Artificial intelligence, Data and Robotics ecosystem

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Author(s):	Christophe Leroux (CEA), Iddo Bante (UT), Lorena Baric (CROAI), Elizabeth El Haddad (INRIA), Andrey Girenko (DFKI), Philip Piatkiewicz (ADRA), Marc Schoenauer (INRIA), Françoise Siepel (UT), Alexandre Vallette (CEA), Niccolo Zazzeri (Trust-IT)
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[2] **R**: Report, **DEC:** Websites, patent filling, videos; **DEM:** Demonstrator, pilot, prototype; **OTHER:** Software Tools

[3] **PU:** Public**; CO:** Confidential, only for members of the consortium (including the Commission Services)

Document summary

The **European Convergence Summit (ECS) 2025**, organized by the ADRA association, focused on defining a plan on **how research and innovation in AI, Big Data, and Robotics (ADR) contribute to enhance Europe's resilience** in three key sectors: **civil security, industrial production, defence, and healthcare.** This 2025 edition of the Summit identified challenges, opportunities, and issued strategic recommendations.

In **civil security**, the ECS emphasized the need for cross-border cooperation and advanced technologies to combat terrorism, cybercrime, and natural disasters. Protecting democratic values and addressing misinformation were highlighted as critical to maintaining societal resilience. Recommendations included improving interoperability, accelerating technology adoption, and adapting regulatory frameworks to foster innovation.

For **industrial production**, the summit addressed supply chain disruptions, global competition, and dependency on critical materials. Investment in innovation, digitalisation, and sustainability was recommended, along with promoting a joint European Industrial Policy to enhance competitiveness and resilience. Part of the discussion was concerned with the synergies between various relevant European policies and corresponding initiatives. Addressing skills shortages, rising energy costs, and market volatility was also emphasized.

In **defence**, the ECS discussed the need for enhanced cooperation, modernisation, and investment in technologies like AI and cybersecurity to address geopolitical instability and security threats. Ensuring strategic autonomy and addressing capability gaps were identified as critical. The summit also highlighted the importance of advanced manufacturing technologies in the defence context.

For **healthcare**, the summit focused on innovative solutions like AI and robotics to address ageing populations, workforce shortages, rising costs, and inequitable access to quality care. Recommendations included improving predictive diagnostics, personalised care, and investing in public health forecasting and pandemic management.

The Summit stressed the importance of AI, data, and robotics for competitiveness, resilience, and sustainability. Recommendations included mandating high-quality, interoperable data infrastructure, promoting human-centric approaches, and ensuring trustworthiness and transparency in ADR technologies. The ECS called for a comprehensive ADR vision, cross-sector collaboration, and ethical standards.

Supporting start-ups, SMEs, and innovative pilots/use cases integrating AI into dual-use technologies was recommended. The Summit also advocated for implementing risk-based regulatory frameworks and developing interoperable ecosystems rooted in shared European values.

The ECS 2025 outcomes aim at guiding policy-making and strengthening Europe's competitiveness and resilience. The summit revolved around several interconnected themes, highlighting Europe's ambitions and challenges in the technological landscape.

ECS 2025 Key takeaway messages

☑ **"Why" European Research and Innovation in AI:**

A fundamental question addressed was the purpose and motivation behind Europe's investment in research and innovation in AI. The speakers emphasised the importance of establishing both the necessary "**infrastructure in place**" and ensuring the availability of "**data fit to destinations.**" This suggests a focus not only on technical foundations but also on data sovereignty and control within Europe.

☑ **Focus on Practical Application and Competitive Advantage:**

The summit aimed to move beyond theoretical discussions and explore the practical application of technological solutions. A key question posed was "**which of those solutions are available and do they really bring competitive advantages to the companies.**" This highlights a desire to translate research into tangible benefits for European businesses and industries.

☑ **Future-Oriented Strategy and Moving Beyond Catch-Up**:

A strong emphasis was placed on the need for Europe to be proactive and forward-looking in its technological development. The speaker states, "**we need to be more focused on the future rather than trying to catch up with our competitors.**" This reflects an ambition to lead in certain technological domains rather than simply follow trends set elsewhere.

☑ **Convergence of Advanced Technologies for Defence**:

The application of advanced manufacturing technology within the defence context was specifically mentioned. This indicates a focus on leveraging technological advancements, including those in AI and data, to enhance European defence capabilities.

☑ **The Criticality of High-Quality Data**:

The importance of data quality was explicitly linked to the quality of AI systems. The statement "it's going to be data of high quality it means that AI will be also of quite high quality" underscores the fundamental role of robust and reliable data in achieving effective and trustworthy AI.

☑ **Building Resilient Systems with Technology**:

A significant theme was the use of AI, data, and robotics to construct resilient systems across various sectors. The specific mention of "**healthcare systems across Europe**" provides a concrete example of the application of these technologies to enhance resilience in critical areas.

☑ **Navigating Global Turbulence**:

The current global environment, described as "**all these turbulences going on around us**," was acknowledged as a factor creating confusion and uncertainty about the best path forward. This highlights the external pressures and complexities that influence Europe's technological strategy.

☑ **Pathways to Harnessing Research: Dialogue, Collaboration, and Interoperability**:

The concluding statement of the summit offers a clear direction for leveraging research in AI, robotics, and data. The conclusion is that to achieve this, Europe should invest in:

- "**A sustained dialogue**": Emphasizing the need for ongoing communication and exchange of ideas.
- "**In a cross- sectoral collaboration**": Highlighting the importance of collaboration between different industries and domains.
- "**In an interoperable ecosystem**": Stressing the necessity of systems and technologies that can work together seamlessly.
- These efforts are explicitly stated as being "**all rooted in shared values in Europe.**" This underscores the intention to develop and deploy technology in a consistent manner with European ethical and societal principles.

The European Convergence Summit - 2025 Edition provided a platform for discussing Europe's strategic direction in AI, data, and robotics. **The key takeaways point towards a future-oriented approach focused on practical applications, competitive advantages, and building resilient systems across various sectors.** The emphasis on high-quality data, cross-sectoral collaboration, and an interoperable ecosystem, all grounded in shared European values, outlines a clear pathway for harnessing the potential of these technologies for the benefit of Europe. The acknowledgment of global turbulence highlights the challenging context within which these ambitions are being pursued.

The document starts with information about the concept, the methodology and the organization of ECS. We then recall the concept of resilience. Afterwards we present the preparatory workshops and the ECS 2025 itself with the outcomes, the recommendations, the dissemination and communication organized after the ECS and the lessons learnt with perspective for the next ECS. Final part highlights the key takeaway messages.

