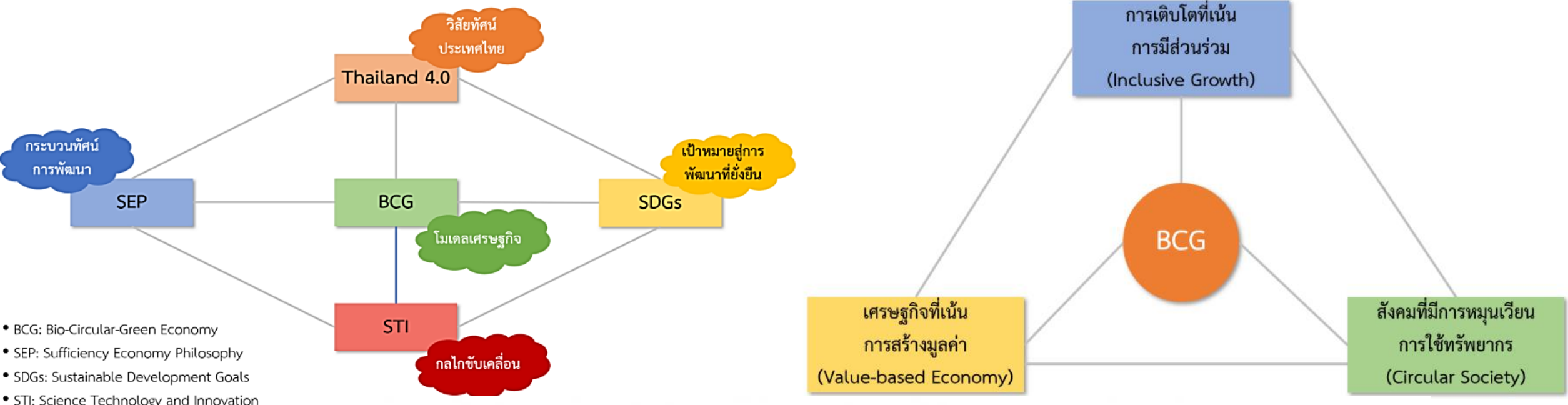
Circular Economy

นำทรัพยากรมาใช้ให้คุ้มค่าที่สุด มุ่งลดปริมาณของเสีย
ให้น้อยที่สุด ด้วยการปรับกระบวนการผลิต
เช่น ออกแบบเพื่อลดการใช้ทรัพยากร เปลี่ยนของเสีย
จากการผลิต หรือผลิตภัณฑ์ที่ใช้ประโยชน์แล้ว
มาแปรรูปเพื่อนำกลับมาใช้ในการผลิต
หรือผลิตเป็นผลิตภัณฑ์ใหม่

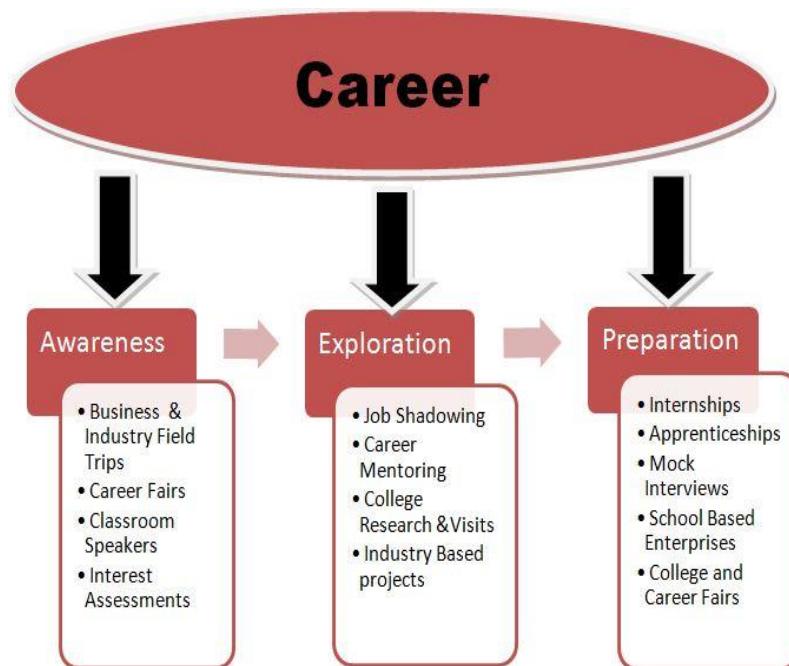
Green Economy

ใช้เทคโนโลยีการผลิตที่เป็นมิตรต่อสิ่งแวดล้อม เช่น
ใช้เอนไซม์จากจุลินทรีย์ฟอกกระดาษ
การใช้สารชีวภัณฑ์กำจัดแมลงศัตรูพืช
ทดแทนสารเคมี

