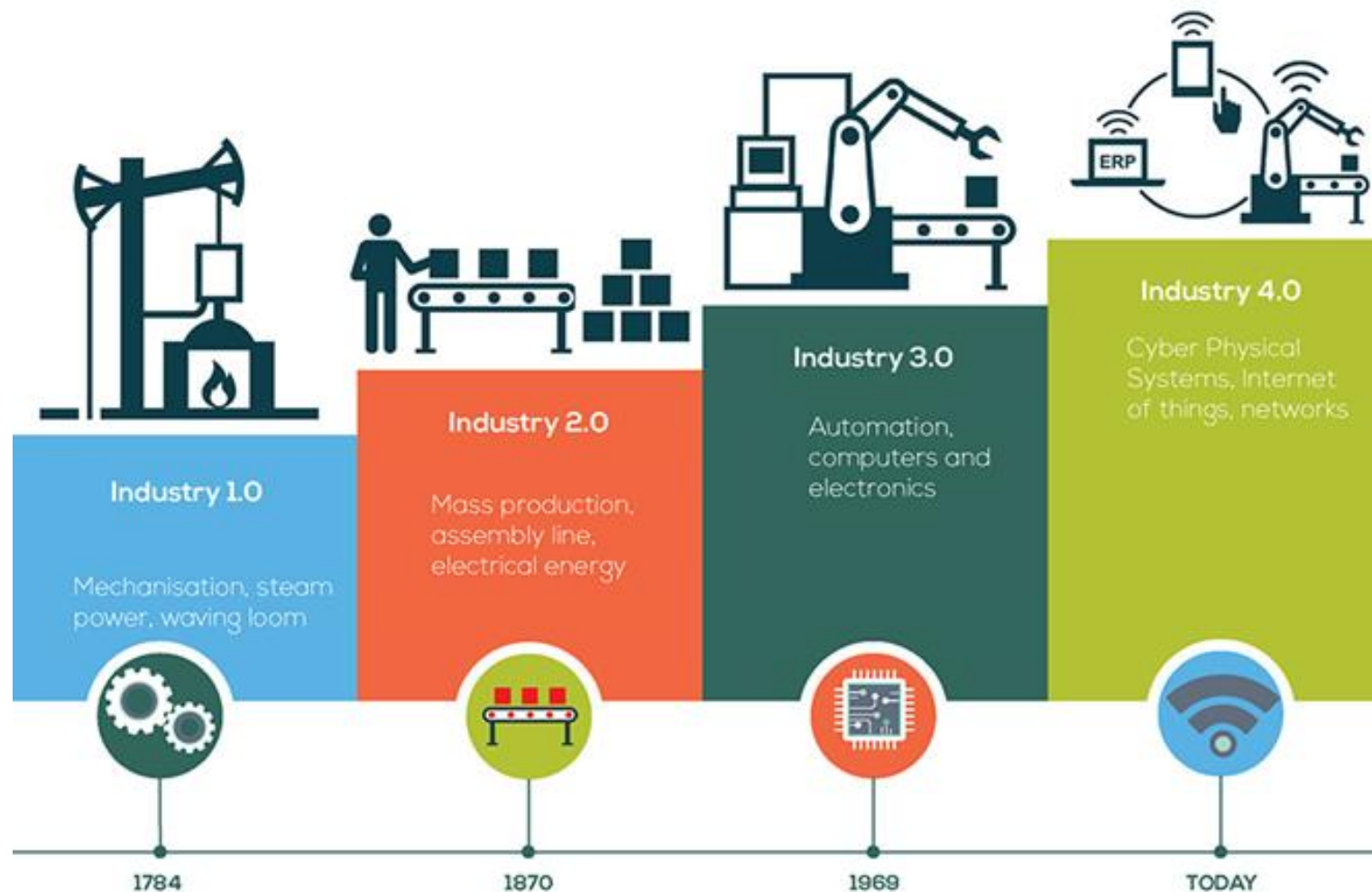


# Improving Malaysian HE Knowledge towards a Wood and Furniture Industry4.0 - MAKING4.0: Dissemination

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# INDUSTRIAL REVOLUTION (IR)



## 9 PILLARS OF IR



- **Systems Integration:** A more cohesive cross company collaboration, enabling horizontal and vertical data integration networks providing truly automated value chains.
- **Internet of Things:** The networking and connectivity of smart devices to enable data collection and exchange.
- **Simulation:** Amalgamation of physical and virtual entities to model, design, simulate, monitor and safeguard physical processes in a virtual environment.