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1 Introduction

Figure 1: European Convergence Summit 2025

Led by UvA, WP4 "**Boosting the Adoption of AI Technology**", aims to encourage and support AI technology adoption across the value chain, from research to procurement.

Task 4.1, led by CEA, focuses on the "**European Convergence Summits (ECS)**". These events aim at organizing a stakeholder dialogue and consensus-building across AI, Data, and Robotics (ADR) communities with respect to socioeconomic challenges of interest for Europe. Task 4.1 involves organizing annual workshops and summits to engage stakeholders, co-construct proposals for ADR industrial strategies, and bridge the three communities at strategic and operational levels. It also supports the creation of key takeaway messages through exhibitions and foresight panels, ensuring diverse audience engagement and influencing decision-makers.

The current document D4.2 describes how the European Convergence Summit as a key event on **AI, Big Data and Robotics and resilience of European economy** was organized and how it went on April 9th, 2025 in Brussels**.**

Section 2 gives some general information about the concept, the methodology and the organization of ECS. The next section 3 recalls the concept of resilience. Chapter 4 presents the workshops organized to prepare the ECS 2025. This chapter is followed by a presentation -section 5- of the ECS 2025 and the outcomes of the different sessions. Section 6 presents the outcomes, the recommendations, the dissemination and communication organized after the ECS, the lessons learnt and the perspective for the ECS after the end of the ADRA-e project. Final chapter 7 gives the key takeaway message from this event. The appendices in part 8 give some details about the organization, and speakers.

2 European Convergence Summit

2.1 Concept

The ECS is an event organized by the ADRA association which represents the private part of the co-programmed partnership on AI, robotics, and Big Data.

The ECS is an event supporting the definition of a policy for research and innovation in AI, Big Data and Robotics (ADR) in Europe: Why conduct research on these topics in Europe? In which direction should we go? What are the challenges of interest for Europe, where do ADR technologies can have a role to address these challenges? What is the competition? What are the prospects for employment, value creation, products, and services? What is acceptable to the European population? The ECS gives a socio-economic frame to the strategic research an innovation agenda and the road mapping effort undertaken in the ADRA partnership.

To answer these questions, the approach proposed by the ECS involves **analysing the intersection of research and innovation in AI, robotics, and Big Data with a socio-economic question relevant to the European Union** and associated countries. This analysis is conducted by considering the viewpoints of experts from various disciplines, industry representatives, researchers, specialists in ethical, legal, and regulatory issues, as well as representatives of civil society or end users.

Last year, the ECS focused on the role of ADR technologies in reducing CO2 emissions (see Summit report from 2024[4]) and reaching the objectives of 2050 of the EU[5]. This year, the ECS focuses on **AI, robotics, and Big Data and the resilience of the European economy**, a subject for which interest has significantly increased in recent years with the SARS-COV2 pandemic, followed by the war in Ukraine, and more recently with the election of the new U.S. President. Adding to this are various reports by Mario Draghi[6], by the Commission Expert Group on the Interim Evaluation of Horizon Europe[7], and others warning about the lack of competitiveness in the European economy. Focusing on competitiveness also means focusing on the economy's resilience in crisis situations. It is essential to anticipate these crises, question energy dependencies and supply chains, and project the potential consequences of disasters or health crises.

The outcome of the ECS represents a consensus between experts from different horizon, on a way to go for research and innovation in Ai, Big Data and Robotics in Europe. The outcome of the ECS 2025 is presented in this report.

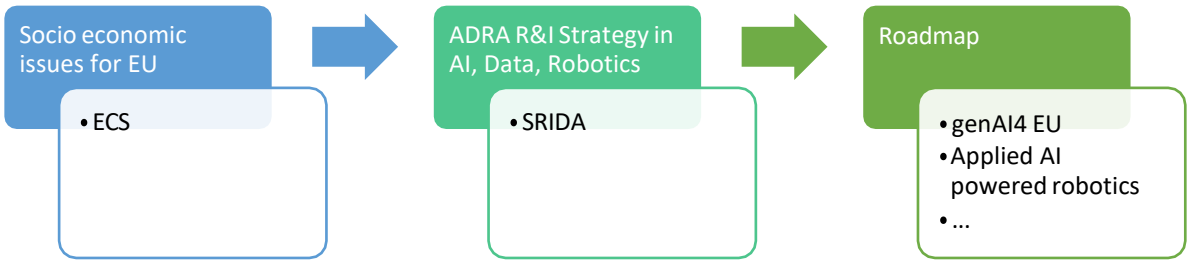


Figure 2: Nesting efforts to support EU ambition in ADR technologies

[4] D4.1 Summit report 1
[5] Going climate neutral by 2050, A strategic long-term vision for a prosperous, modern, competitive and climate-neutral EU economy, 2019
[6] The future of European competitiveness, September 2024,
[7] Align Act Accelerate. Research, Technology and Innovation to boost European Competitiveness, 2024,

2.2 Methodology

The ECS brings together experts interested in the direction of European public policy on research and innovation on ADR technologies. It is held during one day in Brussels.

To prepare for this ECS, several workshops are organized beforehand with a set of experts from different horizon. The aim of these workshops is to identify the threats, strengths and weaknesses of Europe with regard to the socio-economic issue addressed in the ECS as well as the opportunities for research and innovation in AI, robotics and Big Data. The results of these workshops constitute a preamble and provide a framework for the ECS.

