



# Securing the Future through Education and Training

Technical Education and Skills Development Authority (TESDA) - VII

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Regional Director

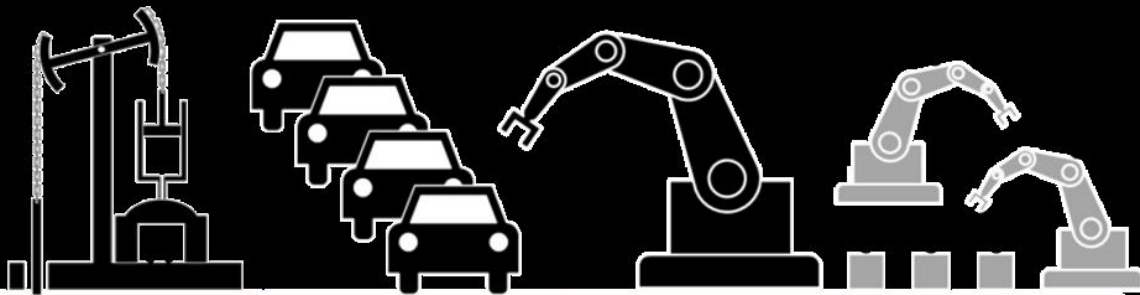
# Background



# Industrial Revolution

*The definition ....*

a rapid major change in an economy (as in England in the late 18th century) marked by the general introduction of power-driven machinery or by an important change in the prevailing types and methods of use of such machines



# Industrial Revolution

*The transition ....*

**First Industrial Revolution** - The first wave of the Industrial Revolution started in Britain and lasted from the late 1700s to the mid-1800s. It industrialized the manufacture of textiles and began the move of production from homes to factories. It also caused the growth of industries, such as coal, iron and railroads

## ***Important Innovations:***

- Spinning jenny



- Steam Engine



- Power loom



- Cotton gin



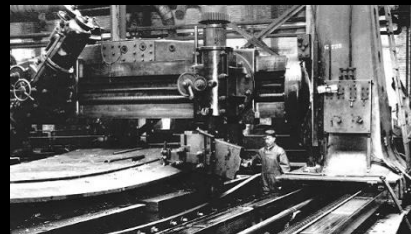
# Industrial Revolution

The transition ....

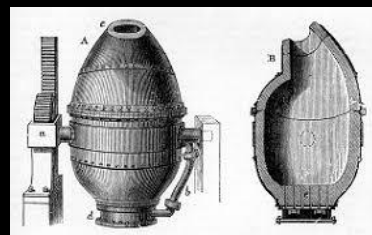
- **Second Industrial Revolution** - The next wave took place from the mid-1800s to the early 1900s. During this phase large factories and companies began to use more technologies to mass produce goods. It witnessed the expansion of electricity, petroleum and steel. Important innovations during this period include the use of electricity, the production line, and the Bessemer steel process.

## Important Innovations:

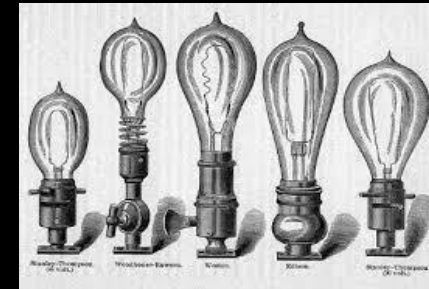
- Steel Mills



- Bessemer Process



- Electric light



- Typewriter



# Industrial Revolution

*The transition ...*

The **Third Industrial Revolution**, also known as the **Digital Revolution**, is the shift from mechanical and analogue electronic technology to digital electronics which began anywhere from the late 1950s to the late 1970s with the adoption and proliferation of digital computers and digital record keeping that continues to the present day. Implicitly, the term also refers to the sweeping changes brought about by digital computing and communication technology during (and after) the latter half of the 20th century. *(source: Wikipedia)*

