

Digitizing Industry and the Circular Economy: European Priorities

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Introduction

The Laboratory for Manufacturing Systems & Automation (LMS) is oriented on research and development in cutting edge scientific and technological fields. LMS is involved in a number of research projects funded by the CEU and European industrial partners. Particular emphasis is given to the co-operation with the European industry as well as with a number of "hi-tech" firms. LMS employs approximately 70 researchers.

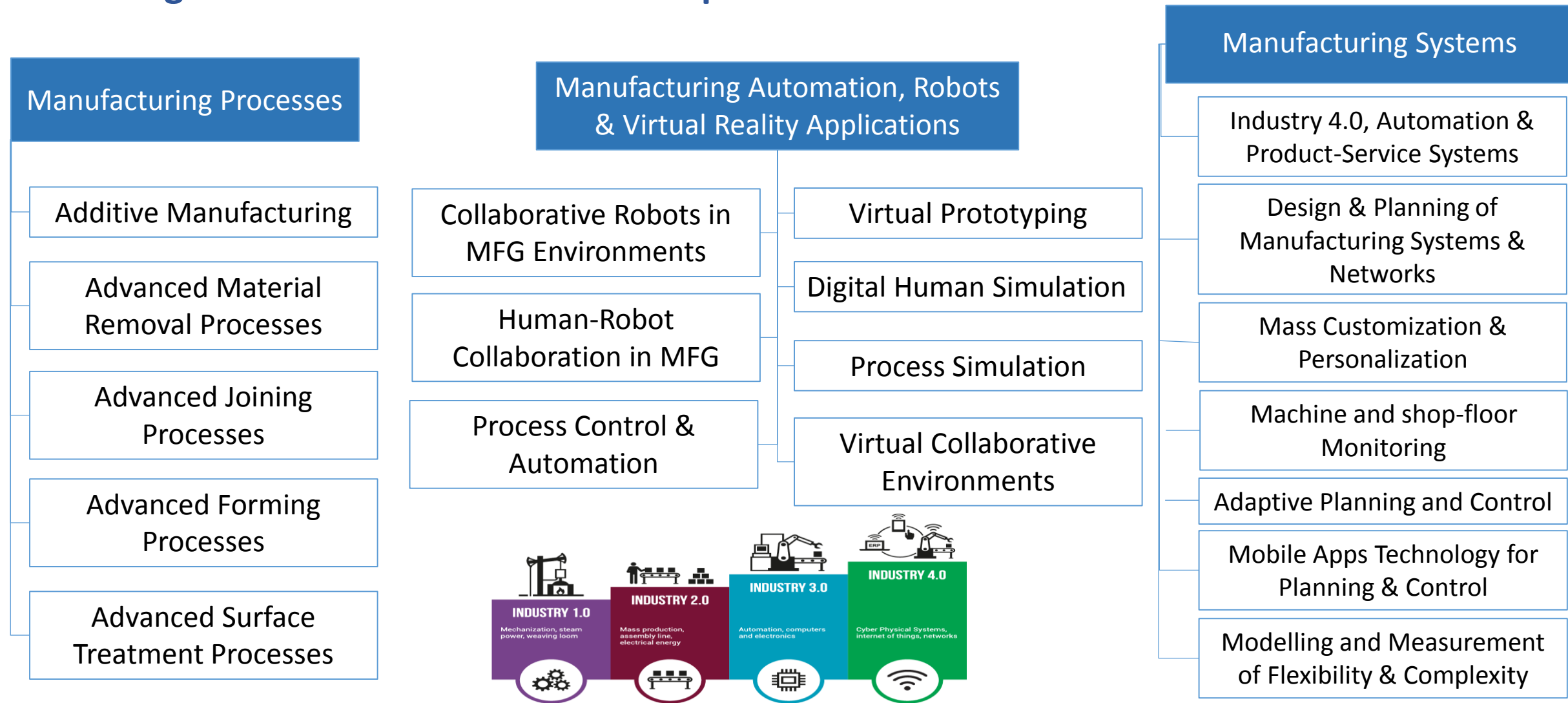
- Participation in more than **150 R&D Projects**
- Organization of more than **10 International conferences.**
- Publication of more than **500 Scientific articles**