- **Additive Manufacturing:** Digital design data is used to create a three-dimensional object in which layers of material are formed under computer control.
- **Cloud Computing:** Remote server software and hardware services used to store, manage, process and visualize data, rather than a local server.
- **Augmented Reality:** Superimposing computer-generated images combined with object recognition to a user's view of the real world, giving an interactive hybrid view.

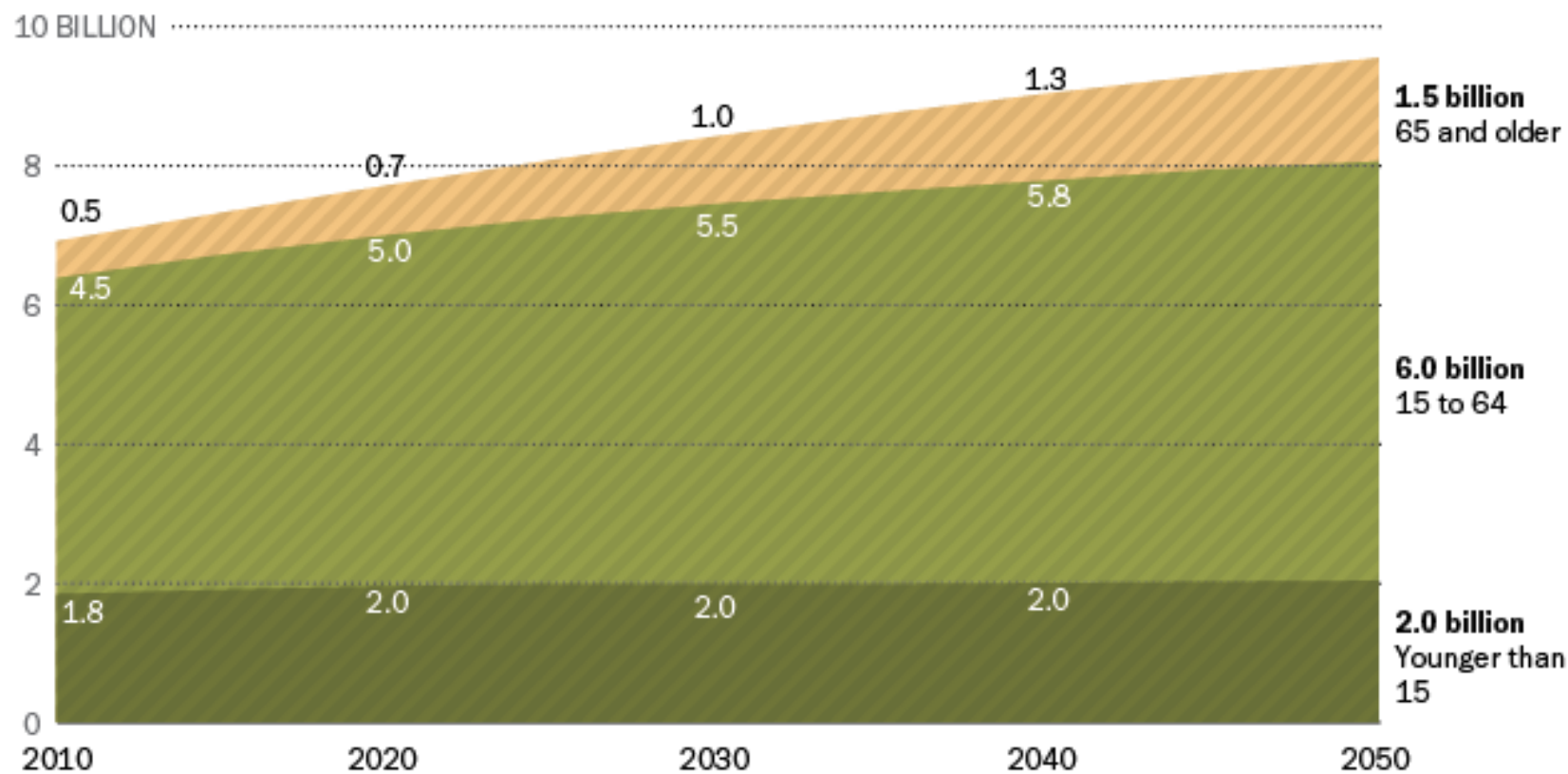
- **Big data:** Large data sets that may be analyzed computationally to reveal inconsistent process performance or availability and visualize results.
- **Cyber Security:** Protection of computer systems from theft or damage to hardware, software or information and from disruption of the services provided.
- **Autonomous system:** An object/process which can gain information about it's environment, adapt and make decisions without the need for human intervention.



