



THE EXCELLENT ADVANCED MANUFACTURING 4.0

Learning Factories in VET/HVET Institutions

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AGENDA – Part 1

Learning Factories

- EXAM 4.0 Project and Goals
- Work-based Learning and its Prominent Role in VET4.0
- Industry 4.0 and Advanced Manufacturing Demand for New Teaching and Learning Structures
- Learning Factories – The Path to Industry 4.0

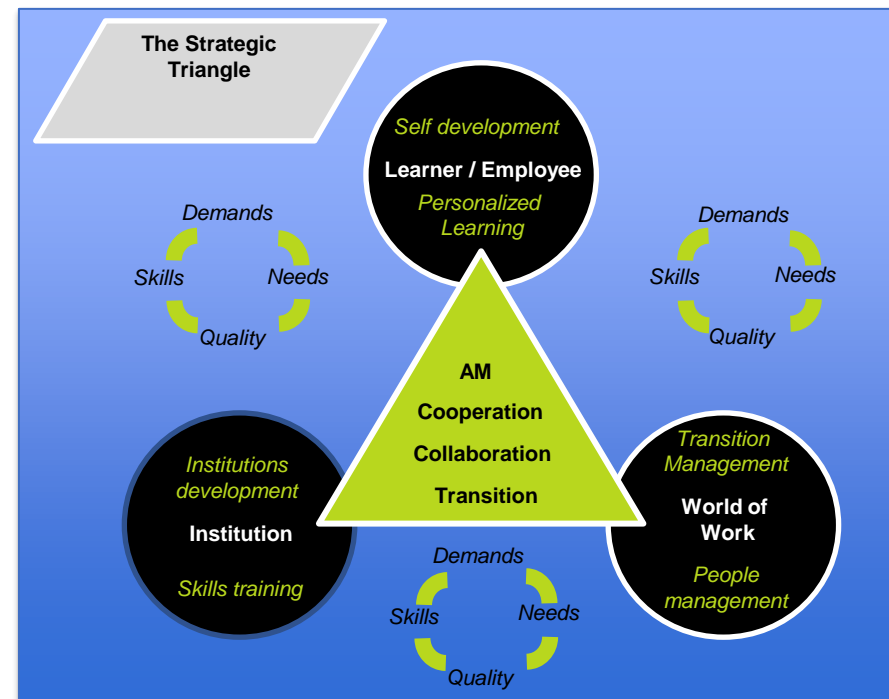
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EXAM 4.0 Project and Goals

- Platform of VET Excellence for Industry 4.0
- Strategic alliance of the three stakeholder groups
- Capture the know-how of constantly changing requirement profiles for qualifications



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EXAM 4.0 Platform Services



NETWORK OF STAKEHOLDERS FROM INDUSTRY AND INSTITUTIONS

European platform of VET
excellence in advanced
manufacturing.



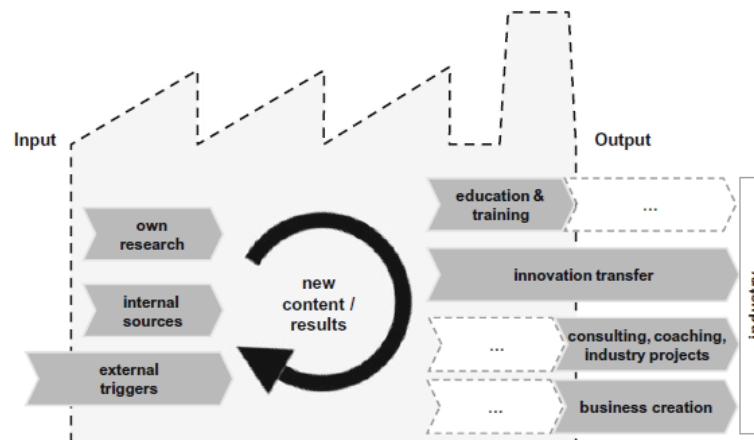
LEARNING FACTORY

Learning environment
based on a real industrial
sites



LEARNING AND EDUCATION

Upskilling for existing
employees in order to meet the
demands of Industry 4.0



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Work-based Learning

- WBL high on demand
- Prominent role in addressing Globalisation, technological changes and the Industry 4.0 transition
- Closing the skills gap by addressing future skills needs



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Industry 4.0 and Advanced Manufacturing