For More Information:

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LMS is organized in Three Different Groups

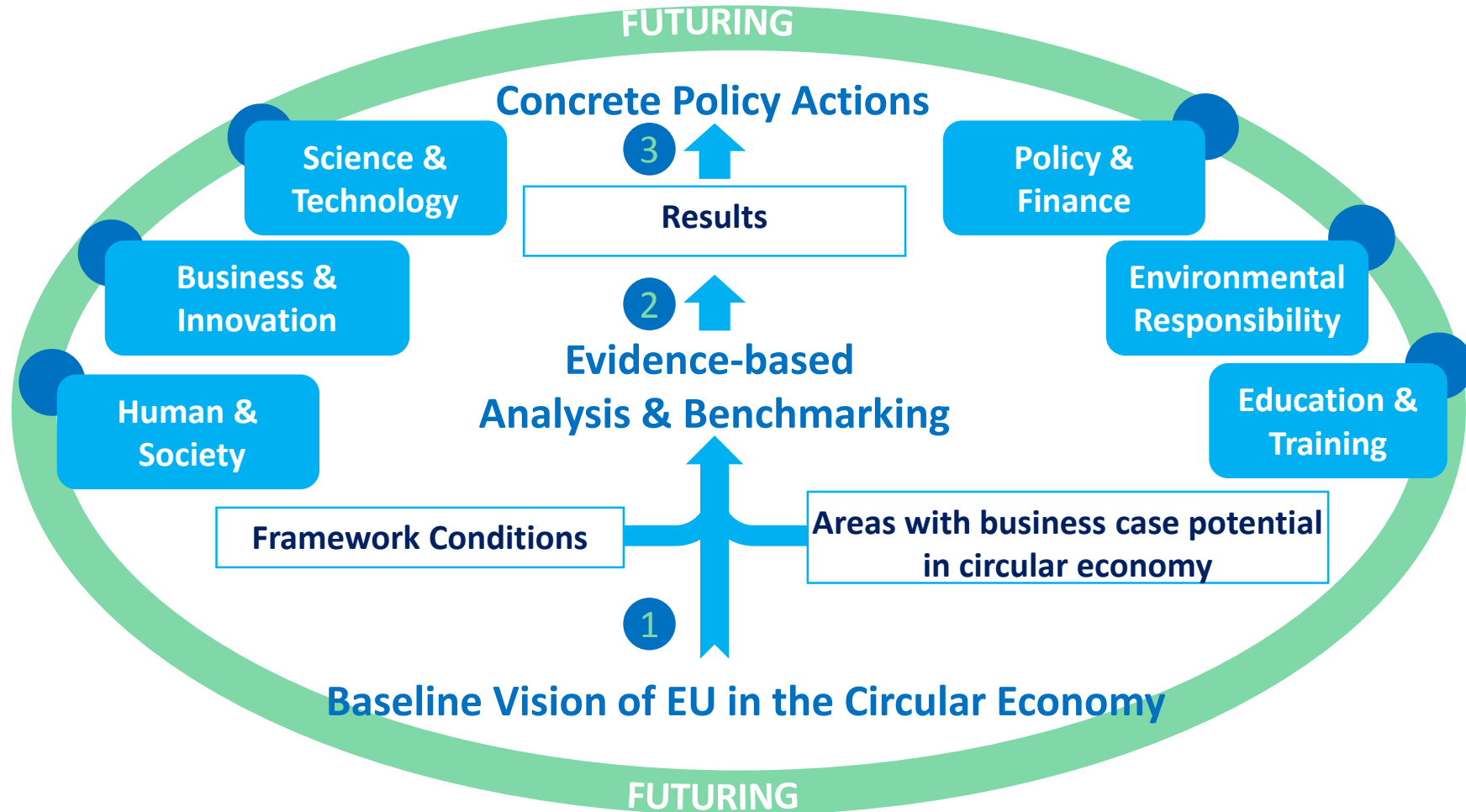




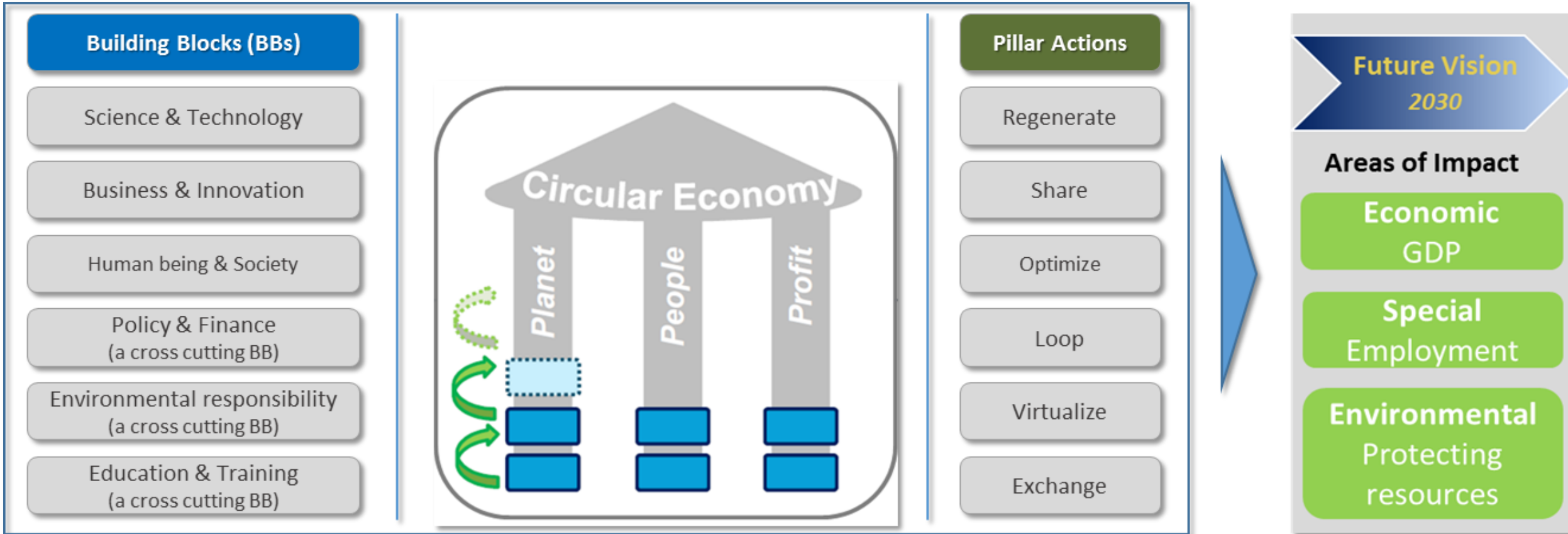
*FUTURING defined a strategy for Europe's Circular Economy
in the context also of digitizing manufacturing*



- *Vision for a Smart, Clean, Human-Centred EU Industry.*
 - *Definition of relevant building blocks.*
 - *Policy support and recommendations.*



Realization Structure



Research questions of transition-oriented analysis to Circular Economy



FUTURING's Building Blocks

Research questions

Science & Technology

What **digital technologies** support the transition to a circular economy?

Business & Innovation

What **digital business models** support the transition to a circular economy?

Policy & Finance

How can **policy and finance** ensure the transition to a digital circular economy?

Human & Society

How can **individuals and society** as a system support the transition to a digital circular economy?

Environmental sustainability

How can the **environment be sustained** by the transition to a digital circular economy?

