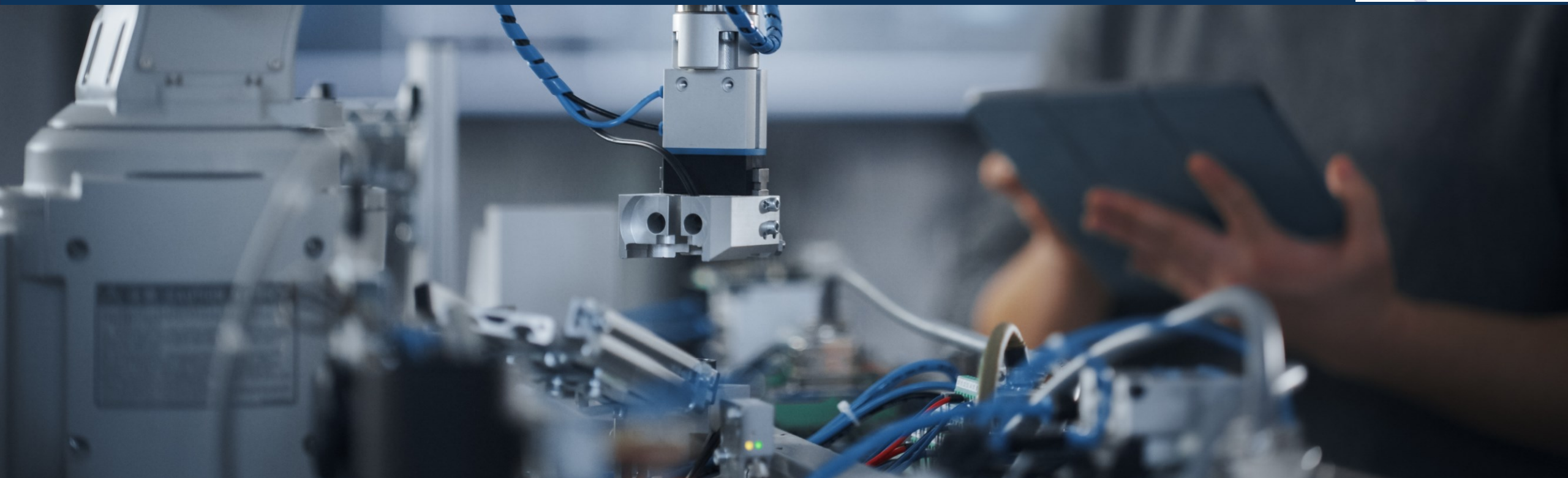


AI-MATTERS - The Manufacturing TEF

Valentina IVANOVA

CEA, List Institute





AI-MATTERS - The Manufacturing TEF

Project duration 60 months

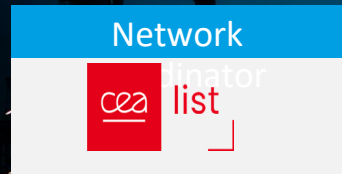
01/01/2023 – 31/12/2027

60 M€ funding; 30 M€ by the EC and 30 M€ by members states and in-kind

AI-Matters Network

7 Nodes

1 Satellite



- 4 Challenges
- 50+ Topic
- 140+ Services
- 8 locations
- 24 partners

- *AI-Matters is a network of seven nodes and one satellite* aiming at increasing the resilience and the flexibility of the European manufacturing sector through the deployment of the latest developments in AI and robotics, and intelligent, autonomous systems for flexible production.
- *Coordinated by CEA from the Paris-Saclay* innovation ecosystem, AI-Matters brings together a consortium of major R&I organizations from *eight European countries* (Germany, Italy, The Netherlands, Czech Republic, Greece, Spain and France) including 24 beneficiaries.
- All consortium members bring their expertise in *manufacturing for different sectors* such as automotive, space and mobility, textile, recycling, etc.
- AI-Matters offers its customers *an extensive service catalogue spanning the topics* above that evolves through continuous updates as needs and expectations of the European manufacturing industry progress.
- Framed under the DIGITAL Europe Programme, AI-Matters actively contributes to enhancing the *leadership of the European manufacturing industry*.