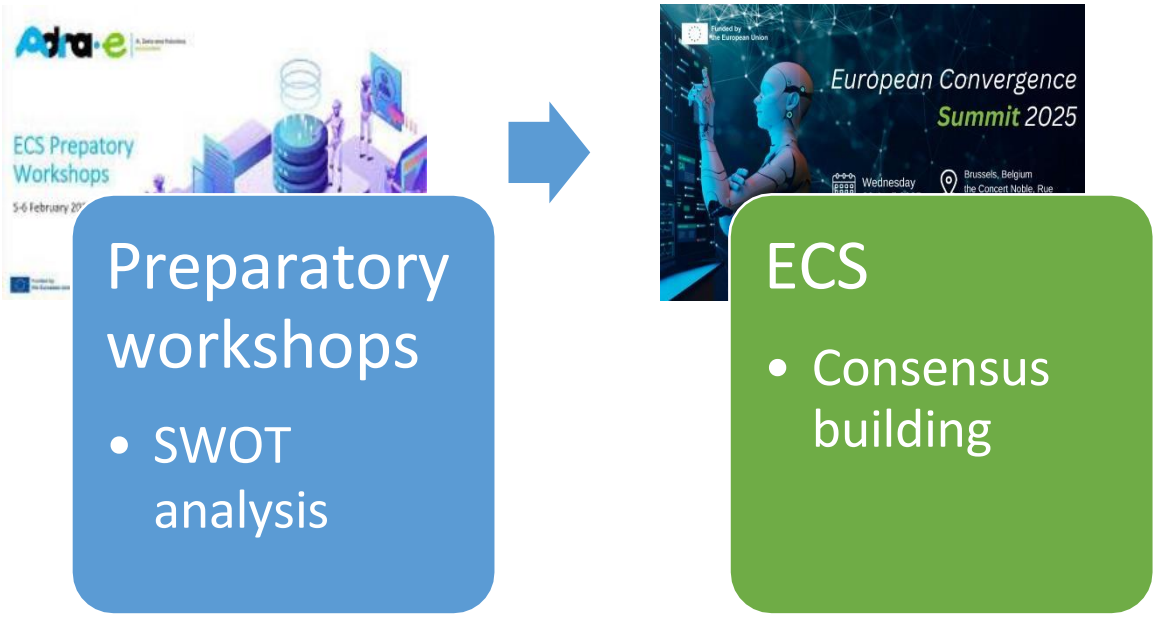


Figure 3: ECS methodology

Readers will find more information about the European Convergence Summit in the deliverable **D4.1 Summit report 1.** This document describes the ECS organized in 2024 on the way AI, Big Data and Robotics can help in reaching the 2050 Net Zero objectives of the EU on CO_2 emissions. This report also gives additional information about the strategy of influence and communication strategy underlying the concept of the ECS and on the mapping elaborated in 2022.

2.3 The committees

Three committees took care during weekly meetings of the organization of the workshops and of the ECS 2025.

- The **program committee** in charge of the agenda, of the recruitment of experts.
- The **organization committee** in charge of the venue, the logistics and organization of the workshops and event
- The **communication committee** in charge of the communication and dissemination actions,

The composition of the committees is provided in the annex.

3 Resilience

3.1 Terminology

Resilience[8] is defined by the EU as « *the ability to face shocks and persistent structural changes in such a way that societal well-being is preserved, without compromising the heritage for future generations*. » The **European Commission considers resilience as a new compass for the EU policy-making**.

9

10

[8] European Commission: Directorate-General for Migration and Home Affairs, ***Building resilience in the civil security domain based on research and technology*** – *Report of the CERIS Expert Group, November 2024*, Publications Office of the European Union, 2024, **https://data.europa.eu/doi/10.2837/06076**

[9] Credit: Karim Manura

[10] Credit: ManageX

SOURCE: BAE Systems, 2020

 [11]

Figure 4: Resilience

Resilience refers to the ability to recover from or adjust easily to misfortune or change. In various contexts, it signifies the capacity to absorb, adapt, and rapidly recover from disruptions or stress while maintaining essential functions and structure. It can relate to:

[11] Credit: Deloite

- **Ecological Resilience**: a forest ecosystem that recovers after a wildfire. The ecosystem's resilience is demonstrated by the regrowth of vegetation, the return of wildlife, and the restoration of ecological functions over time.
- **Psychological Resilience**: an individual who experiences a significant life challenge, such as the loss of a job or a personal tragedy, but manages to cope effectively, maintain a positive outlook, and eventually bounce back to a state of well-being.
- **Organizational Resilience**: a business that quickly adapts to market changes or economic downturns by diversifying its product offerings, implementing cost-saving measures, and maintaining strong customer relationships, thereby ensuring its survival and growth.
- **Infrastructure Resilience**: a city's power grid designed to withstand natural disasters like hurricanes or earthquakes. Resilient infrastructure includes redundant systems, backup power sources, and robust construction standards to minimize disruptions and ensure quick recovery.
- **Technological Resilience**: a cybersecurity system that can detect, respond to, and recover from cyber-attacks. Resilient technologies incorporate features like automated threat detection, data backup, and failover mechanisms to maintain functionality and protect sensitive information.
- **Community Resilience**: a neighborhood that comes together to support each other during a natural disaster, such as a flood or earthquake. Community resilience is demonstrated through collective efforts in emergency response, resource sharing, and rebuilding initiatives.
- **Economic Resilience**: a country's economy that can withstand global financial crises by diversifying its industries, promoting innovation, and implementing effective fiscal policies to stabilize and grow the economy.

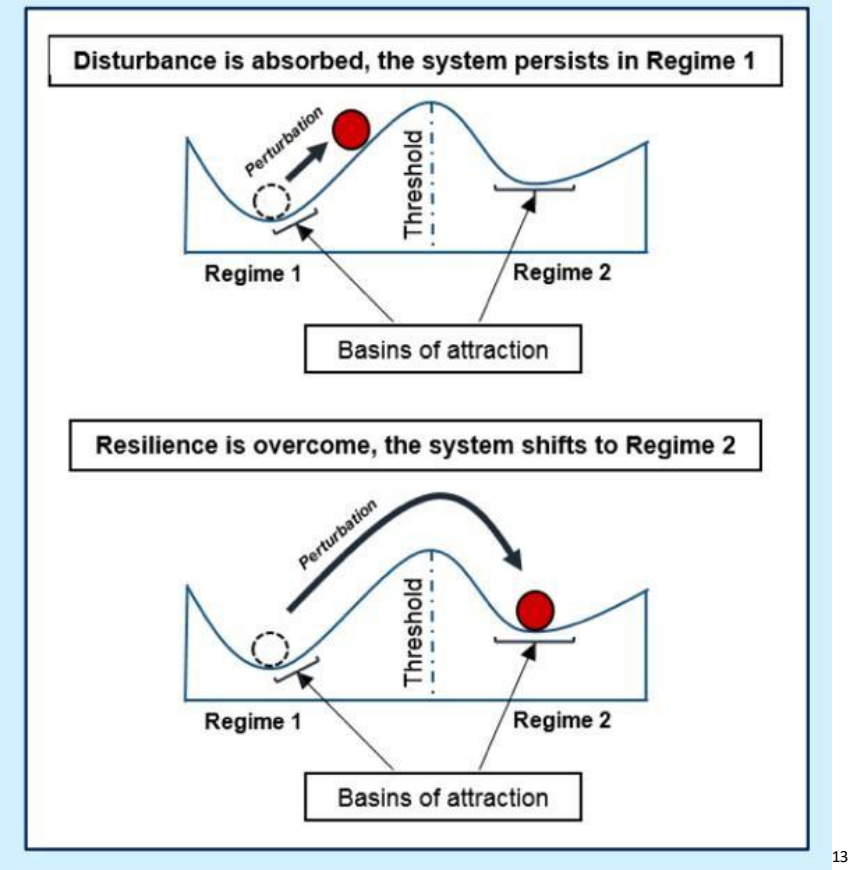
Recent events demonstrate that resilience is a key issue, given the various crisis of recent years: Covid-19 and the supply chain disruptions that followed, China's increasing military strength and the possible withdrawal of the US from Europe's security architecture, the hybrid threats from players such as Russia and China, amplified since the start of Russia's large-scale invasion of Ukraine, and, perhaps most importantly, all the consequences of global warming, often seen as a 'threat multiplier'. Whether it be the floods in Western Europe in 2021 and 2024, the earthquakes in Turkey and Syria, or the wildfires in California, the consequences of global warming are already upon us, and will only intensify in the coming years.