- Personal Computer
- Internet
- Information and Communication Technology



# Industrial Revolution

*The transition ...*

The **Fourth Industrial Revolution (4IR)** is the fourth major industrial era since the initial Industrial Revolution of the 18th century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres, collectively referred to as cyber-physical systems.<sup>[1]</sup> It is marked by emerging technology breakthroughs in a number of fields, including robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the Internet of Things, the Industrial Internet of Things (IIoT), fifth-generation wireless technologies (5G), additive manufacturing/3D printing and fully autonomous vehicles. *(source: Wikipedia)*

- Robotics
- Artificial Intelligence
- Nanotechnology
- Quantum computing
- Biotechnology
- The Internet of Things
- 3D printing
- Autonomous vehicles



# Global Connectivity





# Internet of Things

The network of physical devices, vehicles, home appliances, and other items embedded with electronics, software, sensors, actuators, and connectivity which enables these things to connect, collect and exchange data.

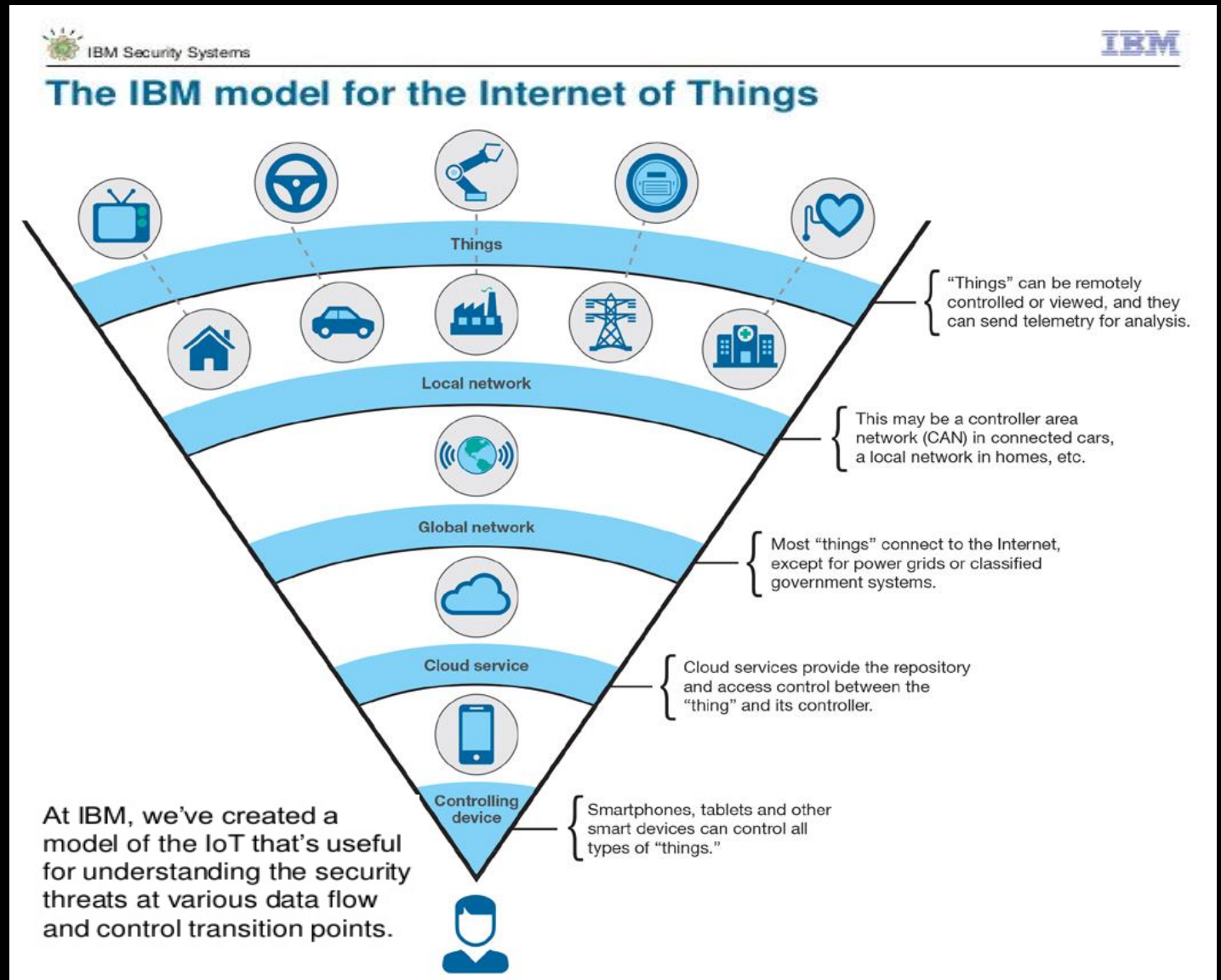
Applications:

- Consumer applications – including connected vehicles, home automation, wearable technology, connected health, and appliances with remote monitoring capabilities
- Commercial applications – including Medical and healthcare (remote health monitoring and emergency notification system), transportation systems, Building and home automation
- Industrial applications – manufacturing (industry 4.0) and agriculture
- Infrastructure application – Metropolitan scale deployments, energy management and environmental monitoring

*(source: Wikipedia)*



# Internet of Things



At IBM, we've created a model of the IoT that's useful for understanding the security threats at various data flow and control transition points.



# Internet of Things



(source: ICTbusiness.biz)



# TESDA's interventions



# 4th High Officials Meeting on SEA-TVET

TESDA and DepEd hosted the 4<sup>th</sup> High Officials Meeting on SEA-TVET on September 4-5, 2018 at the PICC, Manila with the theme **“Moving together towards TVET 4.0”** aiming to promote regional cooperation, harmonization, and internationalization of TVET education in the region.



## TVET 4.0

**TVET 4.0** is drawn as an organized and cooperated undertaking that aims to harmonize and advance the quality of TVET among SEA member states. This effort is expected to give focus and underscore the development of higher skills and knowledge of workers to the level required in the 4<sup>th</sup> Industrial Revolution or Industry 4.0



# Higher Level TVET Qualifications

2D/3D Animation NC III

2D/3D Game Art Development NC III

3D Animation NC III

Automotive Servicing NC IV

CAD CAM Operation NC III

Commercial Cooking NC III

Electrical Installation and Maintenance NC IV

Food and Beverage Services NC III

Food Processing NC III

Mechatronics Servicing NC III to NC IV

RAC Servicing (PACU/CRE) NC III

Welding (SMAW/GMAW) NC IV

Visual Graphic Design NC III

Web Development NC III



# NTESDP 2018-2022

## 6 Strategic Directions

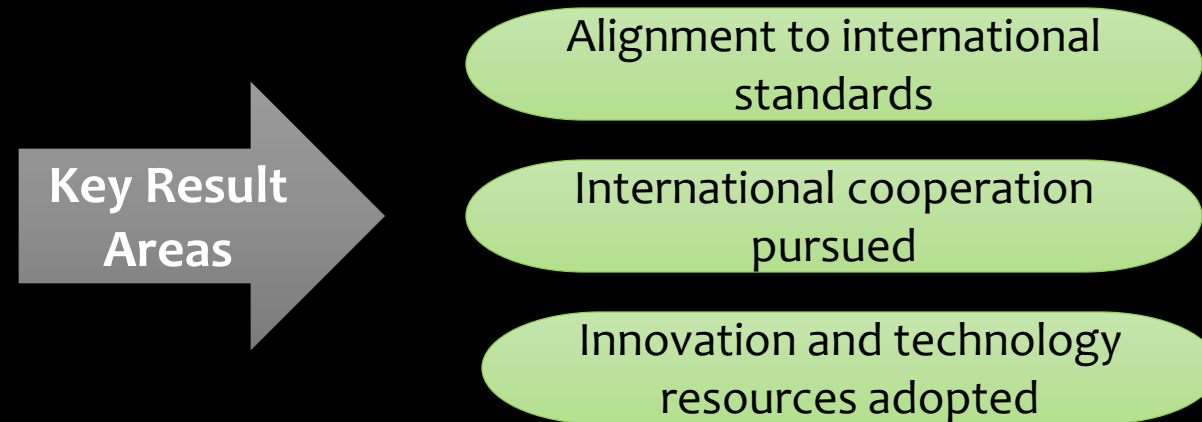
- **Provide Quality TESD and Certification for Global Competitiveness**
  - Intensify implementation of quality TESD and certification for Social Equity and poverty reduction
- **Upscale TESD and assessment and certification programs to higher PQF Levels**
  - Expand and intensify partnerships and linkages with industries and other stakeholders in the areas of TESD
  - Streamline and intensify QMS in all organizational subsystems
  - Scale-up workforce competencies to achieve organizational excellence.