Challenges in manufacturing industry AI-Matters addresses



Human-Robot Interaction

Creating efficient, safe collaborations between workers and robots to increase productivity, reduce error rates and improved worker safety



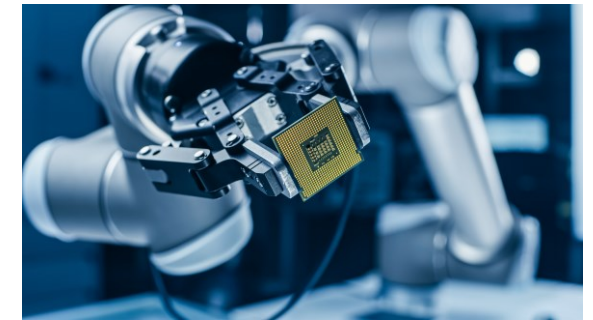
Factory level optimization

Leveraging advanced technologies and process improvements to streamline operations towards enhancing efficiency, minimizing waste, and boosting productivity



Circular economy

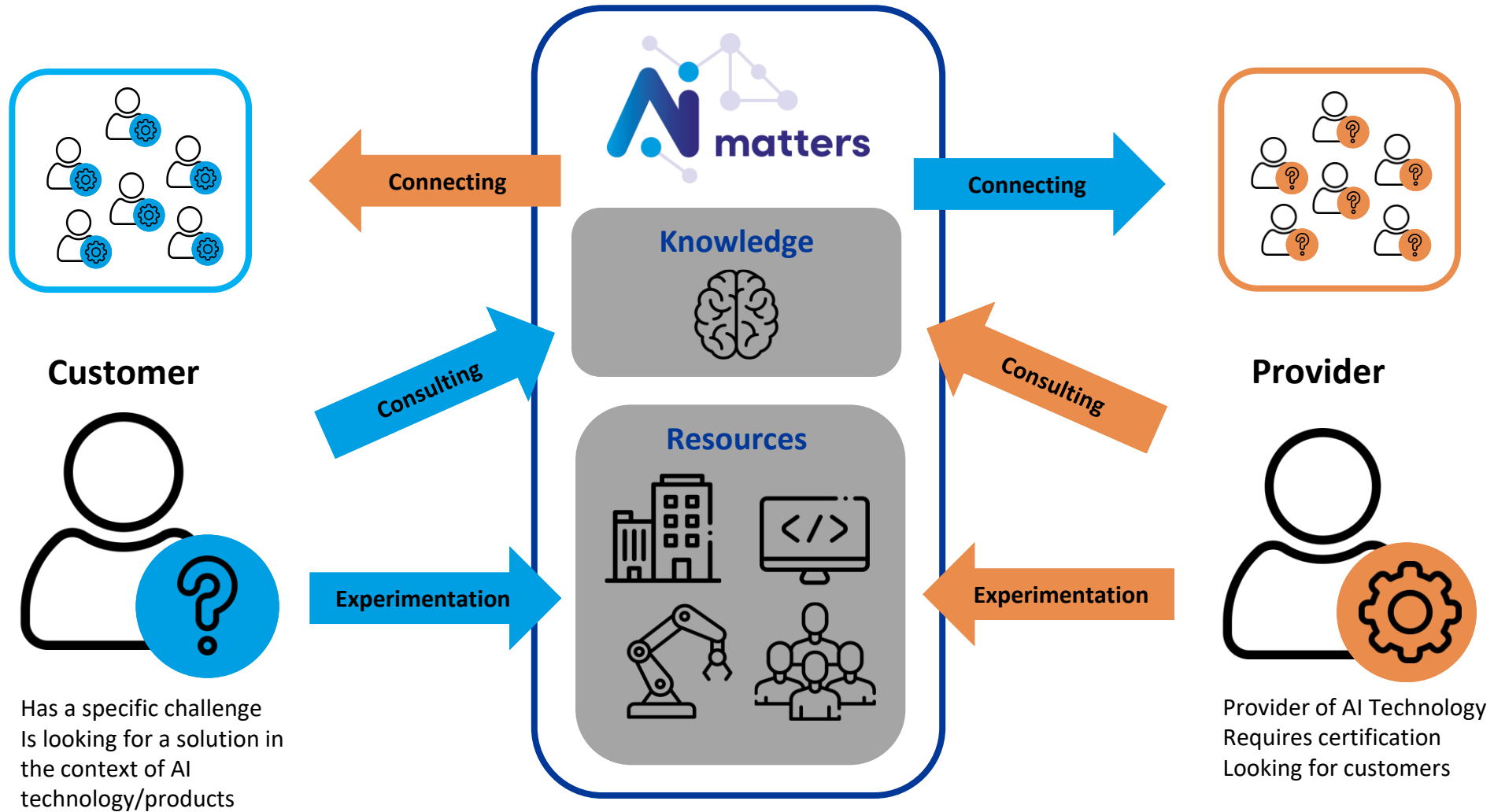
Minimizing waste and making the most of resources, designing products for longevity, reuse, and recyclability, developing sustainable production processes