More than ever, we need to consider the value of a strategic independence and sovereignty in various domains, including defence. The Common Security and Defence Policy enables the Union to take a leading role in peacekeeping operations, conflict prevention and in the strengthening of the international security.

Member states are increasing their defence expenditures; it is now blatantly obvious that, both for our economic and strategic autonomy, European countries need to envision a European defence, made by and for Europeans.

In addition, as stated by the report by Sauli Niinistö « *Safer Together. Strengthening Europe's civilians and military readiness* »[12], there is an urgent need to enhance Europe's resilience in Civil Security.

[12] Saul Niinistö « Safer together, *Strengthening Europe's civilians and military readiness*», March 2024



[13]

Figure 5: absorbing vs overcoming perturbation

3.2 Focus of the ECS 2025

As the examples and testimonies above show, resilience issues concern a very wide range of activities and concerns relevant to European society and economy. For this Convergence Summit we have chosen to segment our study and focus on a few sectors of the European economy. We opted for the segmentation as stated below on

- Civil security,
- Industrial production
- Defence
- Health

We therefore excluded from our analysis questions concerning agriculture and the consequences of global warming as well as questions relating to ecological transition for example.

To clarify our segmentation and the terminology used in the following some elements on the terms used, we provide in the introduction of each workshop below a brief recap about the topic covered.

[13] Ecological Resilience, January 2019, Allison K. Ludwig Conor D Barnes Conor D Barnes Dillon Fogarty Dillon Fogarty Dirac Twidwell

4 The preparatory workshops

4.1 Objectives and Principle

The focus of our workshops is to investigate the possibilities AI, data and robotics technologies are enabling us to respond to challenges related to resilience of European economy. Each workshop focuses on a specific field. The analysis conducted grounds on the experience of experts in the field selected in the workshop. Workshops are opportunities to collect suggestions to help Europe become more resilient in the field covered from personal experiences.

The expected results are pragmatic ideas, aligned with sectoral needs and European policies.

Four workshops were organized to segment our analysis about ADR and resilience of the European economy and to prepare the ECS 2025:

- **civil security**, organized by Alexandre Vallette and Christophe Leroux from CEA
- **industrial production** coordinated by Andrey Girenko from DFKI[14]
- **defence**, ran by Alexandre Vallette and Christophe Leroux from CEA
- **health** organized by Françoise Siepel and Maren Bödding from University Twente

The primary objective of these workshops was to analyse possible crisis situations in each of the segments concerned. It was then necessary to understand the threats, weaknesses, strengths and opportunities that these crisis situations represent for the European economy. The aim was to identify ways for research and innovation ADR technologies to respond to these crisis situations and ensure the resilience of the EU economy.

Information about the organization and outcomes of each workshop is presented in the following sections.

4.2 Workshop organization

4.2.1 Principle

The workshops were organized online, the organization team being gathered in Brussels for supervision. We used the Mentimeter[15] tool to support the organization and collect the feedback from the participants.

All workshops followed the same organization starting with an introduction about the resilience topic, a presentation of the segment of analysis and on a description of the objectives. Then we conducted an analysis on the Strength, Weaknesses, Opportunities and Threats for Europe in the specific segment of analysis of the workshop. Afterwards, we discussed with the participants of the track for research and Innovation for AI, Data and Robotics with regard to this SWOT analysis.

[14] Deutsches Forschungszentrum für Künstliche Intelligenz
[15] Mentimeter

4.2.2 Agenda

Workshop on chosen segment of analysis

10mn **Topic Introduction**

60mn **SWOT Analysis for Chosen Segment** in Europe (Part 1)

30mn Break for **synthesis of the SWOT** analysis

60mn **Expectations from ADR & Alignment with EU-level Policy** (Part 2)

20mn **Wrap-up and Key Take away**

4.3 Civil security workshop[16]

4.3.1 Civil security workshop introduction

Civil Security Most of the time, we use in English the expression "Civil Protection" or "Civil Defence". However, we chose this term "civil security" to take a more global approach, including cyber security as well as supply chain disruptions. Civil security deals with the protection of European citizens outside of a war situation. Civil security in Europe is challenged by **evolving threats like terrorism, cybercrime, and natural disasters**, demanding stronger cross-border cooperation and advanced technologies for prevention and response. Additionally, **protecting democratic values and addressing misinformation** are critical to maintaining societal resilience and trust.

[16] Workshop organized by Christophe Leroux and Alexandre Vallette from CEA

4.3.2 Testimonies

Some warm testimonies of the participants during the Questions and Answer part of this session

Coordination among different teams crucial for saving the structure during the Notre-Dame fire

Heavy admin and excessive number of procedures in Europe limiting urgent responses.

Establish ***more effective communication*** *mechanisms and organize joint exercises to improve coordination.*

regulations to foster innovation while ensuring safety and compliance.

Training first responders to use

Use of ***AI in planning*** *for a*

drones for better understanding of crisis scenes.

Conduct ***large-scale crisis exercises*** *at the European level, use AI to support decision-making*

better grasp of the issue and in ***post-event analysis***

Regular exercises for ***terrorist attack scenarios*** *have enhanced operational readiness in Paris.*

Necessity to communicate ***as much data as possible****, as AI depends on it.*

Success of the deployment of autonomous inspection robots on the San Giorgio Bridge in Genoa

Robot ***Colossus provided significant*** *support during intervention at Notre-Dame*

Need for a European framework for the ***protection of critical infrastructures*** *to facilitate the*

adoption technologies

Traumatic for victims to repeatedly recount their experiences to different teams and services.

Traumatic for victims to repeatedly recount their experiences to different teams and services.

The protection of citizens must be understood as a whole because of cascade risks: *natural disaster, health crisis, security issue for example*

Testimonies from a former senior official of the BSPP[17].

The role of AI in crises situation. Artificial Intelligence (AI) should assist in planning. As the saying goes, "*The first victim of war is the plan*." However, having worked on it beforehand allows for a better understanding of the issues. By dedicating time to intelligence and learning to work together, we better prepare for future challenges.

Shifting from a logic of efficiency and Taylorism to a logic of agility. The BSPP, must ensure that each intervention is flawless, both for the victims and judicially with procedures that cover 90% of crises. However, for certain crises, such as terrorist attacks or the Notre-Dame fire, strictly following regulations can lead to mission failure. Following rules can result in failing to preserve assets.