## FUTURE POTENTIAL OF WOOD FURNITURE

- In 2050, the world population is expected to be 9.6 billion, an increase of 38%, from 6.9 billion in 2010.
- Geographically, 54% of the world's population lives in urban areas, a proportion that is expected to increase to 66% by 2050.
- Demographic and technological changes will have a significant impact on the lifestyle by the year 2050.

## Estimated global population by age, 2010-2050

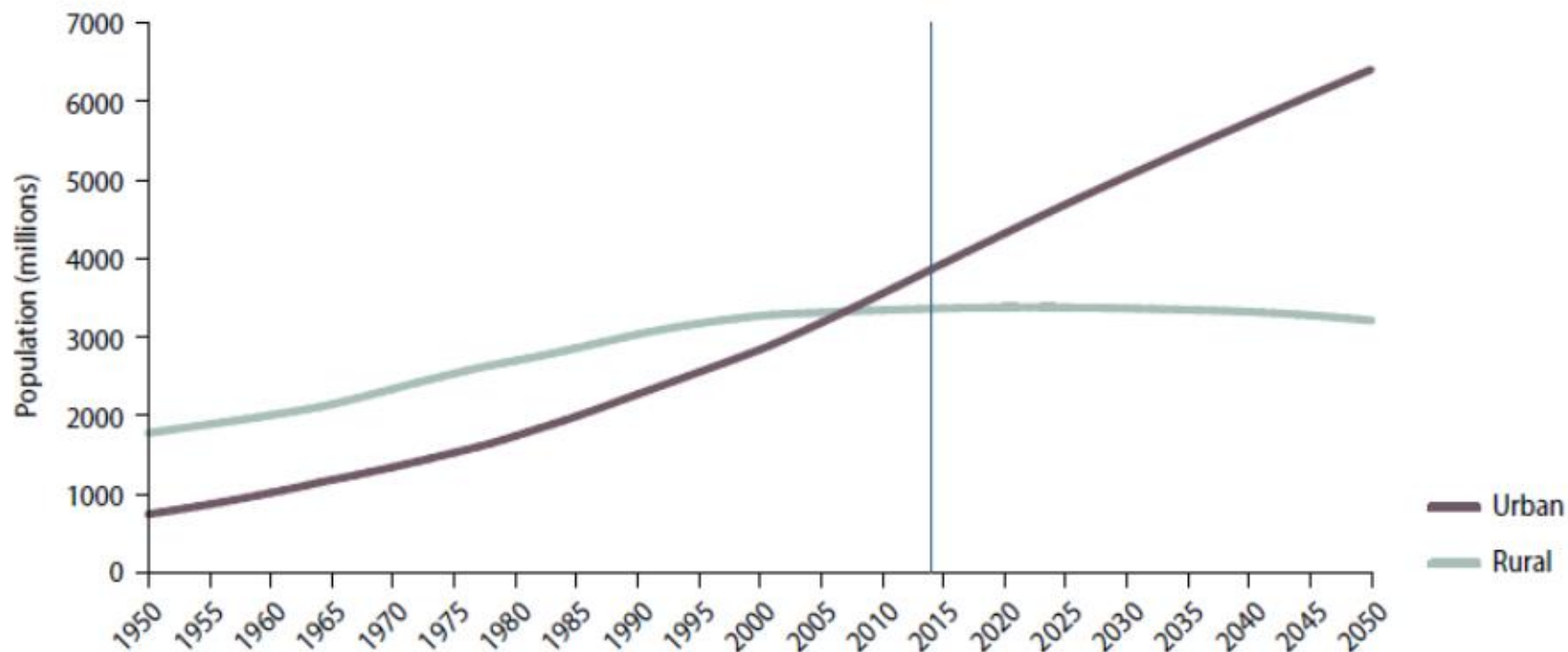


Source: United Nations. (2013). World Population Prospects: 2012 Revision. Retrieved from <http://esa.un.org/unpd/wpp/index.htm>





## Urban and rural population of the world, 1950-2050



Source: United Nations. (2014). *World Urbanization Prospects The 2014 Revision: Highlights World*

- Increasing of population, IR 4.0 and more IT savvy will also shape the direction of the furniture design and manufacturing industry.



Typical Office Layout (left) vs. Office with Home Serenity Concept (right)

- In the **academic stream**, programs are available for designers, production engineers or material experts.