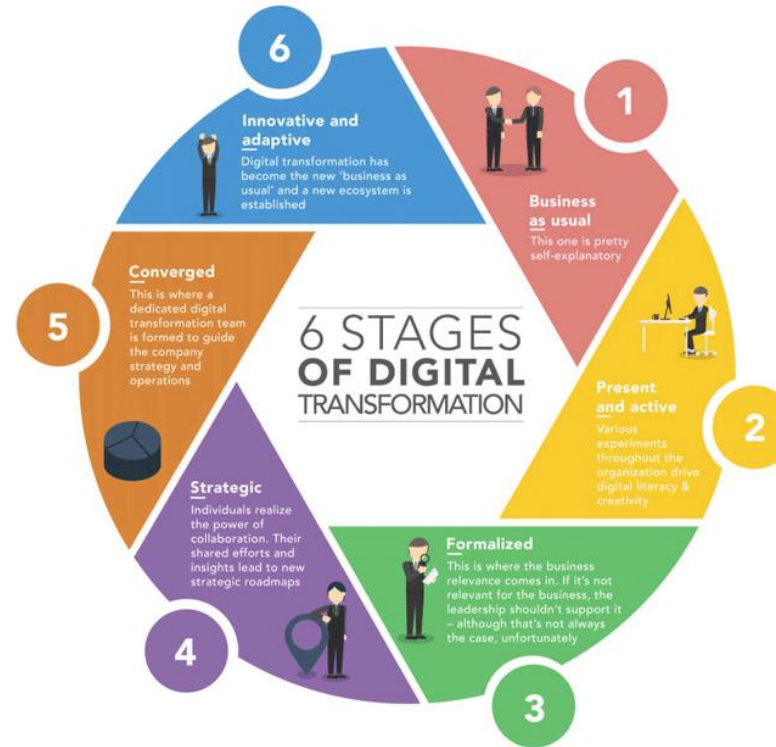
BCG Model โมเดลเศรษฐกิจที่นำวิทยาศาสตร์ เทคโนโลยีและนวัตกรรมมาต่อยอดจุดแข็งของไทย
เพื่อยกระดับความสามารถในการแข่งขัน เป็นการลงทุนในสิ่งแวดล้อมเพื่อการเติบโตของธุรกิจอย่างยั่งยืน