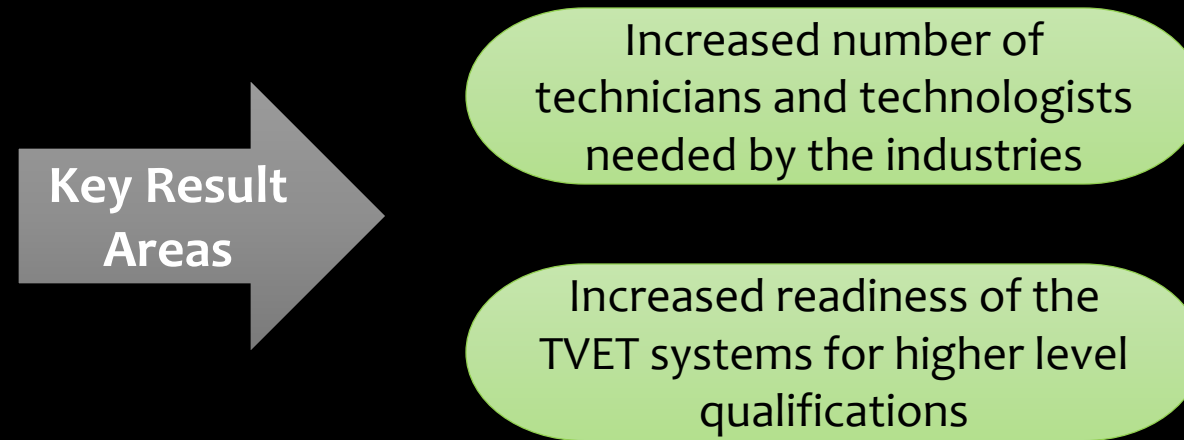
# Strategic Directions

- **Provide Quality TESD and Certification for Global Competitiveness**



# Strategic Directions

- Upscale TESD and assessment and certification programs to higher PQF Levels



# Strategic Directions: Continuing Efforts

- Prioritization of Diploma Programs
- Push for more dual-tech programs
- Emphasis on addressing the workforce requirements of industries with large employment bases and high growth potentials
- Adopting 21<sup>st</sup> Century Skills, especially those related to critical and creative thinking, greater networking and connectivity, better people and organizational skills, higher familiarity with and expertise on information and communication technology, and the convergence of industrial technology with ICT



# Industry Collaboration



# NTESDP 2018-2022 Strategies

**Adopt Skills Needs Anticipation to identify skills for the 4<sup>th</sup> Industrial Revolution requirements**

- **Industry-led TVET delivery**
- **Developing higher level TVET qualifications**
- **PQF Implementation on Diploma Programs**

**Intensify industry participation in the design development, implementation and assessment of policies and programs**

- **Capacity building programs for trainers and assessors in key industry sectors**

**Intensify involvement of industries in the competency assessment**

- **Competency Assessment and Certification of industry workers**
- **Enterprise-Based Training Delivery**



# Challenges



# Challenges

## Human Resource

- The Fourth Industrial Revolution (4IR) and the fast pace of technology development would make many jobs obsolete in the near future. Almost all industries except those directly engaged in high-contact personal interaction (health care, hospitality, entertainment and household services) will be affected by 4IR. Many new jobs with a new set of skills will arise but, in order to take on these new jobs, new technical education and skills training programs have to be designed and developed.
- On the other hand, the demand for OFW services in various countries may also weaken due to the rise of robots and DIY (do-it-yourself) technological breakthroughs



# Challenges

## Government (TESDA)

- Preparedness of the TVET landscape which refers to the TVET infrastructure, its systems and operational mechanisms which provide for the readiness, capacity, efficiency and quality of the sector to deliver to its community
- The lack of trust to TVET

(source: PDP 2017-2022)







**Thank You!**