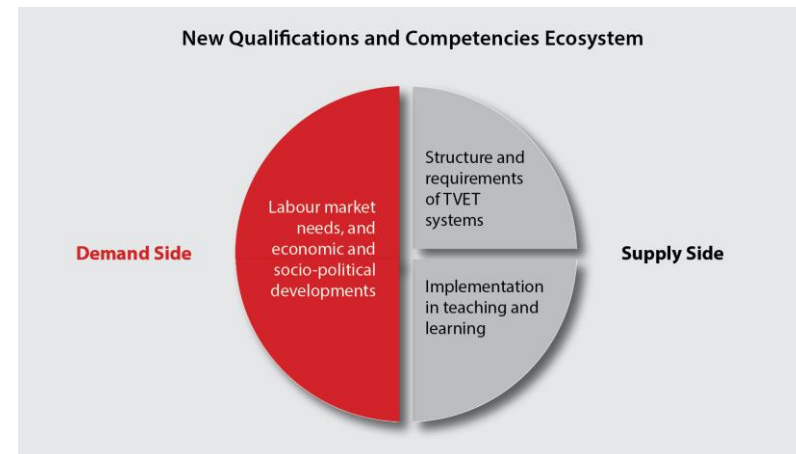
- Advanced economies seeking to improve the productivity and efficiency in industrial manufacturing.
- Internet of Things IoT
- Industrial Internet of Things IIoT





New Teaching and Learning Structure

- Implement new learning strategies
- Transform pedagogical practices in higher education to achieve a balance between social skills, science knowledge and technical training

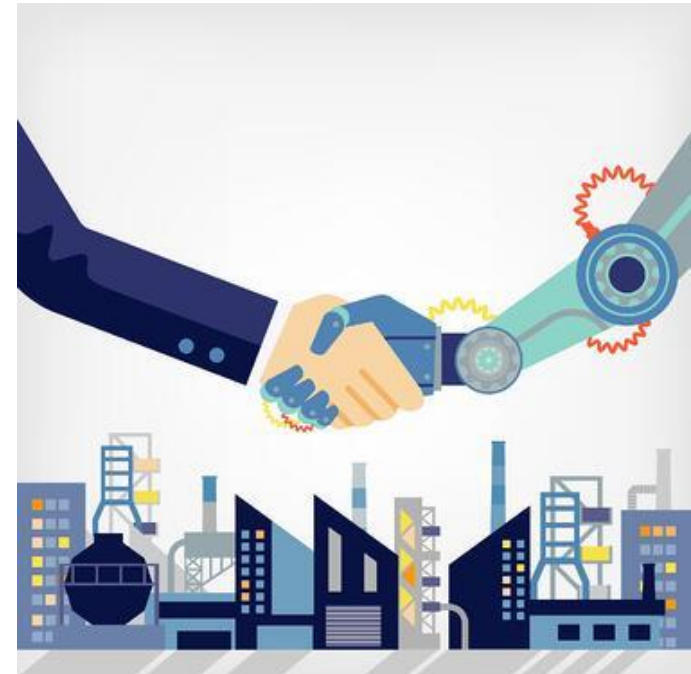


Source: UNESCO UNEVOC



The Learning Factory

- LF an authentic production environment designed and used primarily for the purpose of learning.
- LF for training both teachers and students on the practical implications of Industry 4.0 and the use of new technology in industry.