Education & Training

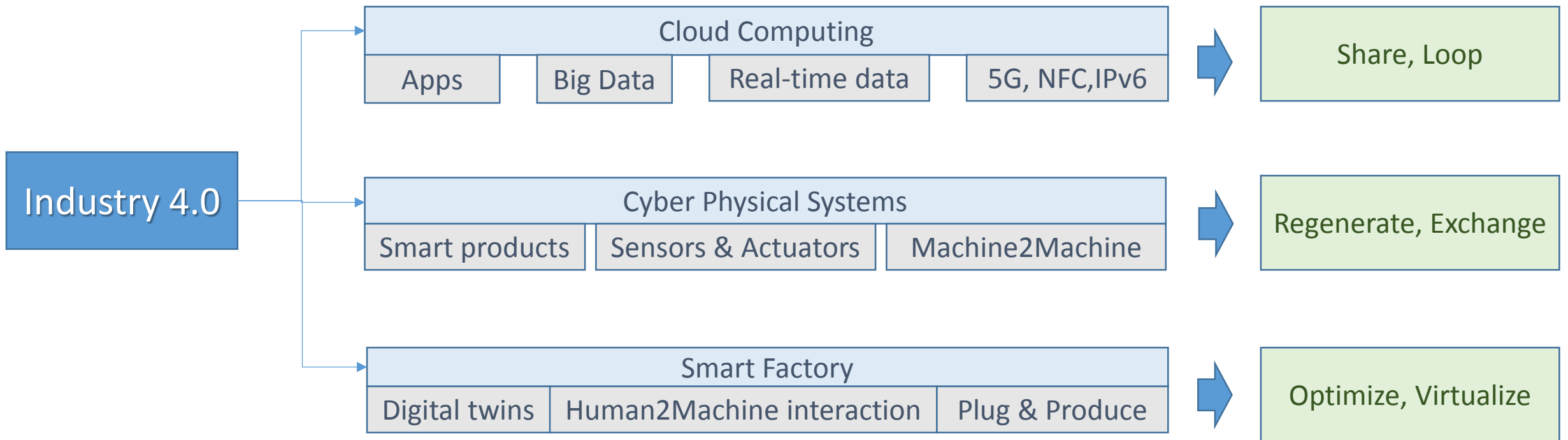
How can **education and training** support the transition to a digital circular economy?

