



University of Applied Sciences and Arts Northwestern Switzerland
School of Applied Psychology

member of
swissuniversities

Decision-making in the age of AI

Bühler AI Community

Uzwil, 8.11.2024

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Institute Humans in Complex Systems (MikS)

- Analysis, evaluation and design of complex systems
 - Increased technical and organizational complexity
 - Individuals and groups confronted with such complexity
- Objectives
 - Increase the reliability and safety of sociotechnical systems
 - Healthy humans and organizations



Outline

–Intelligence

- Human intelligence differs from AI
 - Amazing abilities of humans
 - Outlook: Combining human and machine
- HORIZON-Project AI4REALNET

Intelligence

Intelligence:

Ability to learn from experience, solve problems and use knowledge to adapt to new situations.

(Myers, 2005, S. 460)

Artificial intelligence:

Replication of human intelligence within computer science.

(Wikipedia, 2023)



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Focus: Experts



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HORIZON-Project AI4REALNET

Humans are Different

Object recognition vs.
patterns in pixels



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Humans are Different

Object recognition vs.
patterns in pixels

Understanding vs. data patterns



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Humans are Different

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Understanding vs. data patterns

Value system (understanding of
the world) vs. pursuit of goals?



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Value system (understanding of
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Empathy (Theory of Mind) vs.
inability to put oneself in the
other person's shoes



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Empathy (Theory of Mind) vs.
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Taking responsibility vs.
functioning



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Expertise: Humans' Experience = Tacit Knowledge

Experts recognise patterns:
They can „read" situations

Often an unconscious process

Mostly tacit knowledge: not explainable

Prerequisite: Experience

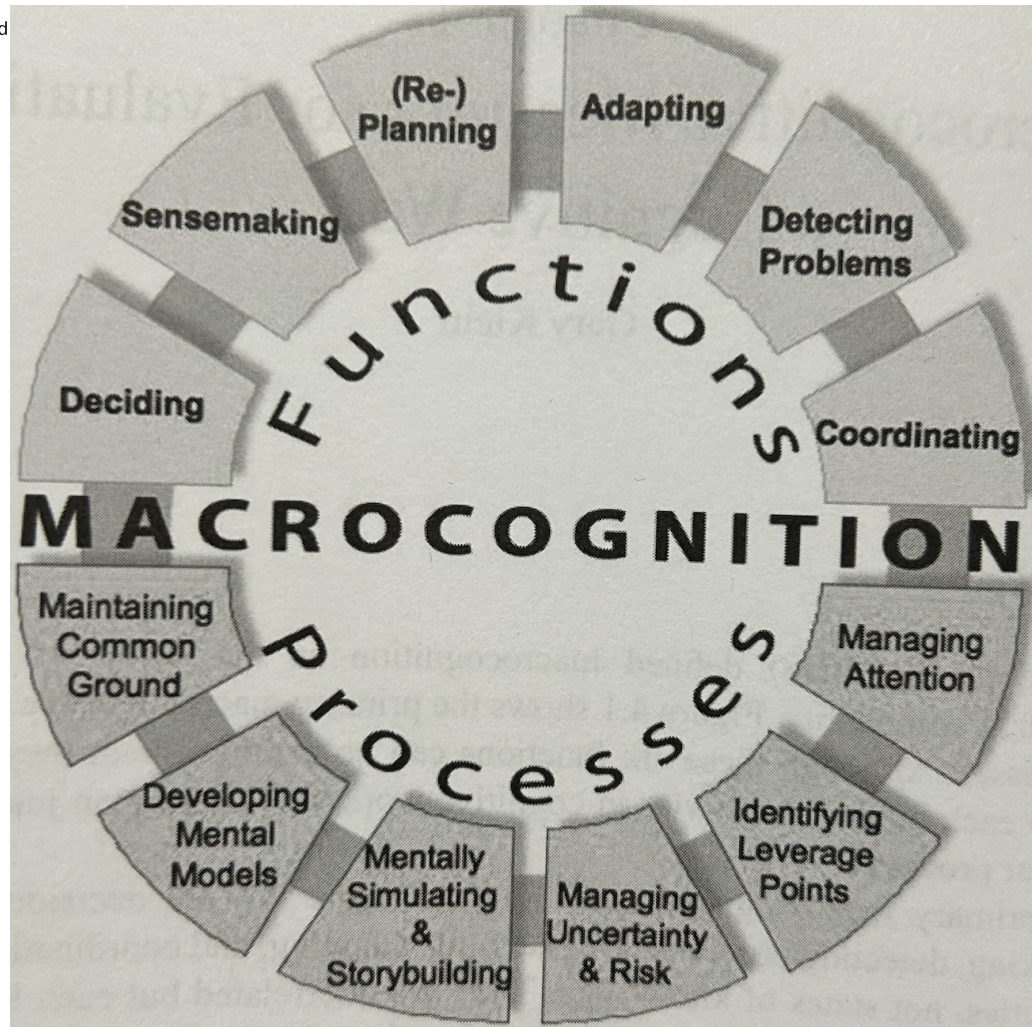
- What is important about the situation?
- What needs to be taken into account?
- What needs to be done?

