Horizon Europe

AI, Data & Robotics Partnership

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DIGITAL IN THE NEXT MFF: OVERVIEW

Digital Europe

1. High Performance Computing (HPC)
2. Artificial Intelligence (AI)
3. Cybersecurity
4. Advanced digital skills
5. Digital transformation and interoperability

Digital in Horizon Europe

1. Digital under "global challenges"
   - Digital and industry cluster
   - Digital in other clusters - health, mobility, energy, environment,..
2. EIC Pathfinder (FET Open) under Open Innovation
3. Research Infra under Open Science

CEF - Digital

Connectivity
- Synergies with Transport /Energy
- WIFI/BB 4EU
- 5G roll out

MEDIA under Creative Europe within Cohesionand Values

- Distribution of works
- Creation

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Pillar 1
Excellent Science

- European Research Council

- Marie Skłodowska-Curie Actions

- Research Infrastructures

Pillar 2
Global Challenges and European Industrial Competitiveness

Clusters
- Health
- Culture, Creativity and Inclusive Society
- Civil Security for Society
- Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

Joint Research Centre

Pillar 3
Innovative Europe

- European Innovation Council

- European innovation ecosystems

- European Institute of Innovation and Technology

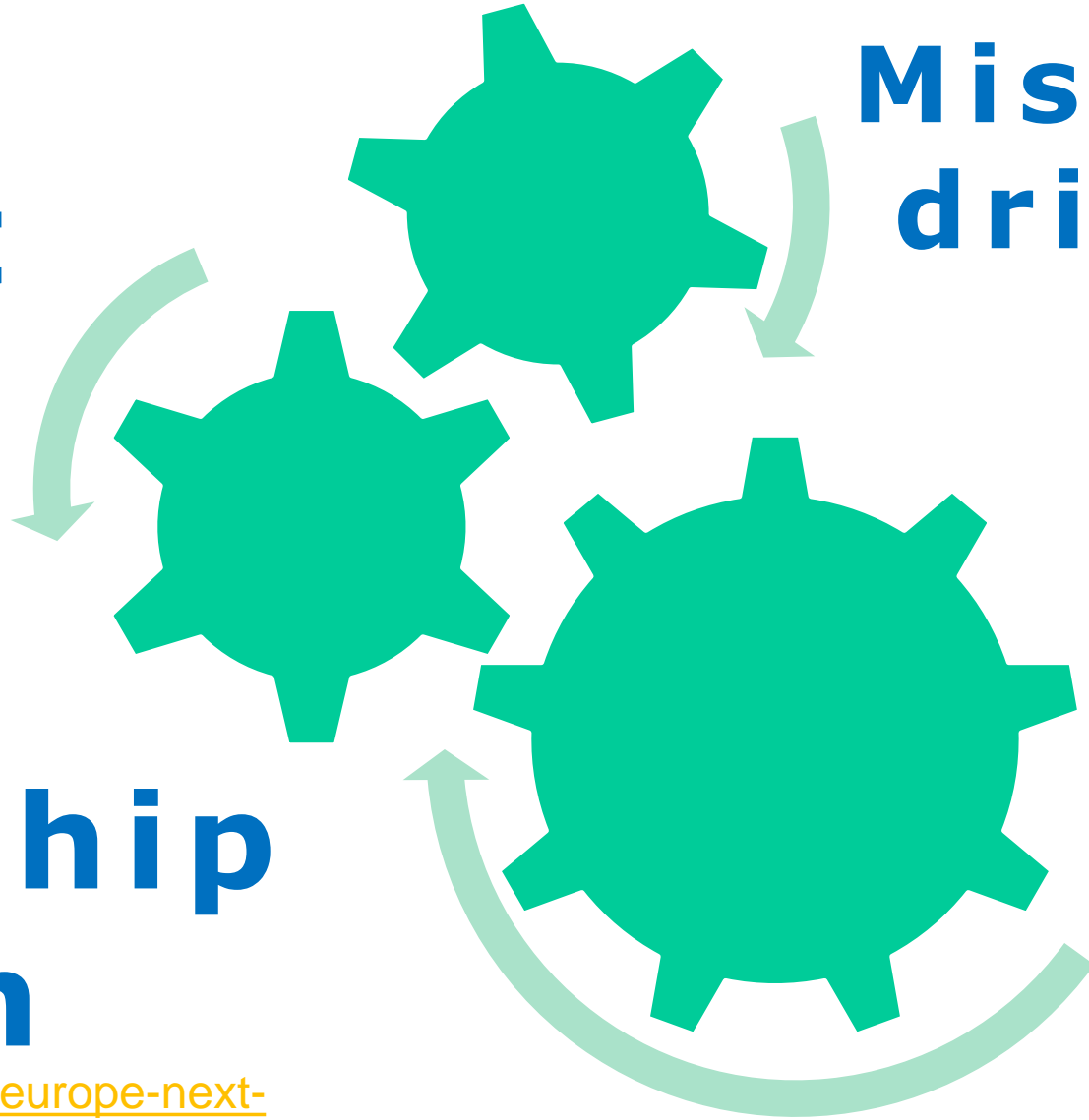## Widening Participation and Strengthening the European Research Area