Exercising is essential: to prepare for crises situations like simulation of terrorist attacks to create a safe environment and value learning feedback. This allows for an increase in complexity like the need for a flexible and responsive staff was crucial for situations like the Notre-Dame fire. It is essential to *move from a logic of efficiency and Taylorism to a logic of creativity* to better manage crises and adapt to unforeseen situations.

[17] *Brigade des Sapeurs-Pompiers de Paris*: two centuries of experience and 500,000 annual interventions

Variety of approach between countries. At the international level, crisis management approaches vary significantly from one country to another. With the Japanese, faced with extraordinarily complex and tragic situations like chemical attacks, planning is taken to the extreme. Unlike France, where the ability to adapt is rapid, the Japanese can take several days, even a week, to react. Russia, on the other hand, stands out for its very creative approach, despite limited resources. Their relationship with human life differs significantly: they treat the crisis as a humanitarian object, not always prioritizing human life. This was evident during the fires and the Beslan hostage crisis, where differences in moral and ethical approaches, as well as the relationship with victims, were clearly apparent. In Germany, the logic is decentralized, unlike France and lacks centrality. A central understanding could facilitate the decentralization of action management. However, neither the French model nor the German model is perfect. The British model is somewhat affected by budget cuts however, the integrated Joint the Command they promote, relying on different agencies, without necessarily having a leader from the start is good, but not always effective due to the need for concatenation and synthesis. The canton organization in Switzerland have a quite efficient collective entry point. Luxembourg, although less experienced, has a remarkable ability to learn from other European countries. Singapore stands out as being at an excellent level. They have a real-scale school for crisis management, with real-scale buildings. They organize training sessions and invite firefighters from around the world. They appropriate a doctrine and a synthesis, and their pedagogical quality is open and impressive. Israeli firefighters, although often considered less efficient, benefit from a very effective civil security system. This is based on a strong territorial network and a well-trained reserve, with strong population engagement. The Canadians, with their dual North American and European culture, know how to take the best from both worlds. However, they have not yet overcome the trauma of 9/11, and frictions between agencies persist. Despite this, they have overcome the effect of shock and have developed the ability to quickly train all actors, fostering dialogue and information sharing. FIMA, despite a controversy with Donald Trump, stands out for its exceptional ability to conduct after-action reviews (RETEX). It implements a doctrine, appropriate equipment, and a virtuous professional circle. European mechanisms, on the other hand, are often perceived as inconclusive due to excessive bureaucracy and procedures that stifle operational intelligence. The actors of the EU Civil Protection Mechanism (MIC) were often recruited for their ability to apply procedures without reflection, which limits creativity, except among the Italians.

RETEX is never easy, especially in cases of human fatalities. It is crucial to be humble, avoid stigmatizing, and learn from mistakes. Most tragedies are linked to human organizational factors. It is a delicate subject, and without learning capacity, we risk repeating the same mistakes. RETEX should focus on identifying key criteria rather than creativity, adopting a historical approach. This approach can be interacted with other examples to enrich the analysis. Big Data and AI are neutral tools that should facilitate this approach. It is crucial to codify and sanitize the process to prevent one actor from dominating the others. Big Data effectiveness depends on how it is fed and the integrity and reliability of the data entered. It is essential to impose rules from the start, while allowing some flexibility. AI can accomplish considerable work, but humans must remain the judges. A human pair, composed of an academic and a practitioner, is necessary to balance perspectives.

Collaboration between universities and practitioners is often insufficient. This appeared in 2018 symposium with fire departments (Paris, London, Singapore, Tokyo, Boston) and academic institutions like the Sorbonne, Harvard, and the University of Tokyo, as well as major private operators which demonstrated that there was a wall between researchers, who produced quality studies, and operational personnel, with ego clashes complicating collaboration. A recent example illustrates this issue when an expert in decision-making for complex situations analysed the crises of the attacks and Notre-Dame, but his conclusions were at odds with others. He sought to demonstrate his theses, showing the challenges of interdisciplinary collaboration.

National policy: In France, the logic of ego prevails: firefighters are associated with fires, but attacks are more complex. The citizen's perception of state action will depend on the human toll, i.e., the number of deaths. If fifty people die from haemorrhage, it is considered a failure. In the United States, the goal is to save as many victims as possible and neutralize those responsible for the attacks. Then, the major strategic factor is to determine if the actions taken will strengthen the trust relationship between the state and citizens. The management of the Covid crisis was widely criticized: communication was poorly managed; information was poorly transmitted or not at all. A pandemic that was not as lethal as feared opened the door to conspiracy theories, anti-vaccination, and questioned science, resulting from a problem of distrust due to inadequate management.

AI, Big Data and Robotics. AI was not used for managing the Notre-Dame fire. The fire was an atypical case, very brutal, lasting only two hours. Three decisions were crucial for saving Notre-Dame:

1. **Reflex Action**: Fight the fire as close as possible with hydraulic means from the inside to gain time.
2. **Preserve Personnel**: Ensure the safety of the teams on site.
3. **Engage Robotics**: Use a robot to save the grand organ. This robot, initially designed for terrorism situations where firefighters could not intervene, was over-motorized and armored. It was used in combination with drones for a global view on a restricted area.

This was not a technological breakthrough, but the ability to employ and combine existing technical capabilities, which represents an innovation. When the north belfry caught fire, engaging a fire brigade to extinguish the fire in the north was crucial. If the North Tower had collapsed, it would have meant the end of the building.

The three crucial decisions made during the Notre-Dame fire took place within an hour and a half. An efficient support from AI depends on the reliability and verification of data in time. In fact, the fire was poorly indicated, signalling the attic when it was not the case. AI could have been useful beforehand by working on cathedral fire simulations to identify key elements, such as the fact that a pierced nave usually means the building is considered lost.

In training for decision making, it is essential to emphasize that any action affecting the survival of victims or potentially endangering rescuers must be a human decision. Humans, with their discernment and risk-taking, are indispensable in these situations. It is crucial to include this notion in a legal framework.