(Klein, 1993)



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Macro-cognition

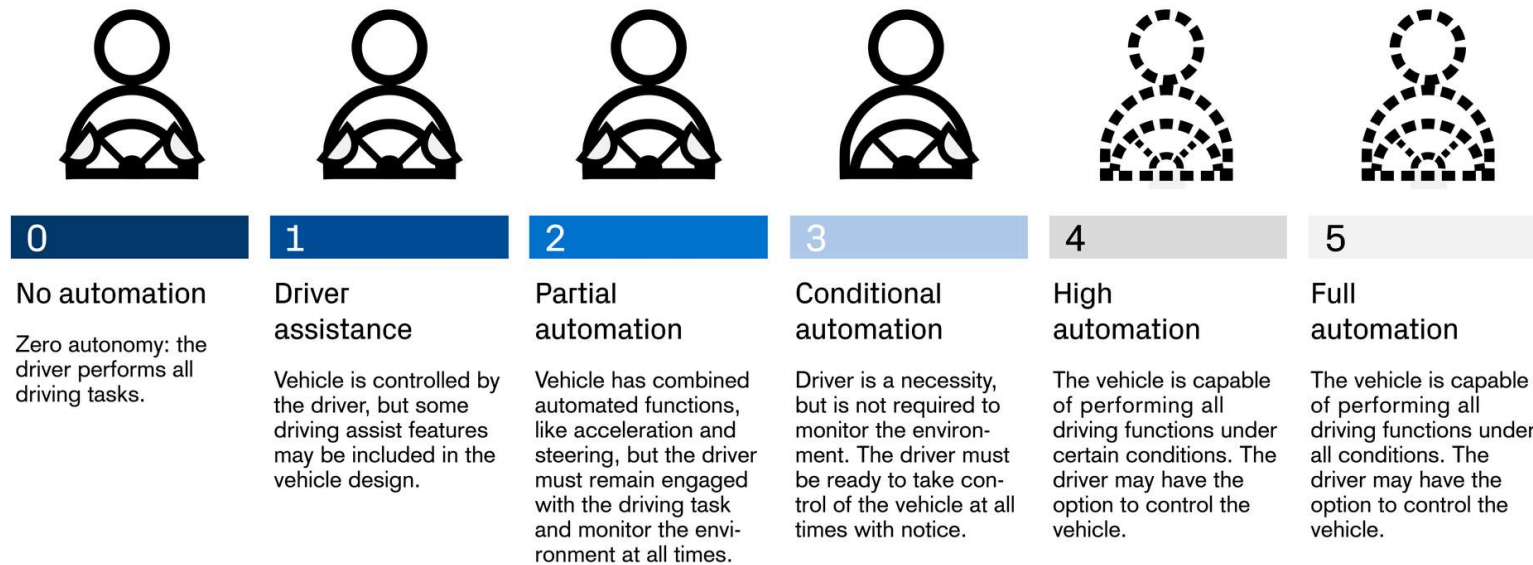


(Klein, 2010)