- In the **technical and vocational (TVET) stream**, the teaching is focused to groom the talent in acquiring the necessary skill-set to make furniture from general woodworking, wood machining and wood crafting.
- A **roadmap** was proposed to drive the industry through achievable goals from 2016-2050 to become globally competitive.
- It is divided into short, medium and long term goals. The roadmap focuses on the **manufacturer, educational institution**, as well as the **government** as the main stakeholders.

## INDUSTRY 4.0 ADOPTION AMONG SMEs

**SME awareness towards ICT is still low...**



**Only 20% of SMEs use ICT applications actively**



**Only 16% of SMEs embarked on e-commerce activities**



**55% of SMEs do not know how to use the internet**



**40% of SMEs say they do not need the internet**



**Low SMEs investment in automation as tech upgrading viewed as a cost rather than an investment**

Source: FMM ICT Adoption Study, 2016

**So where are Malaysian SMEs  
in terms of Industry 4.0  
adoption?**

- Adopt IR 4.0 now or risk being obsolete.

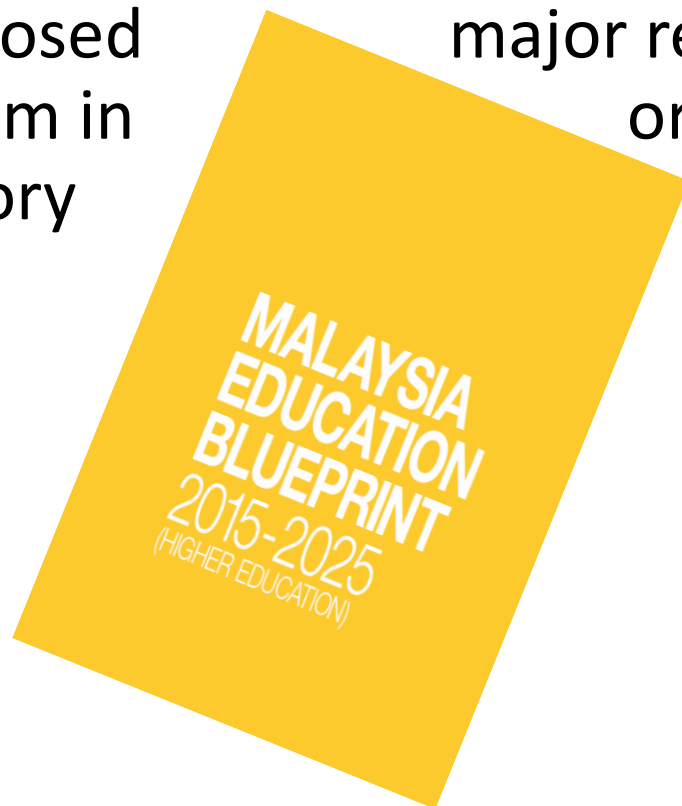




Source: Mega Science 3.0, Final Report Furniture Industry Sector  
<https://bm.akademisains.gov.my> › download › Furniture\_Industry\_Sector