- Widening participation and spreading excellence
- Reforming and Enhancing the European R&I system

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Mission driven

Impact driven

Partnership driven

https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/european-partnerships-horizon-europe_en

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Nemzeti Kutatási, Fejlesztési És Innovációs Hivatal

Cluster 4

Digital, Industry, Space

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Digital Centric Partnerships

- **Key Digital Technologies** (proposed as institutionalised) addressing the technological challenges and emerging opportunities for Europe on key digital technologies. This include microelectronics, embedded software and smart microsystems enlarged with elements of photonics, higher-layers of software and complex system integration

- **High Performance Computing** (proposed as institutionalised) to develop and deploy highly competitive and innovative HPC ecosystems in Europe. It will build on the experience gained in EuroHPC for achieving world-class exascal eand post-exascale (HPC) technologies in Europe, including their integration with Quantum computing

- **Smart Networks and Services** (proposed as institutionalised) to strengthen the position of the European industry in the global race on digital connectivity infrastructures including "5G and beyond" and later "6G" network systems and associated services

- **Artificial Intelligence, data and robotics** (proposed as co-programmed) with a strong socio-economic transformational potential with impact in sectors like health, manufacturing, ship-building, construction, service industries and farming, etc.

- **Photonics** (proposed as co-programmed) with a strong and growing impact on a broad variety of end user industries, developing next-generation photonics components and systems fostering synergies and coordination amongst research and industrial actors.

AI, data & robotics partnership

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Building an ecosystem of Excellence & Trust
White paper on AI

LINK TO POLICY

DIRECTION ALITY

Not limited Horizon Europe work programme inputs
An inclusive strategy to make Europe a leader in Research, Innovation and Deployment – for strategic autonomy, and to make Europe the place to be for scientists and investors

Long term commitment from all: - EC & Private Partner
Private partner = the *growing* community: academia, RTOS, and industry together + civil soc., NGOs, etc.