Outline

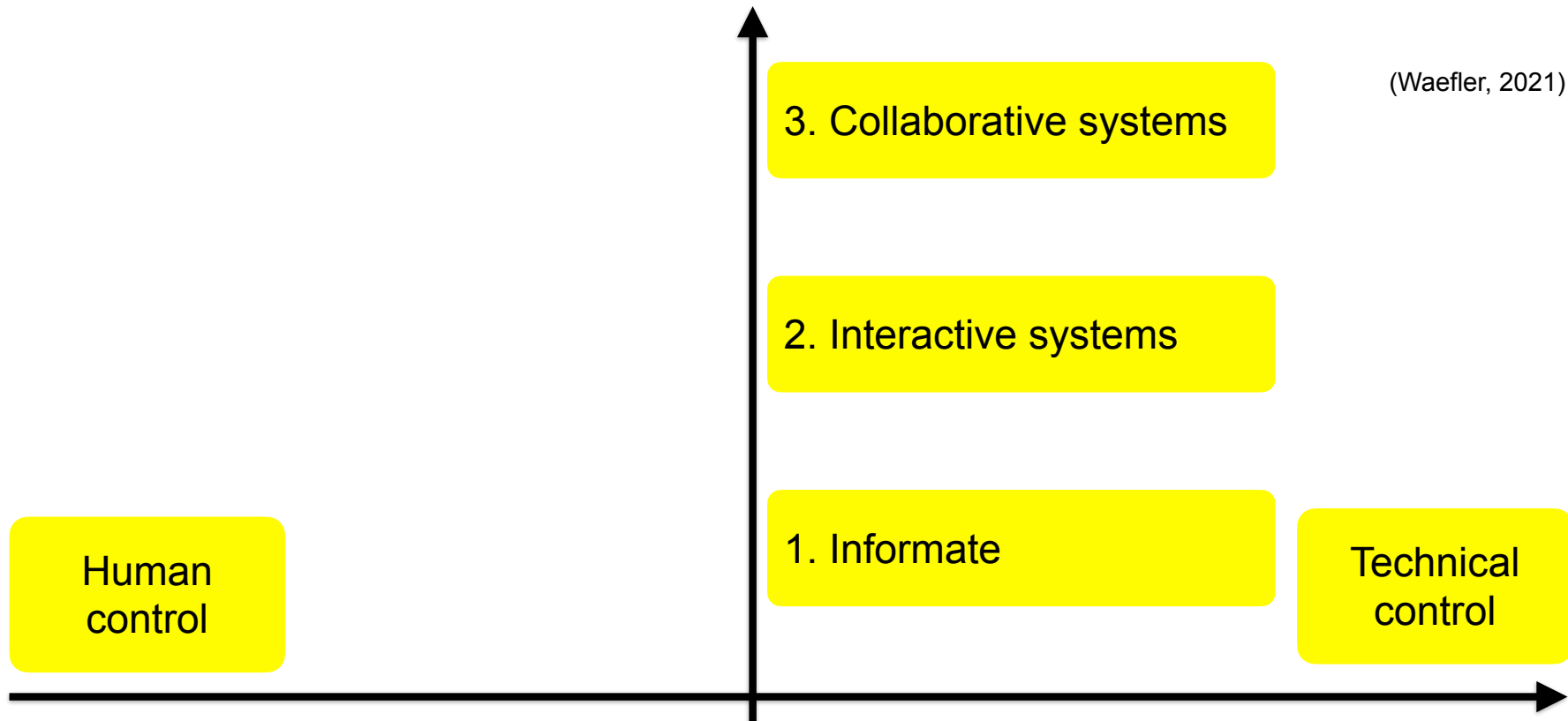
- Intelligence
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Classic View: Automation = Increasing Technical Autonomy