Enablers of digitization in circular economy

Science & Technology

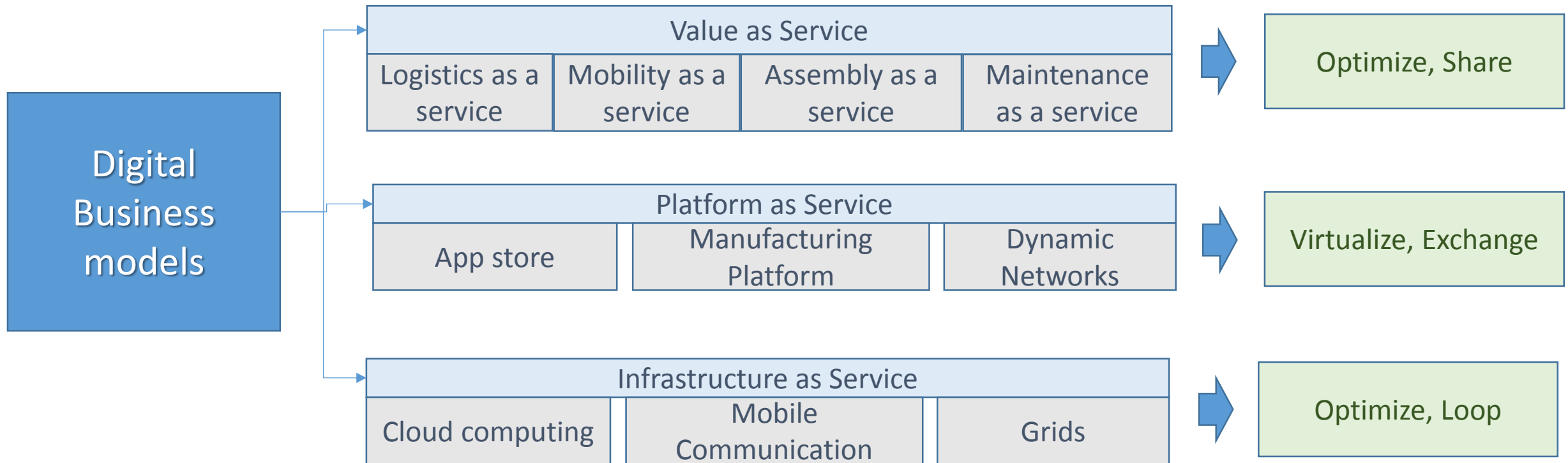


Pillar Actions
(indicatively addressed)



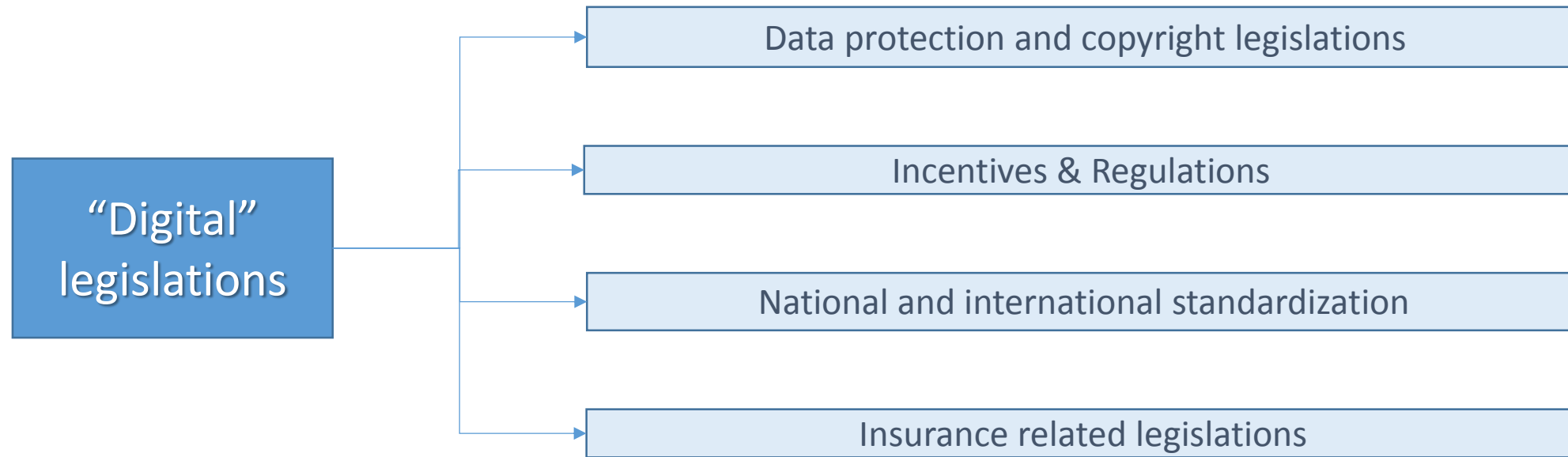
Enablers of digitization in circular economy