ADDITION ALITY

3 BUILDING BLOCKS

AI, Data and Robotics ➔ much bigger impact than the mere sum of the 3

Joining forces with Member States
To develop synergies and maximise impact

COORDI-NATED PLAN

WHOLE COMMUNITY

Developers & user industry + relevant additional stakeholders
(eg: standardisation bodies, civil society, unions, education,…)
To define and implement the strategy
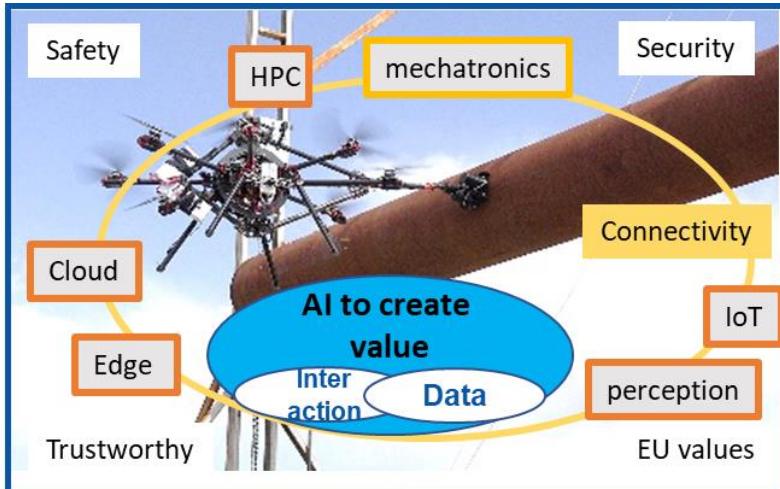
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The new partnership on AI, Data and Robotics in Europe

A joint initiative by

Holistic view needed!

Safety • HPC • mechatronics • Security • Connectivity • Cloud • AI to create value • Inter action • Data • IoT • Edge • perception • Trustworthy • EU values

Maintenance and Inspection
Huge demand in public and private: Energy, Transport, (process) industry, ...
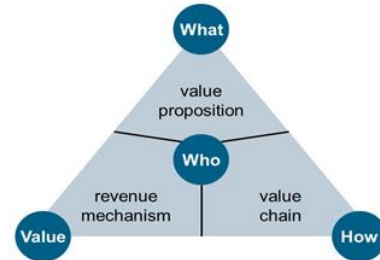
Value creation
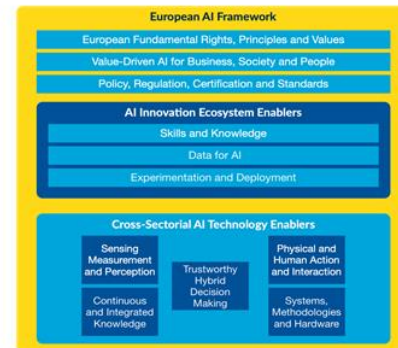*Use of (semi-)autonomous technology, partly in hazardous or remote locations*
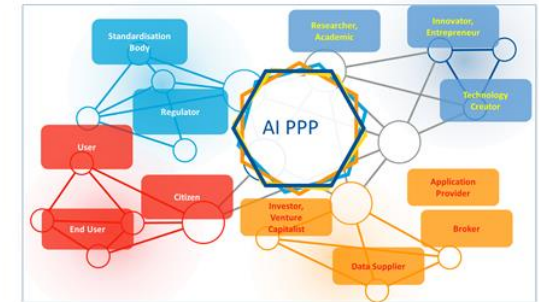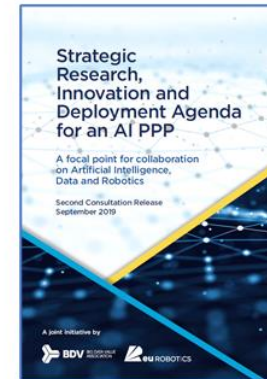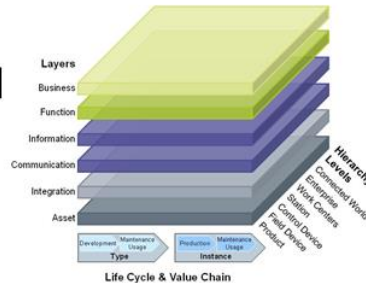
Impact
Safety, environmental, and economical

Business — What / value proposition / Who / revenue mechanism / value chain / Value / How

Usage — European AI Framework: European Fundamental Rights, Principles and Values / Value-Driven AI for Business, Society and People / Policy, Regulation, Certification and Standards / AI Innovation Ecosystem Enablers: Skills and Knowledge / Data for AI / Experimentation and Deployment / Cross-Sectorial AI Technology Enablers: Sensing Measurement and Perception / Physical and Human Action and Interaction / Trustworthy Hybrid Decision Making / Continuous and Integrated Knowledge / Systems, Methodologies and Hardware