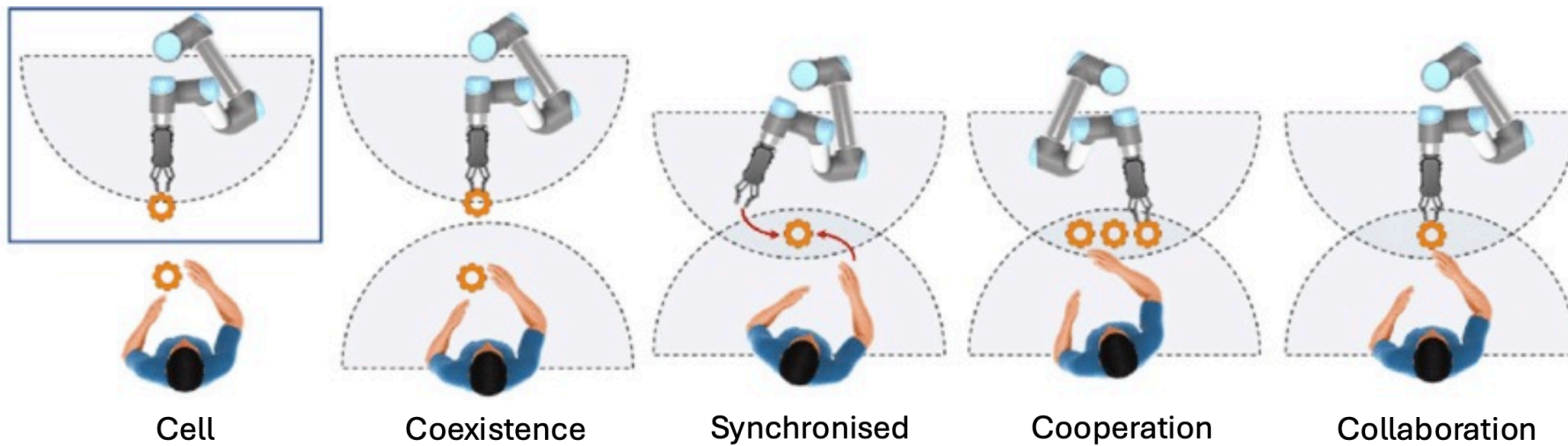


(credit-suisse.com)

Alternative View: Increasing Cooperation of Humans and Technology



Human-Cobot Teaming





AI4REALNET.EU



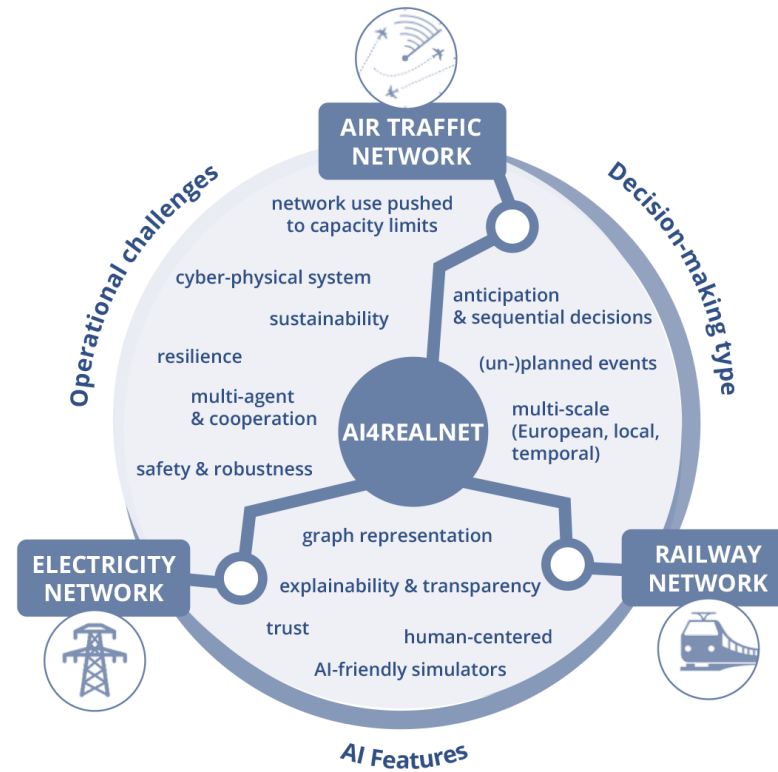
AI4REALNET has received funding from [European Union's Horizon Europe Research and Innovation programme](#) under the Grant Agreement No 101119527