Business & Innovation



Enablers of digitization in circular economy

Policy & Finance

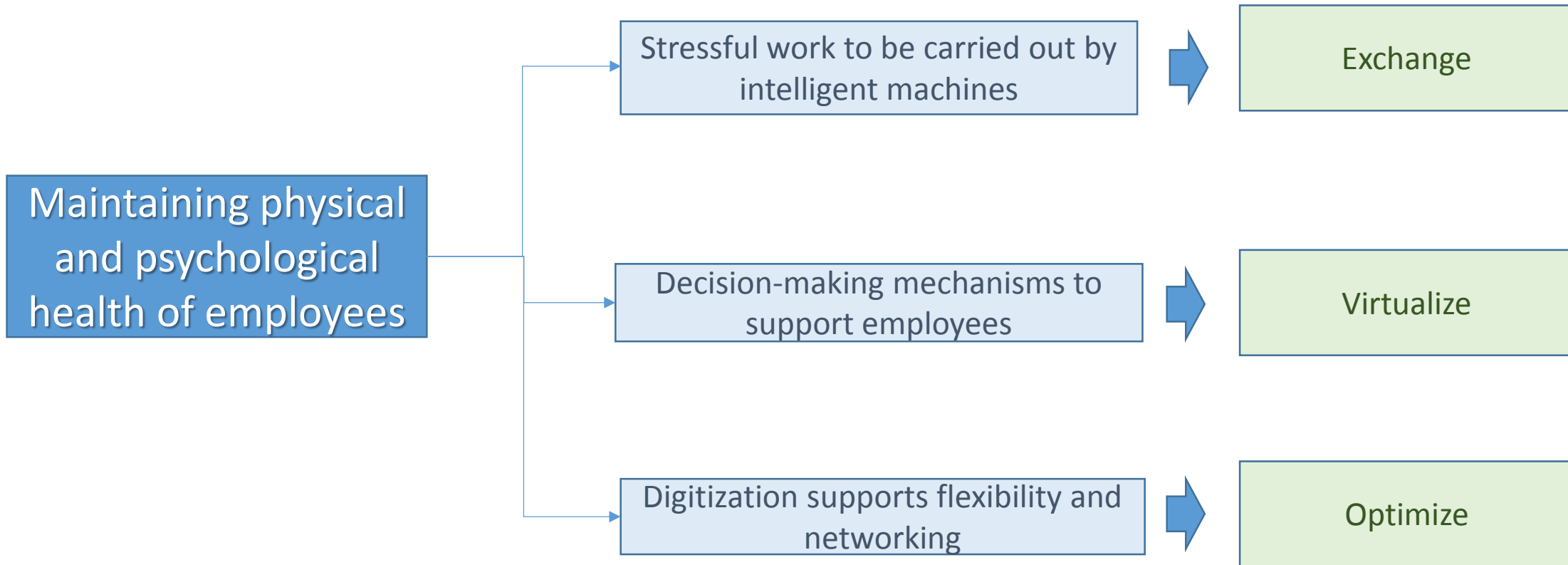


Enablers of digitization in circular economy

Human & Society



(indicatively addressed)