4.3.3 SWOT analysis

Below is a synthesis of the Threats, Weaknesses, Strengths and Opportunities identified for Europe with respect to civil security

Strengths	Weaknesses
Expertise of professionals, researchers	Lack of interoperability (between information systems, agencies, and countries)
Experience with AI applications (especially embedded)	Mismatch between available technological solutions and real needs
Experience in crisis management and affected population (use of GIS)	Communication problems (devices, procedures, civilian/military agencies, connectivity)
Technological innovation	Multiple and complex regulatory frameworks and lack of acceptability

Opportunities	Threats
Adoption of AI and autonomous robots	Technological dependence
Reliability and fluidity of exchanges between IS, agencies, and actors	Cyber-attacks (companies, administrations, etc.)
Development of European standards	Movement against uniformization at the European level
Investment in R&D and support for competitiveness	Hybrid threats against critical infrastructures

4.3.4 Civil security workshop key takeaways

Introduction: Crisis management in Europe, particularly in the field of civil security, faces numerous challenges. The discussions highlighted current issues and led to recommendations to enhance resilience and the efficiency of interventions.

Issues:

1. **Lack of Interoperability:** Different agencies and countries use varied systems and procedures, complicating coordination. For example, during international interventions, the different communication tools used by emergency services from various countries hinder a coordinated response. Consequently, it is particularly traumatic for victims of natural disasters to repeatedly recount their experiences to different rescue teams and services/countries.

2. **Adoption of New Technologies:** The integration of technologies such as AI and autonomous robots is slow and encounters resistance. Additionally, the slowness of certification processes hinders the deployment of autonomous robotic solutions.

3. **Communication and Coordination:** Communication problems between national and international agencies impede rapid and effective crisis response. For example, during the Notre-Dame fire, coordination among different teams was crucial for saving the structure.

4. **Regulation and Acceptance:** Current regulatory frameworks do not always support innovation, and user acceptance of new technologies is a challenge. As stated before, the slowness of regulatory processes hinders the deployment of autonomous robotic solutions.

Recommendations:

1. **Improving Interoperability:** Develop common standards and unified communication platforms to facilitate coordination. For example, the use of GIS platforms for crisis management, as during floods in Poland, enabled a quick response through satellite image analysis. Additionally, similar to how firefighters regularly conduct large-scale crisis scenarios, such exercises at the European level could be carried out, with the help of AI for decision-making support.

2. **Accelerated Technology Adoption:** Invest in research and development of innovative technologies and encourage their adoption through training and demonstrations. For example, training first responders to use drones for better understanding of crisis scenes. The deployment of autonomous inspection robots on the San Giorgio Bridge in Genoa was a success. Furthermore, AI can assist in planning (*a priori*), as working in advance allows for a better grasp of the issue, and it can aid in post-event analysis (*a posteriori*) in conjunction with Big Data. Finally, robotics can provide significant support during complex operations (Notre-Dame and the intervention of the *Colossus* robot).

3. **Strengthening Communication:** Establish more effective communication mechanisms and organize joint exercises to improve coordination. For example, regular exercises by Paris firefighters for terrorist attack scenarios have enhanced operational readiness. It is also necessary to communicate as much data as possible, as AI depends on it.

4. **Flexible Regulatory Frameworks:** Adapt regulations to foster innovation while ensuring safety and compliance. For example, creating a European framework for the protection of critical infrastructures could facilitate the adoption of cutting-edge technologies. Thus, European mechanisms have not been very conclusive due to their strong bureaucratization and the excessive number of procedures that limit urgent responses.

Conclusion: To improve crisis management in Europe, it is essential to overcome current obstacles through better coordination, the adoption of new technologies, and adaptable regulatory frameworks. These efforts will enhance resilience and the efficiency of interventions during crises.

4.4 Industrial production workshop

4.4.1 Industrial production workshop introduction

European industrial production faces significant challenges, including **supply chain disruptions, increasing global competition**, and **dependency on critical materials**, all of which require investment in innovation, digitalisation, and sustainability. Additionally, **skills shortages, rising energy costs**, and **market volatility** further strain competitiveness and resilience in manufacturing. These issues are compounded by a lack of private investments, regulatory complexity, slow decision-making, and reactive policies. To address these challenges, a joint European Industrial Policy, as outlined in Draghi's report[18], is essential to enhance the sector's attractiveness for global talent and drive strategic solutions to strengthen its competitiveness and resilience.

The workshop built on the ADRA-e series of cross-project workshops organized between June and November 2024. It allowed to attract an audience balanced in terms of representation (industry-academia-policy) and comprising representatives of important networks in the field of Manufacturing (e.g. AIM-NET, EITM, etc.). Therefore, the opinions expressed during the meeting represent well the opinions of a wider community.

The workshop design slightly deviated from the design of the 3 other workshops as it followed the pattern of the cross-project workshops series. The introductory part was extended with the presentations laying a foundation for the subsequent SWOT analysis discussion. The 2 running Horizon Europe projects in the field of resilience in Industrial Production showcased the research state-of-the-art in the field (MaaSiveTwin and RAASCEMAN). Moreover, the 3rd presentation provided by the EC roadmapping initiative in the field of Industrial Production, MASTT2040 (https://www.mastt2040.eu), reported first results of the foresight allowing the audience to embrace the perspective for the developments. The SWOT discussion was facilitated by Mentimeter and allowed for collaborative input from online and on-site participants. The results of the discussion can be summarized as the following (the detailed Mentimeter recordings are available on demand):

Strengths	Weaknesses
Skilled and educated work force	Lack of investments for innovation, more generally - insufficiently favourable innovation environment
High industrial culture and long-standing traditions	Fragmentation of industrial policies and over-regulation
Research-based engineering excellence, research-industry links and cooperation	SME-unfriendly environment (lack of resources, lack of ready-made innovative solutions, bureaucracy)
Availability and wide acceptance of standards, including those in the field of Safety, Ethics and Quality.	High costs of labour and resources

[18] https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en

Opportunities	Threats
Circular and environment-friendly industrial technologies as a market opportunity. Political/financial support to dual transition.	Technological competition, dependency in the field of critical technologies. Dependency in the field of critical raw materials. Costs of labour and resources raise further out of control.
Focus on Trustworthy AI-based technologies, European strength in IoT. Edge computing for factory automation.	IP and brain drain due to the lack of domestic innovation opportunities.
Micro-factories with AI-driven customer-centric production, distributed production systems.	Disruptions in supply chains caused by global and EU-internal instability.
Focus on resilience of supply chains, development of EU-internal industrial cooperation, Lower dependence on external resources (re-manufacturing, new materials, etc.)	Degradation of education, vocational training and industrial research due to economic and other difficulties eroding the European advantages.