I. Work-Based Learning (WBL) for Next Education



II. Digital Transformation & Automation (IR 4.0)



III. Green TVET for Sustainable Development Goals (SDGs)

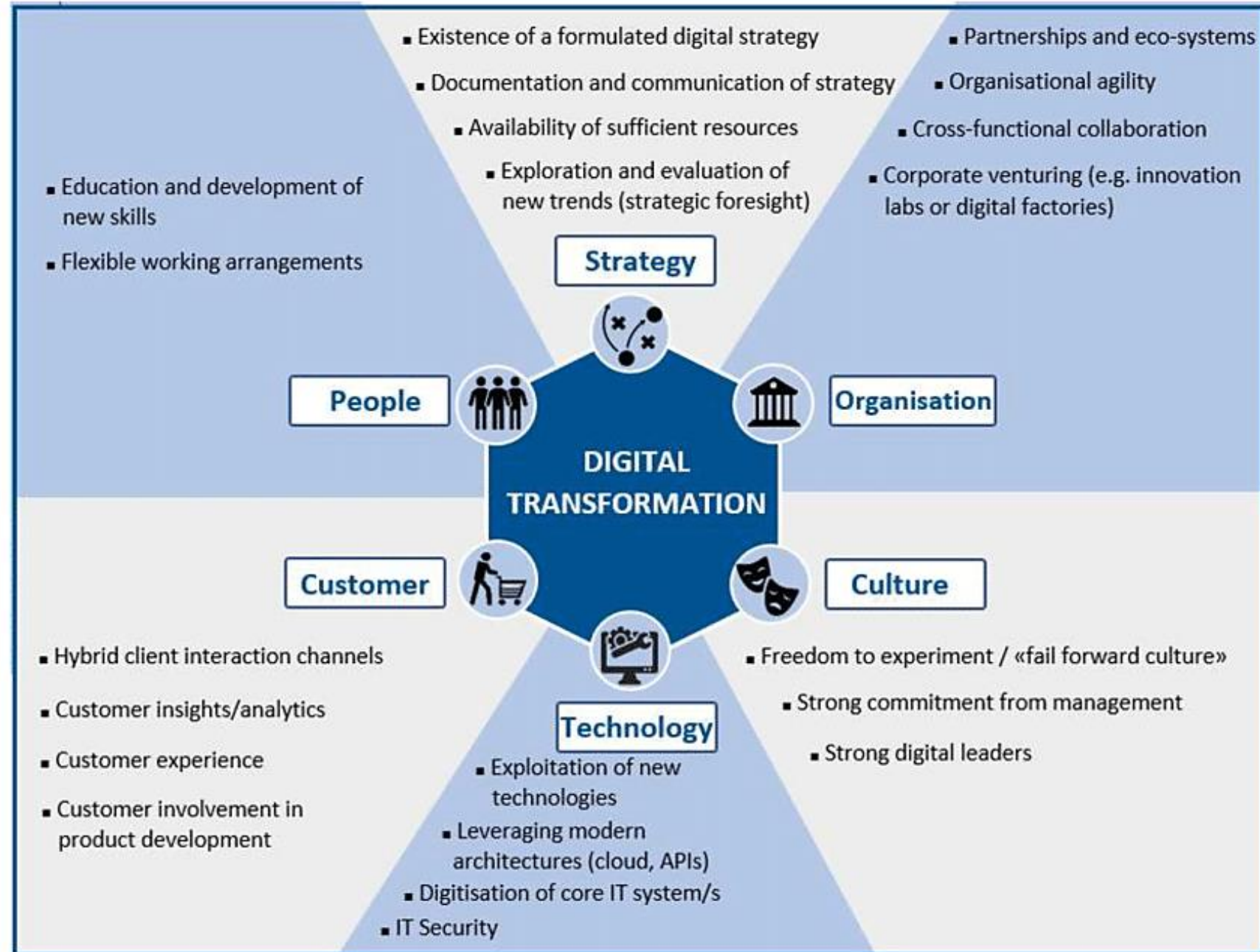
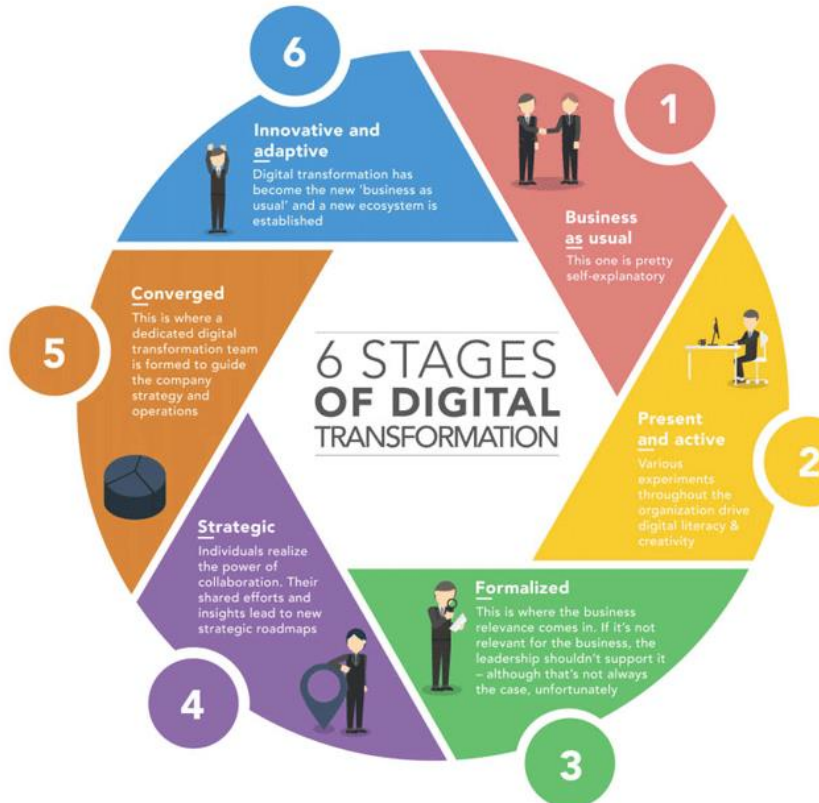
Typology of Green Skills