Functional — Layers / Business / Function / Information / Communication / Integration / Asset / Hierarchy Levels / Life Cycle & Value Chain

Strategic Research, Innovation and Deployment Agenda for an AI PPP. A focal point for collaboration on Artificial Intelligence, Data and Robotics. Second Consultation Release September 2019. A joint initiative by BDV / euROBOTICS

AI PPP

Collaboration *with different stakeholders across Europe*

Openness *and* **inclusiveness** *to bring European knowledge together*

Joint strategy *leveraging European strengths and unique selling points to be developed*

Focused approach *to be fast with high impact*

European Partnership on Artificial Intelligence, Data and Robotics

The Vision of the Partnership is to boost European competitiveness, societal wellbeing and environmental aspects to lead the world in researching, developing and deploying value-driven trustworthy AI, Data and Robotics based on fundamental European rights, principles and values.

A joint initiative by:

BDV BIG DATA VALUE ASSOCIATION   CLAIRE   ellis   EurAi   eu ROBOTICS   European Commission

Guiding principles for successful partnership

"The Vision of the Partnership is to boost *European competitiveness, societal wellbeing and environmental aspects to lead the world in researching, developing and deploying value-driven trustworthy AI, Data and Robotics based on European fundamental rights, principles and values"*

- **Openness and inclusiveness** to bring European and cross-domain knowledge together to fulfill above mentioned vision
- **Openness to include new partners** (new businesses, new experts, new knowledge, new entrepreneurs etc.)
- Joint strategy leveraging **European strengths and unique selling points** to be developed BUT also with a strong focus on new emerging businesses (e.g. verticals, service businesses etc.)
- Leading principle must be to **produce valuable content in/for Europe** and to overcome particular interests. **Trust to each others.**
- **Well balanced** amount of members covering AI, Data and Robotics and well balanced between Research and Industry. Representativeness of the new innovation forces/communities (e.g Start-ups, high-tech companies, …)

Partnership General Objectives

Secure **European's sovereignty over AI, Data and Robotics** technologies and knowhow

Establish **European leadership in AI, Data and Robotics** technologies with high socio-economic impact

Reinforce a **strong and global competitive position of Europe** in AI, Data and Robotics

AI Deep-Dive

Decades of research in AI have produced technologies that are providing strong benefit to all verticals in industry, government, and society.

The Partnership will focus its work on AI in its broad sense including...

Trustworthy and human-centric design and operations of AI systems

Optimization and decision making

Search methods and **Evolutionary Computation**

Small data learning, continuous learning and transfer learning

Combination of **machine perception, learning and reasoning**

Machine Learning and deep learning encountering technological and organizational access to data

The PPP will consider all major areas including, but not limited to *Planning and Scheduling, Learning and Reasoning, Knowledge-based systems as well as applications to Vision, Speech Processing, Natural Language Processing and Decision Support Systems.*

Data Deep-Dive

Success in data-driven AI application relies on the access and processing of data in high quality and efficient manner by

- Privacy by design: Scaling Privacy-Preserving Technologies

- Overcoming barriers to data sharing which requires
  - frameworks for data governance for all parties to share their data assets within a trusted framework to create new data value chains
  - European Data Space as key enabler for data-driven AI by enabling the creating of data value chains using a mix of personal, non-personal, proprietary, closed and open research data.

- Establishing means for extracting insights meaningful from unstructured data, such as language, images, video, text, sound, etc.

- Deriving value by combining data insights & domain knowledge, i.e. by combining symbolic and non-symbolic approaches

- Scalable and reliable approaches for distributed data analytics (edge analytics)