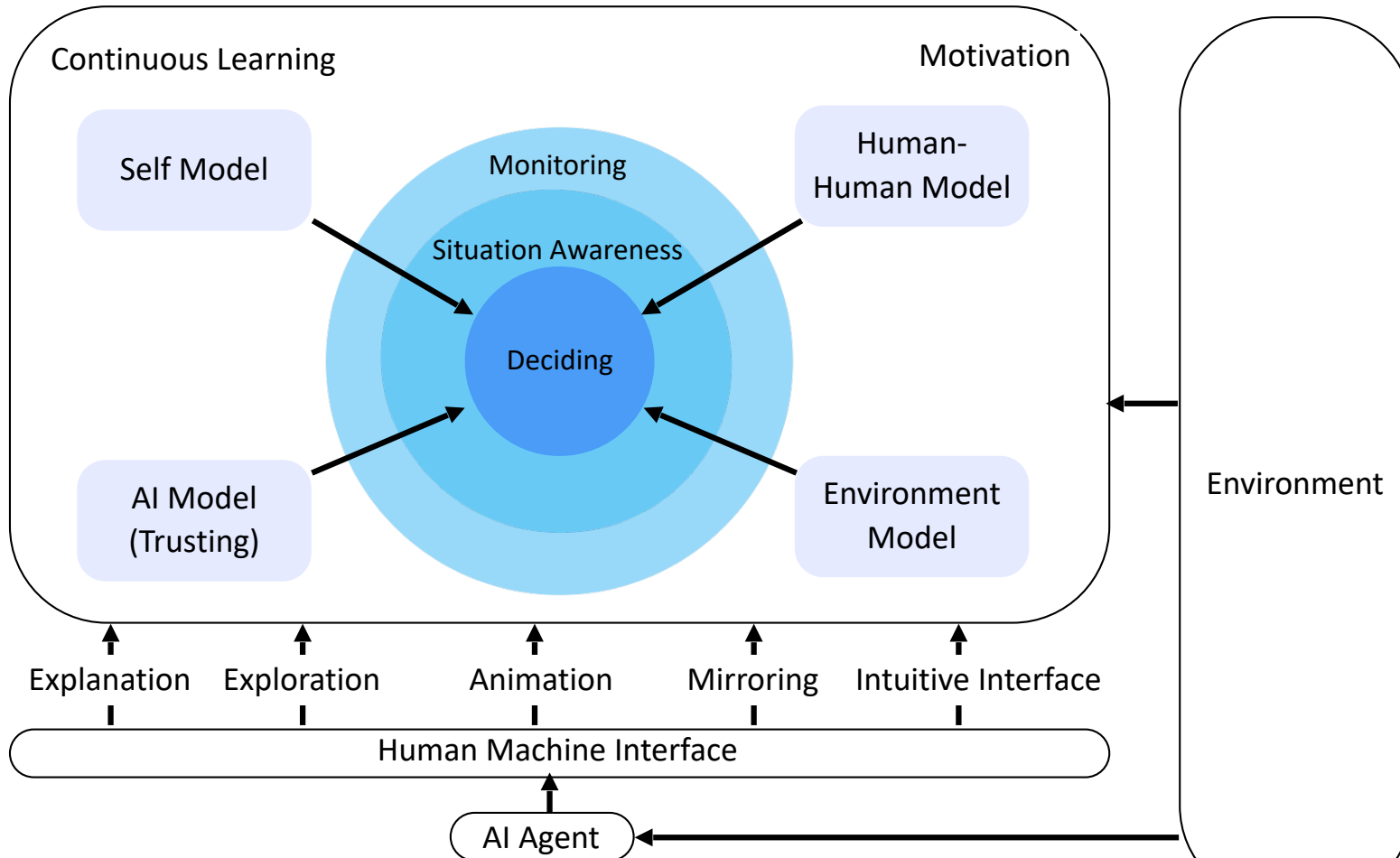
ai4realnet.eu



Focus on critical infrastructures



Human Agent



Summary

- Humans and artificial intelligence are very different
- Artificial intelligence can (partially) emulate human intelligence
- Based on their different strengths and weaknesses, humans and artificial intelligence can complement each other

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Thank you for your attention!

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