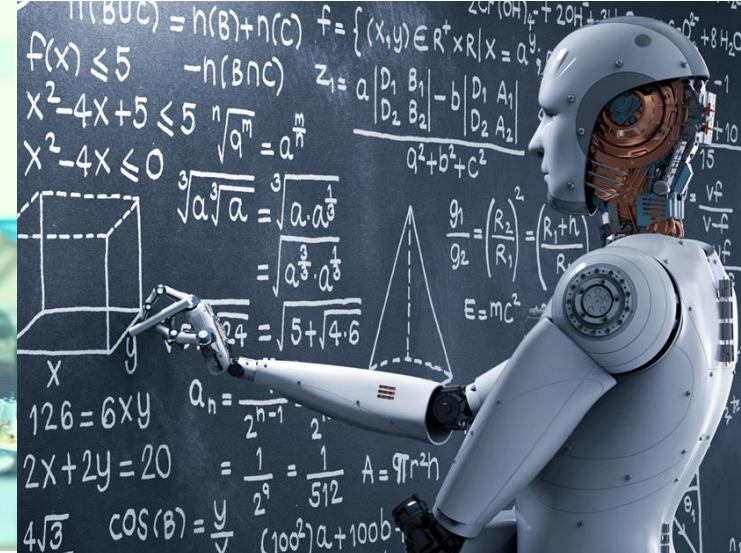
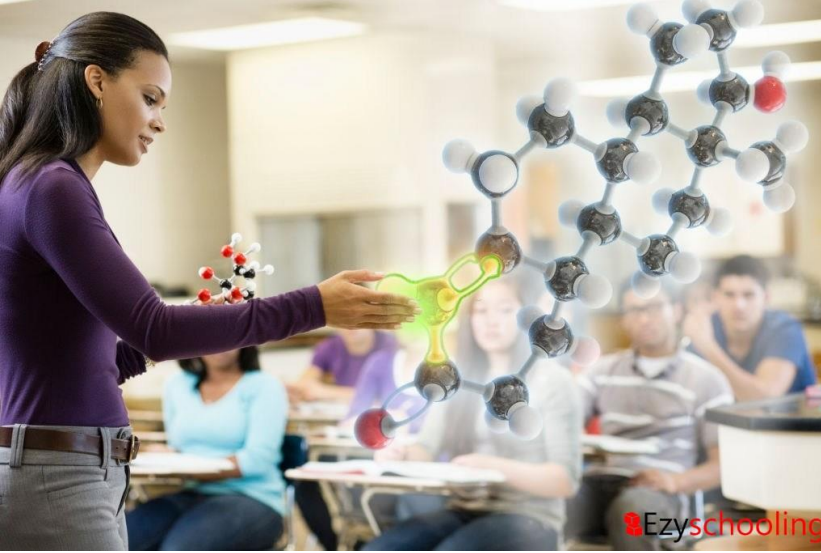


VI. Collaboration Networking Platform (i.e., UNESCO-UNEVOC, RAVTE, AUN, etc.)

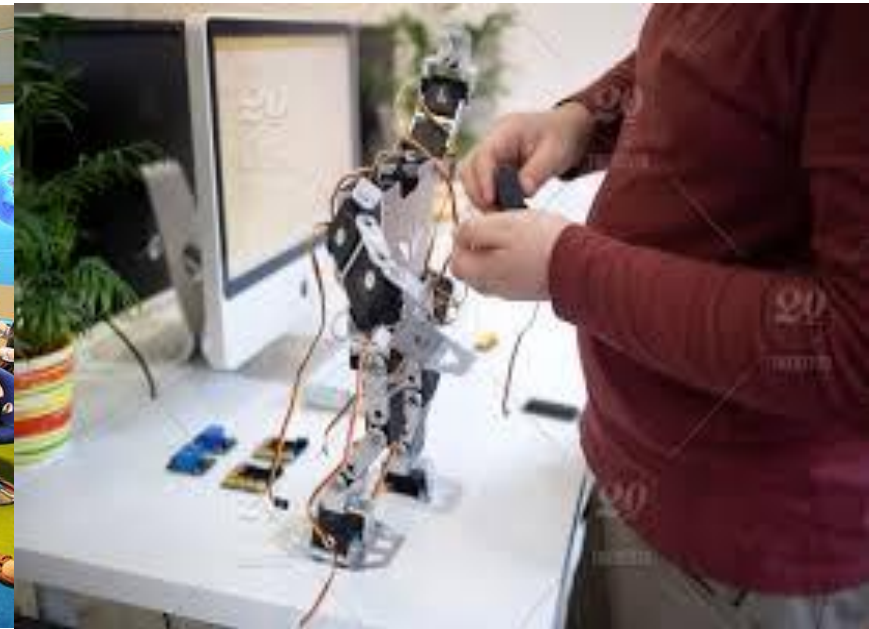
6 Stages of Digital Transformation

- (1) Business as usual
- (2) Present and active
- (3) Formalization
- (4) Strategic transformation
- (5) Convergence
- (6) Innovation and Adaptation





What (Next)...Then & How...?



Thank you for your kind attention!!

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