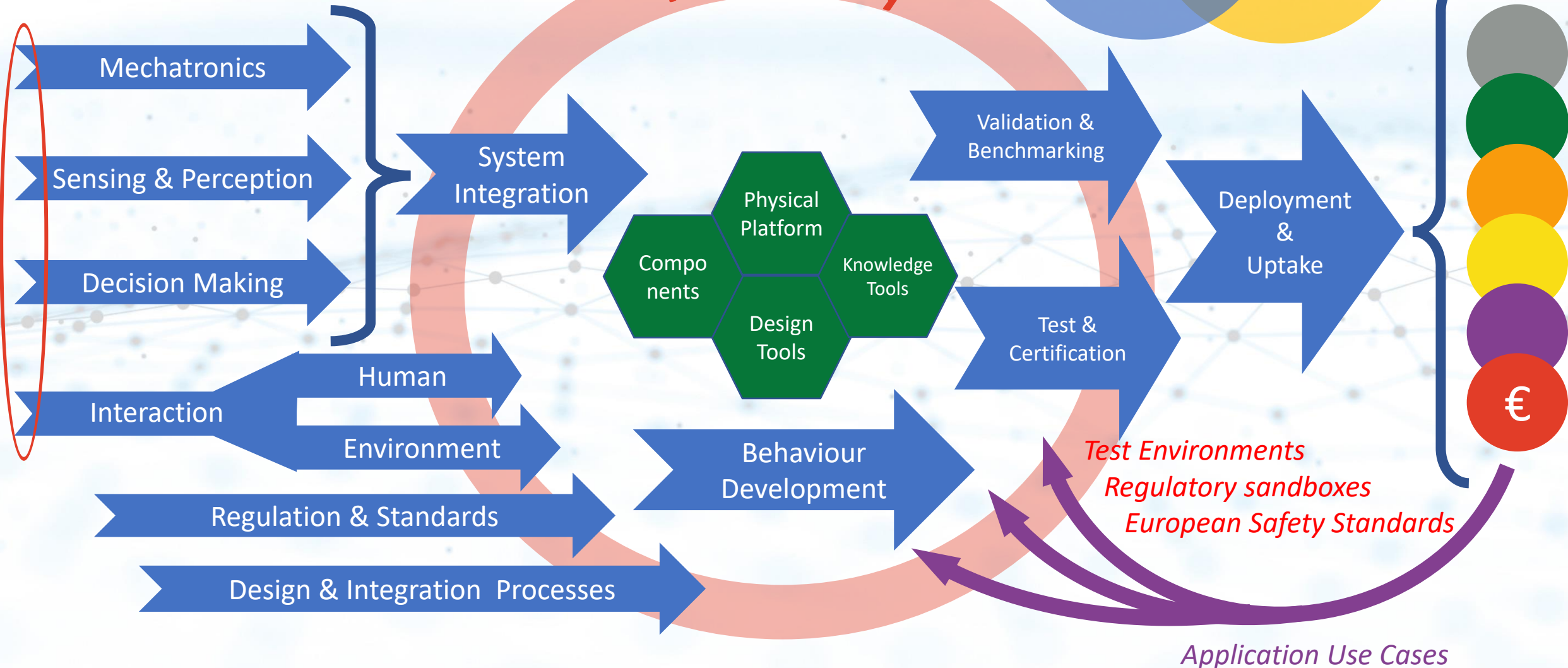- Supporting scaling and federation of Data and AI systems

Robotics Deep-Dive
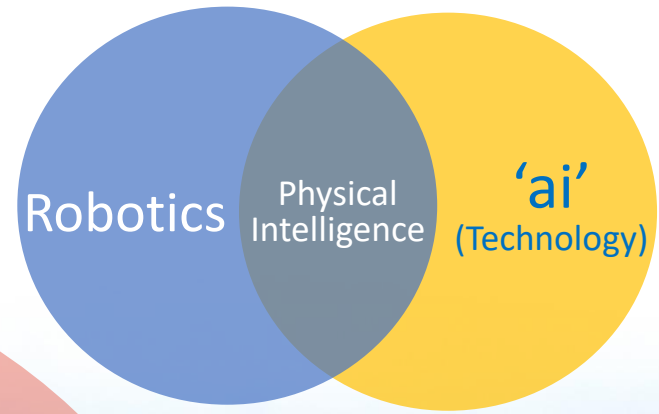
Looking for more information?
EU funding

Consult your National Contact Point

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IDEAL-IST

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