Enablers of digitization in circular economy

Environmental Responsibility



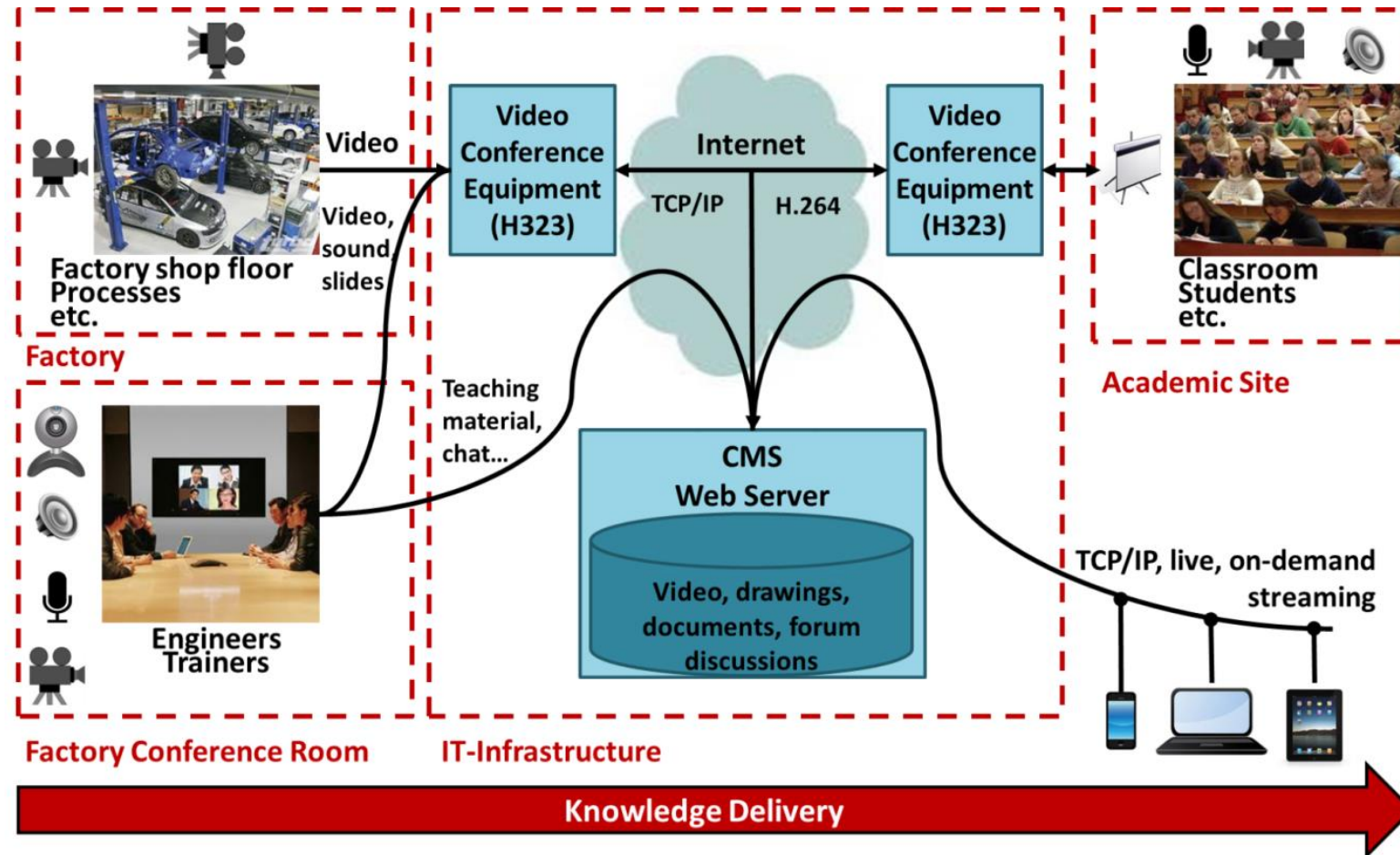
Enabling technologies	Circularity criteria							
	Energy Efficiency	Material efficiency	Less waste	Less emissions	More safety	Higher flexibility	Sustainable product	Customizable product
Technologies for “self-assembly”
Innovative micro/nano-manufacturing processes
Additive manufacturing
Flexible Sheet-to-Sheet (S2S) and Roll-to-Roll (R2R)
Innovative physical, chemical and physicochemical processes
Integration of non-conventional technologies and conventional technologies
Methods for handling of parts, metrology and inspection
Photonics-based materials processing technologies
Collecting, dismantling, sorting and recycling processes
Shaping technology for difficult to shape materials
ICT solutions for factory floor and physical world inclusion
ICT solutions for modelling, simulation and management tools
Control technologies, Robots and Automation