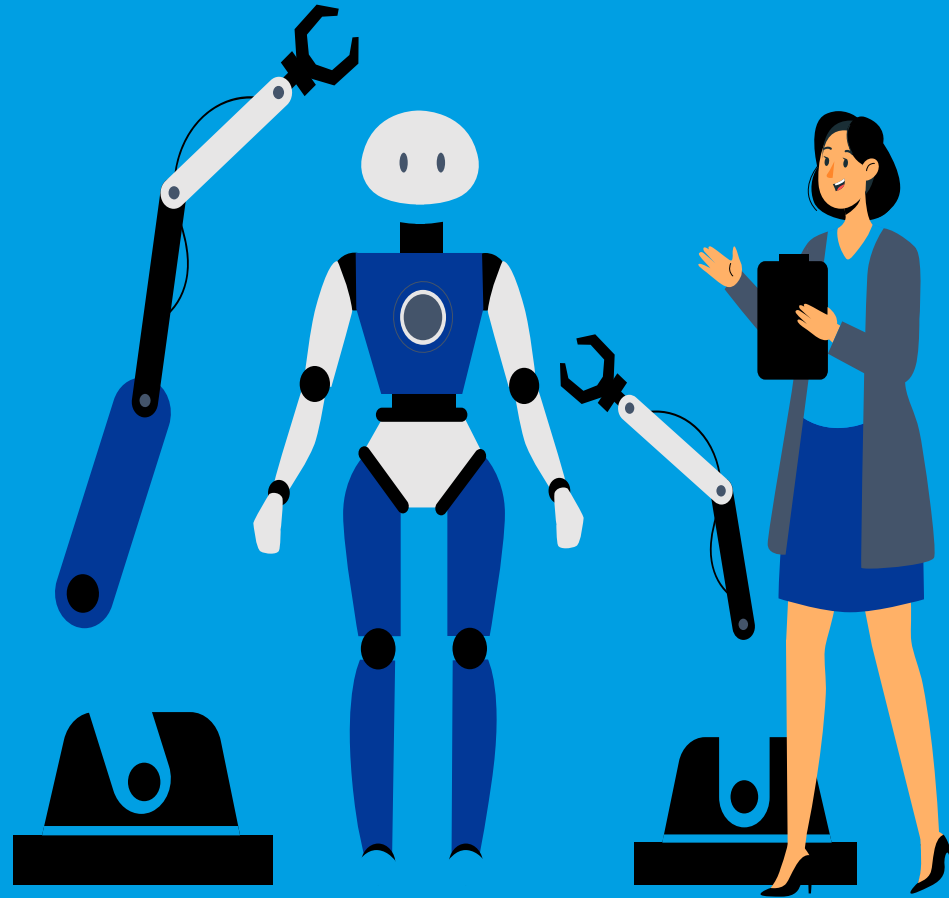
Other upcoming and enabling technologies

Integrating innovative tools and systems that support and enhance manufacturing processes and facilitate smarter production, supply chain efficiency and product innovation

The AI-Matters Offer



The AI-Matters Service Catalogue and Examples



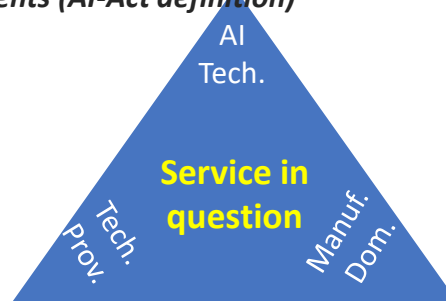
Building and consolidating the network's capabilities