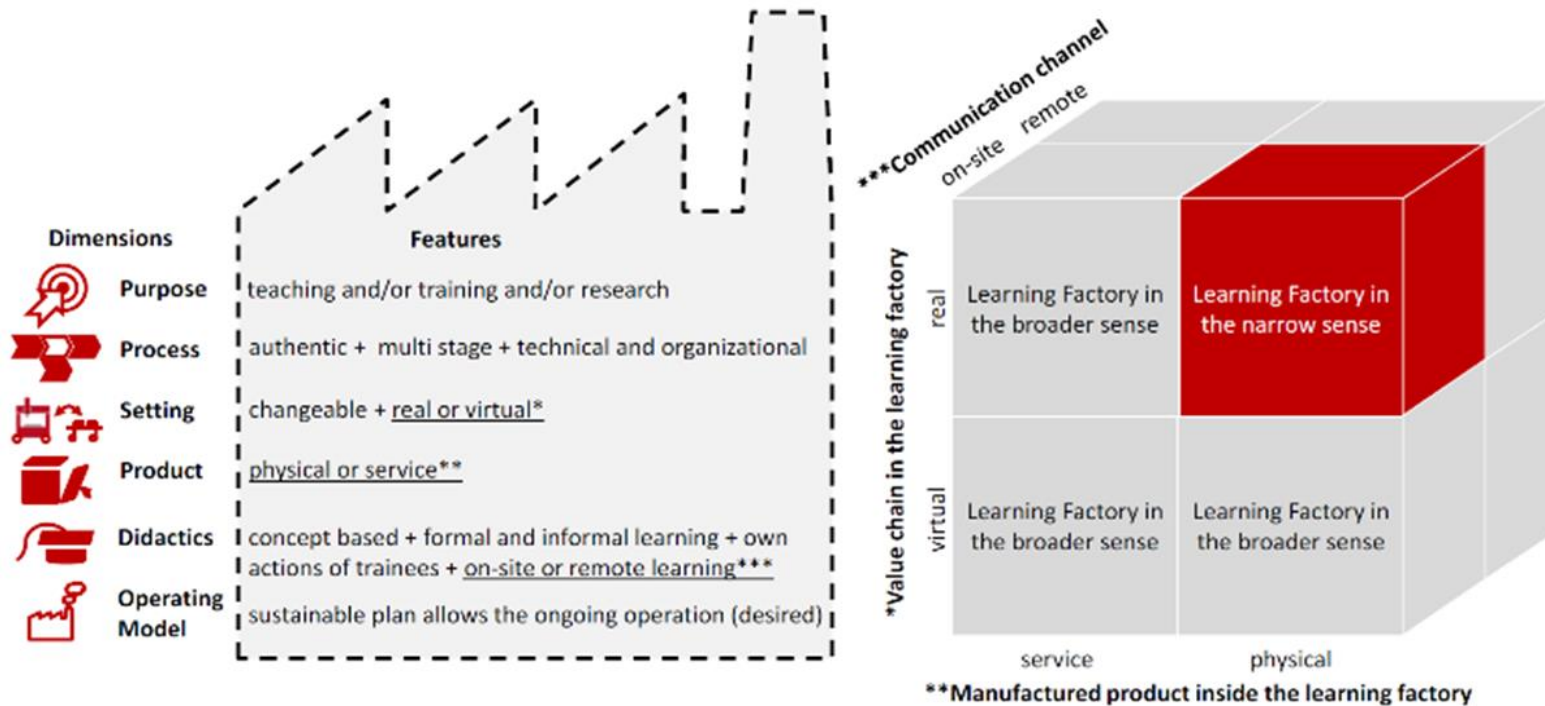
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The Learning Factory

Figure 1. Key features and variants of Learning Factories



Source: [Abele et al. \(2015: 2\)](#)



The Learning Factory Purposes

- to **enhance academic education** through offering more realistic hands-on practical experience;
- to **enable the acquisition of technical and vocational skills** and the associated workplace behavioural and **social competencies**;
- to **facilitate experimentation for research**, innovation or process improvement, and the acquisition of the skills and understanding that these activities require



The Learning Factory Multitasks

- LF is defined as an **idealized replica of sections of the value chain in Industry4.0** where informal, non-formal and formal learning take place
- LF are a place for “**train the teacher**”
- LFs are used for **educational purposes and research** in areas such as manufacturing (TU Darmstadt), energy efficiency (Green Factory Bavaria), service operations processes (McKinsey Capability Center Atlanta) among others



The Learning Factory Benefits

- Enhance competence development for VET/HVET institutions
- Empower training, research and education.
- Closing the skills gaps in Industry 4.0 economies.



Source: Fraunhofer IPT



Thank you
for
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Work-based Learning Characteristics

Characteristics	Work-based Learning	Workplace Learning
Driver / Owner	Educational institutions	Employers
Partnerships	Educational institutions as Driver may partner with: <ul style="list-style-type: none"> • Employers to provide the internship / industry attachment • Consultants 	Employers as Driver may partner with: <ul style="list-style-type: none"> • Consultants • Educational institutions (e.g. online literacy training)
Participants	Students / Trainees / Learners completing a qualification	Employees
Purpose	To expose participants to meaningful and relevant workplace experiences to better connect their learning to the workplace and deepen their skills, before graduation	To address skills gaps, improve performance and develop staff
Time	<ul style="list-style-type: none"> • Part of a qualification • Time in workplace varies according to different educational institution's industry section requirements 	<ul style="list-style-type: none"> • Ongoing • Specific work / business / performance related outcomes often tied to stipulated period of time dictated by employer
Outcomes for driver	<ul style="list-style-type: none"> • Qualification that represents skilled and work-ready graduates • Projects undertaken in the workplace are a source of holistic, authentic activity / service / product that can be used for learning and assessment purposes 	<ul style="list-style-type: none"> • Improved performance • Improved professional judgement • Development of learning culture that supports innovation • Flexible professional development appropriate to individual and collective (e.g. team) needs