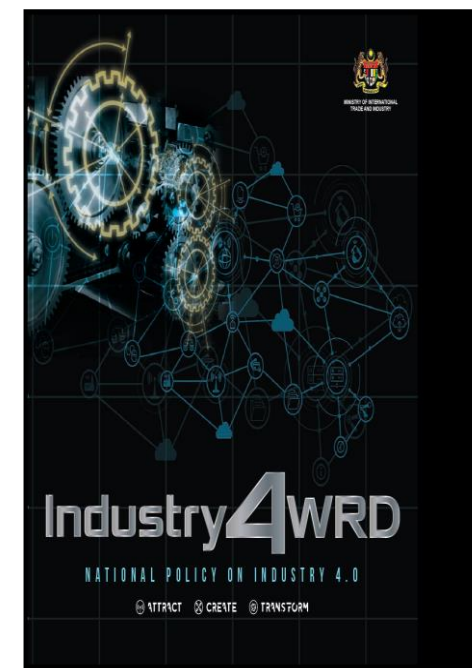
## NATIONAL POLICY

- **Malaysia Education Blueprint 2015-2025** - Ministry of Education (MoE) has proposed education system in upward trajectory major reforms to Malaysia's higher order to accelerate the positive of the system.

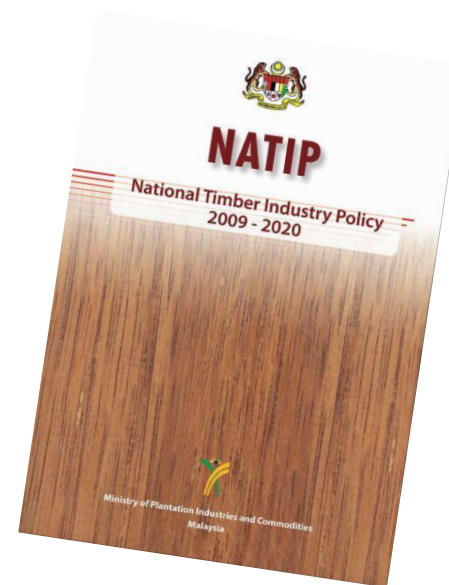




- **Industry 4WRD** – The national policy on Industry 4.0 was launched by Prime Minister.
- Tailor-made policy for Malaysia focusing specifically on small and medium enterprises (SMEs) in the manufacturing sector.
- Under Ministry of International Trade and Industry (MITI).



- **National Timber Industry Policy (NATIP) 2009-2020** –The policy directions are concerned with the long-term development of the timber industry.



- **Malaysian Board of Technology (MBOT)** - act to promote education and professional training in related technology and technical fields. Catching up with the emerging technology of IR 4.0 in Malaysia, MBOT has presented the Fourth Industrial Revolution (I4.0) as the theme in their 4<sup>th</sup> official bulletin (Jul-Sept 2017).



# CAPACITY BUILDING IN THE FIELD OF HIGHER EDUCATION (CBHE)

- **Project** is funded by Erasmus+ Programme of the European Union.
- Title of the project is “Improving Malaysian HE Knowledge towards a Wood and Furniture Industry4.0 – MAKING4.0”.
- Joining Efforts between European and Malaysian partners.

## PROJECT GOALS

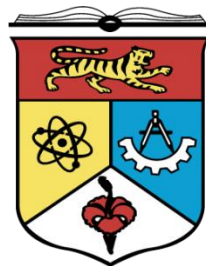
- To develop an innovative Master degree to modernize the current training offered in wood and furniture technology processes pertinent to Industry 4.0 in Malaysia.
- To create an innovative learning pathway that equips higher education students with the most important competencies and skills related to Industry 4.0.
- To promote cooperative activities and provide more opportunities for students to gain the specific and transversal skills required in wood and furniture industry.