Enablers of digitization in circular economy

Education & Training

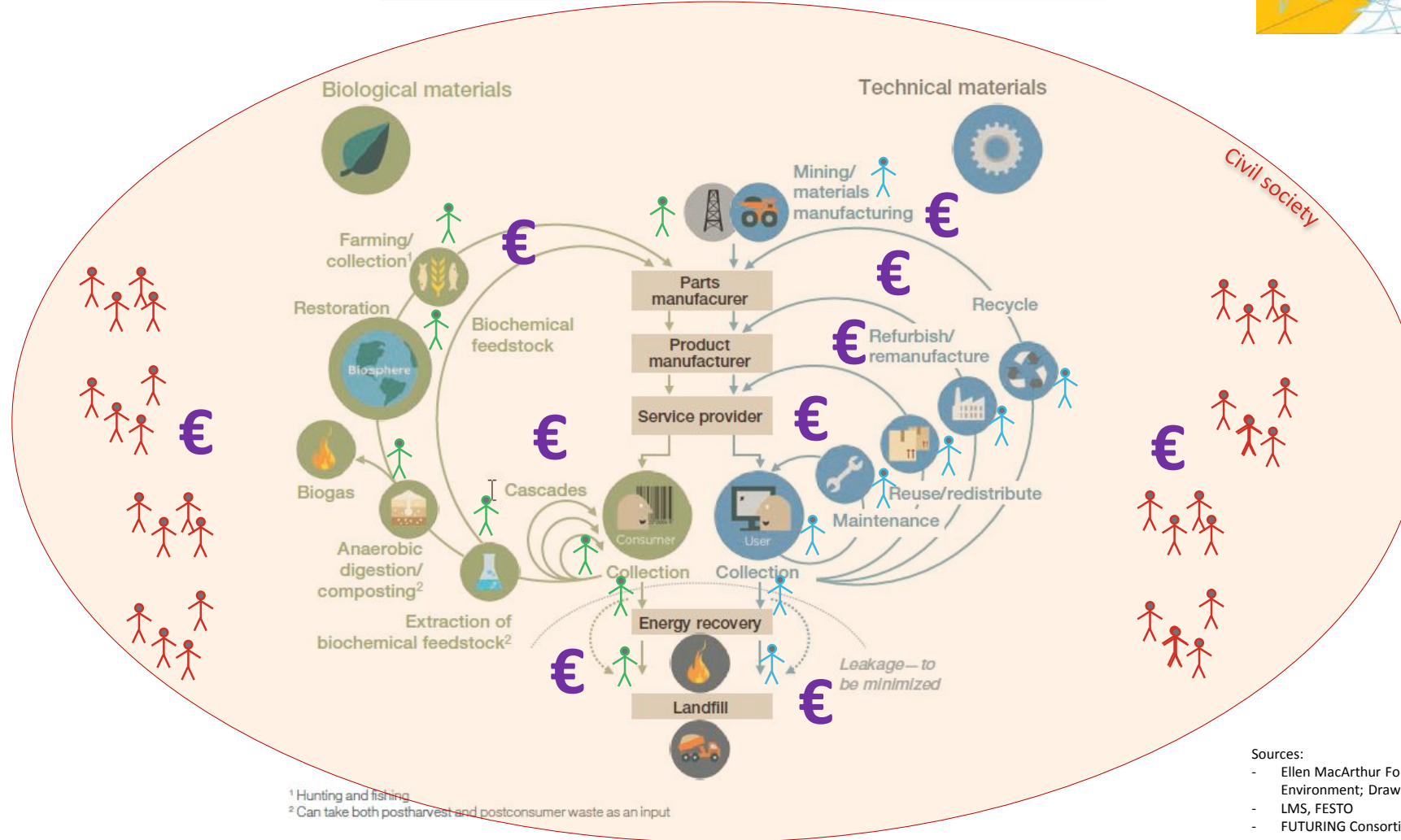


Use of advanced ICT in the Teaching Factory paradigm



Circular Economy in FUTURING

Ecological + Societal + Economical



Sources:

- Ellen MacArthur Foundation, SUN, and McKinsey Center for Business and Environment; Drawing from Baumgart & McDonough, Cradle to Cradle (C2)
- LMS, FESTO
- FUTURING Consortium



Thank you for your attention!



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FUTURING Website:
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