4.4.2 Industrial production workshop key takeaways

Recommendations:

- **Build on Europe's advances in the field of Industry**. Particular focus on those industrial segments where Europe maintains leadership (high-end quality technology-intensive innovative products, high degree of customer request adaptation, etc.) Increase support to topics related to Supply chain resilience, especially in the context of Green and Digital Transition policies.
- In general, **prioritise better funding allocation**, find priority niches and champions in them. For that, there is a need for a consultative process between stakeholders aimed at coordination and synergetic effect between various related initiatives.
- **Green transition** as an opportunity
- **Forward-looking research** instead of chasing competitors
- **Capitalise on cross-culture** richness

4.5 Defence workshop[19]

4.5.1 Defence workshop introduction

Defence concerns all that can be specific to this sector. European defence is grappling with **evolving security threats and geopolitical instability**, necessitating enhanced cooperation, modernisation, and investment in technologies like AI and cybersecurity. Additionally, **ensuring strategic autonomy and addressing capability gaps** including industrial production specificities are critical to strengthening Europe's defence posture and resilience.

4.5.2 SWOT analysis

Below is a synthesis of the Threats, Weaknesses, Strengths and Opportunities identified for Europe with respect to civil security

[19] Workshop organized by Alexandre Vallette and Christophe Leroux from CEA

Strengths	Weaknesses
Technological expertise and highly qualified frameworks/workers	Dependence on non-European suppliers: lack of a European idea of sovereignty
Industrial capabilities	Fragmentation and lack of coordination
Investments in R&D	Insufficient cooperation
Political stability	Short-term measures

Opportunities	Threats
Increase in R&D investments in dual-use technologies	Rise of protectionism and intra-European political disagreements
Development of production capacities in emerging technologies and experimentation with these technologies in Ukraine	Increase in hybrid threats
Increase in military budgets + pooling of loans at the European level	Unfavourable economic context
Adoption of AI and autonomous robots	Competitors with lower regulation

4.5.3 Defence workshop key takeaways

Introduction

The defence industry in Europe plays a crucial role in the security and stability of the continent. However, it faces several challenges that hinder its ability to innovate and effectively respond to modern threats. The discussions at the workshop highlighted key issues, such as technological dependence on non-European suppliers, fragmentation of efforts among member countries, and complex regulatory frameworks. These challenges require special attention to strengthen the resilience and efficiency of the sector.

Issues:

1. **Technological Dependence:** The European defence industry heavily relies on non-European suppliers for critical technologies, which limits its strategic autonomy. For example, dependence on the United States for defence technologies is a major obstacle to the need for strategic autonomy.
2. **Fragmentation and Lack of Coordination:** The diversity of cultures and policies within the EU leads to fragmentation and slow processes, complicating coordination among member countries. Thus, different national policies make it difficult to harmonize defence efforts.
3. **Insufficient Investments:** Investments in defence are often insufficient and inconsistent, hindering the development of advanced technological capabilities. In this regard, the lack of stable funding for research and development limits technological progress.
4. **Regulation and Acceptability:** Complex regulatory frameworks and ethical constraints limit innovation and the rapid adoption of new technologies. In fact, ethical constraints can restrict the use of certain defence technologies.

Recommendations:

1. **Development of Common Standards:** Create European standards to improve interoperability and facilitate collaboration among member countries. Thus, common standards could help harmonize equipment and communication systems.

2. **Investment in R&D:** Increase investments in research and development to stimulate technological innovation. Thus, funding programs for R&D could encourage the development of new defence technologies. The EU can particularly rely on its counter-terrorism technologies.

3. **Strengthening Cooperation:** Improve communication and coordination mechanisms. For example, close collaboration between companies and defence ministries, as well as joint collaboration workshops between the ADR community and military/defence communities, could improve operational readiness and strengthen defence capabilities in Europe. In addition, data-driven AI technologies, a data-sharing system, including military data where possible, should be considered. Finally, cooperation can be done with leading partners such as Norway or a return of the United Kingdom.

4. **Flexible Regulatory Frameworks:** Adapt regulations to promote innovation while ensuring security and compliance. In this regard, more flexible regulations could allow for faster adoption of new technologies.

Conclusion: To improve crisis management in the European defence industry, it is essential to overcome current obstacles through better coordination, the adoption of new technologies, and adapted regulatory frameworks. These efforts will strengthen the resilience and efficiency of interventions in times of crisis.

4.6 Healthcare workshop

4.6.1 Healthcare workshop introduction

Healthcare faces major challenges, including ageing populations, workforce shortages, rising costs, and unequal access to quality care. These pressures highlight the urgent need for innovative solutions such as artificial intelligence (AI), data, and robotics to enable more efficient and personalised services.

The European healthcare sector stands at a critical juncture, shaped by demographic change, staffing constraints, technological disruption, and global health threats. At the ADRA workshop, experts and stakeholders examined how AI, Data, and Robotics (ADR) can strengthen the resilience of healthcare systems across Europe. Discussions focused on assessing current capabilities and vulnerabilities, leveraging emerging opportunities, and addressing risks through the strategic deployment of ADR technologies. The goal: to enhance care delivery and better prepare systems for future crises through intelligent, adaptive solutions.

The workshop was structured around several key topics, including:

- Introduction to the challenges faced by healthcare systems in Europe.
- The role of AI, data, and robotics in enhancing healthcare resilience.
- Interactive discussions using Mentimeter to gather participant input on various aspects of healthcare.
- SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) of the current healthcare landscape.
- Exploration of specific case studies and examples of technology implementation during the COVID-19 pandemic.
- Discussion on the alignment of technology with EU policies and ethical considerations.
- Future steps and recommendations for enhancing healthcare resilience through technology.

4.6.2 Healthcare workshop key takeaways

European healthcare

- Build a resilient healthcare system in Europe
- European healthcare systems are among the most developed globally, marked by public accessibility, skilled personnel, significant research infrastructure

European strengths:

- Highly skilled workforce: broad access to high-level medical education and training
- Public and universal coverage: most healthcare systems are public, inclusive, and built on shared values
- Advanced infrastructure: Europe boasts high-quality research facilities and strong R&D capabilities
- Data Availability: large, geographically distributed datasets support research and potential AI applications Holistic and preventive care philosophy: a growing shift toward integrated and person-centred care models
- Digital foundations: many Member States have high levels of digitalization, enabling adoption
- Political commitment: healthcare is seen as a right, with strong EU-level political support for inclusivity

Systemic challenges in Europe:

- Fragmentation across national systems and regulations hampers cooperation and scaling.
- Workforce shortages persist in many countries, limiting service delivery and innovation adoption.
- Increased complexity and uncertainty in healthcare delivery.
- High cost of innovation including assistive robotics and new AI tools, without aligned reimbursement pathways.
- Lack of coordination: absence of a unified EU framework for personal healthcare and technology integration.
- Digital divide: disparities in digital literacy and technological infrastructure among MS.
- Innovation fatigue: healthcare workers and institutions are overburdened, leaving little room for experimentation or tech adoption.
- MDR and AI Act constraints: current compliance pathways are not fully clear

How can work together addressing crisis?