- To push active collaboration and partnership between Europe and Malaysia in order to obtain an impact on creativity, modernization and internationalization of higher education fields related wood and furniture industry.
- To boost the 4<sup>th</sup> Industrial Revolution in the timber industry of Malaysia as the technological frontier amongst all Asian manufacturing industry working towards a smart and sustainable industry.



## PARTNERS

- Lead by Prof. Dr. Maria Victoria Bueno from UPCT as Project Coordinator. Three years project with 9 institutions.



# STUDENTS

- Who are the target students for this Master Degree?
  - Engineer?
  - Technologist?
  - Designer?
  - Anyone .....

## DEVELOPING CURRICULUM (WORK PACKAGE)

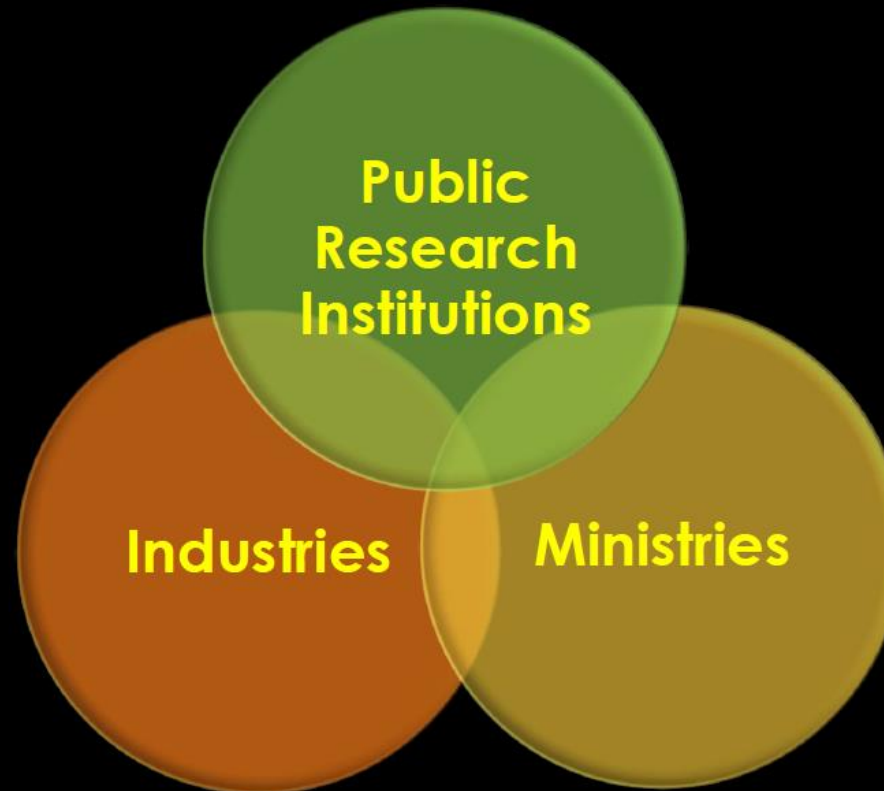
- WP1 – PREPARATION (UPM)
  - Analysis and comparison of the current HE training offer, furniture and woodworking industry.
- WP2 – DEVELOPMENT (KIT)
  - Training path, learning content structure.
- WP3 – DEVELOPMENT (WULS)
  - Develop of training materials and guidelines for trainers.

- WP4 – DEVELOPMENT (UKM)
  - Pilot test analysis and Master course validation and accreditation.
- WP5 – QUALITY PLAN (CETEM)
- WP6 – DISSEMINATION & EXPLOITATION (USM & WULS)
- WP7 – MANAGEMENT (UPCT)

## CHALLENGES

- Awareness
- Budget/Funds
- Support from industries

# ECOSYSTEM TOWARDS INDUSTRY 4.0





# THANK YOU