<https://ai-matters.eu/>

- Consolidating service catalogue
 - ✓ Completing initial set of service offerings
 - ✓ A **refined service catalogue** with **new services** and more **market-oriented** content.
- Refining business model

Evaluation triangle for AI-Matters services

2. A **machine-based system** designed to **operate with varying levels of autonomy** and that may exhibit adaptiveness after deployment and that, for explicit or implicit objectives, infers, from the input it receives, how to **generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments** (AI-Act definition)



1. A **technology provider** is a company or organization (SME by EU def) that supplies technology-based products, services, or solutions to other businesses (manufacturing industry). (GTP generated definition)

3. The manufacturing sector **includes a vast range of activities and production techniques, from small-scale enterprises using traditional production techniques, such as the manufacture of musical instruments, to very large enterprises sitting atop a high and broad pyramid of parts and components suppliers collectively manufacturing complex products, such as aircraft.** (EU definition)

Service catalogue: <https://ai-matters.eu/>

The screenshot displays the 'ai matters' service catalogue website. At the top, there is a navigation menu with 'HOME', 'ABOUT US', 'CHALLENGES & TOPICS', 'SERVICES', 'NEWS & EVENTS', and a 'CONTACT' button. A search bar is located on the right side of the header.

The main content area features a large image of a robotic arm and a person. Below this, there are several service cards, each with a title, a description, and a 'Read more' button. The cards are:

- AI Audit:** Node: Germany; Category: Circular Economy, Factory-Level Optimization, Human-Robot Interaction, Other Emerging and Enabling Technologies; description: documentation + summary-report...
- AI-based control of electric machines:** Node: Germany; Category: Factory-Level Optimization; description: Feasibility report, measurement results...
- TraCIM:** Node: Germany; Category: Factory-Level Optimization; description: Developers of 3D coordinate data evaluation algorithms can document level of agreement of their data fits...

On the left side, there are filters for 'Country' (Czechia, Denmark, France, Germany, Greece, Italy, Netherlands) and 'Challenge' (Circular Economy, Factory-Level Optimization, Human-Robot Interaction, Other Emerging and Enabling Technologies). There are also buttons for 'FILTER' and 'CLEAR'.

Robotic Intra-logistics Testing



Testing the solutions in complex industrial environment in connection to many technologies in customer-defined scenarios

Human-robot interaction

Czech Node

The service offers experiments and tests with robots of different types in complex industrial environments equipped with precise optical localization systems. It also offers support for AI implementation and development of AI-based systems for perception and control in mobile robots including advanced human-machine interfaces.

Setting Up Test-Bed For Automatic Disassembly Task



A highly integrated and compact system combining a single arm and exchangeable tools with 3D vision sensors, is proposed for disassembling operations. Enhanced with intuitive programming and advanced perception capabilities, it ensures an easy deployment to different use cases.

Helps customers evaluate intelligent robotic systems for performing complex disassembly tasks

Circular Economy

French Node

Asset Tracking Experimentation



Tracking AGVs as they displace items from the warehouse to the workflow

Factory-Level Optimisation

Italian Node

- Support in asset tracking through the use of selected technologies (e.g., GPS, WIFI, BLE, UWB) based on the company's transportation and logistics requirements.
- The service includes an analysis/assessment phase and adoption of the selected technologies for a limited period in order to test and experiment the technical and functional requirement of technology adopted.

Dual cobot manipulation



Testing Grippers And Manipulation Strategies,
Before Investing Time In Automation

Human-robot interaction

Dutch Node

- Experiment whether one or two cobots can be used to automate a task in the production line. A single arm could be utilized for product singulation, e.g. in a bin- or heap picking task. The dual arm setup extends the ability towards tasks where humans normally need both their hands.
- Examples could be (dis)assembly tasks, packaging or introducing products to the production line.

Operating Of The AI-MATTERS Network

The AI-Matters launch event in Bilbao



Generative Artificial Intelligence for Manufacturing

tecNALIA **AFM** **AI matters**

AGENDA

Artificial Intelligence & Robotics for Manufacturing

BILBAO EXHIBITION CENTRE BEC (Barakaldo-Bizkaia) June 6th, 2024 Nivel 5 Sala 1

Time

TITLE OF THE SESSION

PRESENTER

11:00 Official Opening

11:15 Welcoming Words

11:25 About AI-MATTERS (The testing and experimentation Facility for manufacturing)

11:35 The AI-MATTERS Spanish Node and ecosystem

11:45 The key role of Artificial Intelligence: revolutionising Manufacturing Industry and robotics.

12:45 Inspiring cases for Manufacturing and robotics.

13:30 13:45 CLOSING of the event

13:45- LUNCH

15:00 Guided Tour in BIEMH

Matusz Baldyga - European Commission

Agustín Sáenz - TECNALIA

David Souta - CEA

Begoña Sánchez - TECNALIA

Carmen Alonso - TECNALIA (keynote and moderator)

Sandra Seijo - Ayesa

Fernando Sáenz - Sovvy

Manuel Gallardo - Oesia

Andrés Anzola - Lis Data

César Lorenzo Zúñiga - ORION

Tom Oñativia - TECNALIA

Santiago Grandal - AIMEN

Carlos Millán - ITR

Amaya Martínez - SPRI - Basque Government

Patricia Tarnés - AFM

Master of Ceremonies: Xabier Usarte - TECNALIA

Panel discussion

- Launch event held in the framework of the **BIEMH 32nd edition** (advanced manufacturing trade show) with a total of 37,614 visitors from 67 countries; 1,604 exhibiting firms from 29 countries.
- ✓ Attended by **80 participants** (project partners, companies, public organisations, research institutes, other stakeholders)
- ✓ We officially **launched TEF services**.
- ✓ The event permitted to understand **companies and service provider's needs & challenges** and to present some **inspirational use cases**.
- ✓ A **tour** was offered to all participants to learn, exchange and share with some exhibitors.
- **Bilbao full-scale operations launch event**, organised in combination with the AI-MATTERS Consortium meeting (4-7th June).

Limitations, Challenges and Outlook

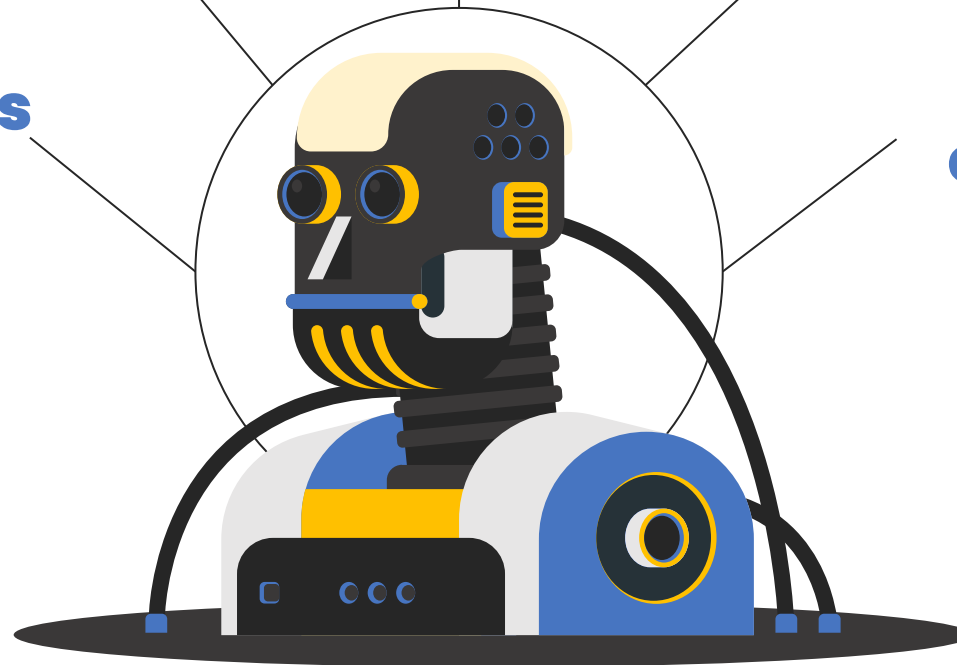
Service Evolution

Equipment update

**Business model
Sustainability**

**Dissemination
activities Events**

**Reaching
customers**





Thank you for your attention

valentina.ivanova@cea.fr



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