Opportunities for ADR:

- Personalized medicine: AI enables tailored diagnostics and treatments using patient-specific data
- Remote and preventive care: Robotics and AI support home-based monitoring, reducing hospital load and enabling care in underserved areas.
- Autonomous assistance, so implementing AI based systems for diagnosis and also autonomous surgery
- Pandemic preparedness: Data analytics can anticipate health crises and optimise resource deployment
- Support for Aging Population: ADR can mitigate workforce shortages and assist in elder care (e.g., telerobotics, rehabilitation robotics)
- SME and innovation ecosystem: The EU has a strong network of researchers, universities, and SMEs working on cutting-edge technologies
- Ethical innovation leadership: Europe can lead globally in developing socially responsible and privacy-aware ADR healthcare solutions
- Shared platforms: The EU structural funds offer avenues for coordinated investments and scaling of innovations

Recommendations:

- Create a Resilience Roadmap: Develop comprehensive strategies for integrating ADR into healthcare, focused on long-term sustainability and crisis preparedness.
- Simplify Compliance for Innovation: Offer fast-track or phased compliance models for new ADR technologies, especially in experimental or crisis-use cases
- Train the Future Workforce: Promote interdisciplinary education combining medical, technological, and entrepreneurial skills.
- Standardize Across EU: Advance common standards for cybersecurity, risk management, and adaptive AI systems.

- Enable Data-Driven and Personalized Healthcare

Conclusions:

- Its strengths such as skilled workforce, inclusive systems, high-quality infrastructure, form a solid foundation
- Systemic fragmentation, regulatory complexity, and uneven adoption must be addressed.
- The ADR ecosystem must be supported through smarter policies, agile funding, interoperable infrastructures, and cross-sector collaborations.
- By fostering experimentation, co-creation, and standards alignment, ADRA can help transition from innovation potential to widespread, impactful implementation.
- Ultimately, resilient healthcare in Europe will depend on moving from reactive systems to proactive, integrated ones where technologies serve people, equity is preserved, and innovation thrives responsibly.

5 ECS 2025

5.1 Venue

The ECS 2025 took place at the Concert Noble in Brussels on April 9th, 2025, from 9h00 to 17h30.

Figure 6: ECS 25 - Concert Noble, Brussels

5.2 Communication

The team provided the appropriate specific logos, badges and visuals for speakers. It also organized the dissemination of the information about the event throughout the appropriate community.

Figure 7: Badge and logo

The team supervised the production of a video about the event which is now available on the ADRA portal.

5.3 Setting the scene: EU AI initiatives

The day started with a brief description of the agenda and the objectives of the ECS. It was followed by a presentation from Evangelia Markidou from the AI Office of the AI, Big Data and Robotics partnership and of the articulation of the initiatives supported.

5.3.1 Programme of the session

The objectives of the ECS were twofold:

- First, it was to **consolidate** the results obtained during the workshops held in early February. The analysis conducted during these workshops is far from exhaustive. We did not address issues related to global warming, in particular.
- Second, it was to **reach a consensus** on the direction of research and innovation in AI, robotics, and Big Data in Europe. It is about proposing a vision that can help to select the orientations to take.

To reach these objectives, we organized the ECS in five sessions alternating the viewpoints of different experts. The first four sessions were modelled on the preparatory workshops:

- **civil security session**, organized by Christophe Leroux from CEA
- **industrial production session** coordinated by Andrey Girenko from DFKI
- **defence session**, ran by Christophe Leroux from CEA
- **health session** organized by Françoise Siepel from University Twente

The final foresight session, was meant to combining the conclusions of the previous sessions with the viewpoints of participants from various backgrounds.

The agenda of the ECS is provided in annex in 8.3 and the list of key note speakers and panellist given in 8.1

5.3.2 Articulation with the AI Office initiatives

Figure 8: Contextualization from the AI Office by Evangelia Markidou, DG Cnect

This session started with a key note speech[20] which was the opportunity to present the aim of the AI Office of the European Commission, the partnership on AI, Big Data and Robotics, the current challenges, the strategy, the key initiatives in place to support this strategy including the articulation with the ECS. Among these documents:

- *"Adra releases Policy Paper and Technology Roadmap: GenAI and Robotics 4EU"*[21]

[20] "*The Role of AI, Data, and Robotics in Addressing Socio-Economic Challenges*" Evangelia Markidou,
[21] ADRA : Adra releases Policy Paper and Technology Roadmap: GenAI and Robotics 4EU

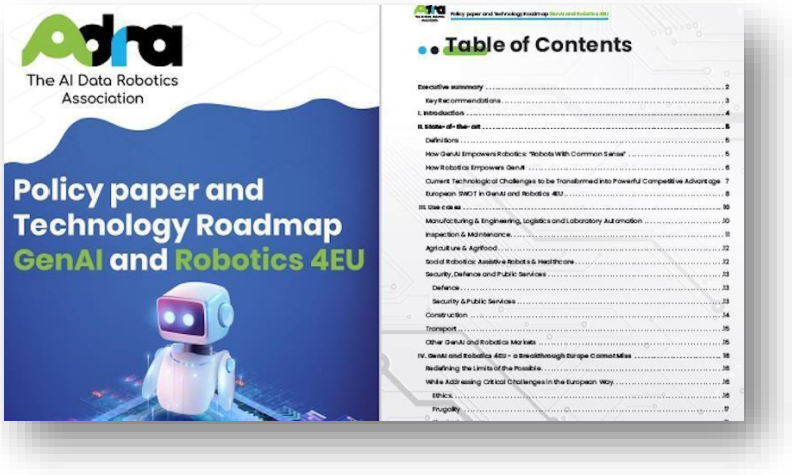


Figure 9: Policy paper and technology roadmap GenAI and Robotics 4EU

- "*AI-powered robotics strategy for Europe*" to be published

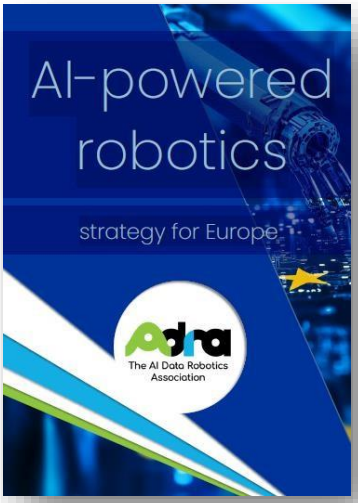


Figure 10: Policy paper and technology roadmap GenAI and Robotics 4EU

The keynote speech was also the opportunity to insist on the importance attached by the EC to this concept of resilience of the European economy and on the role the co-programmed partnership on AI, Big Data and Robotics can play to support this ambition. In particular to support rapid responses to support decisions.

Figure 11: presentation of AI Office strategy

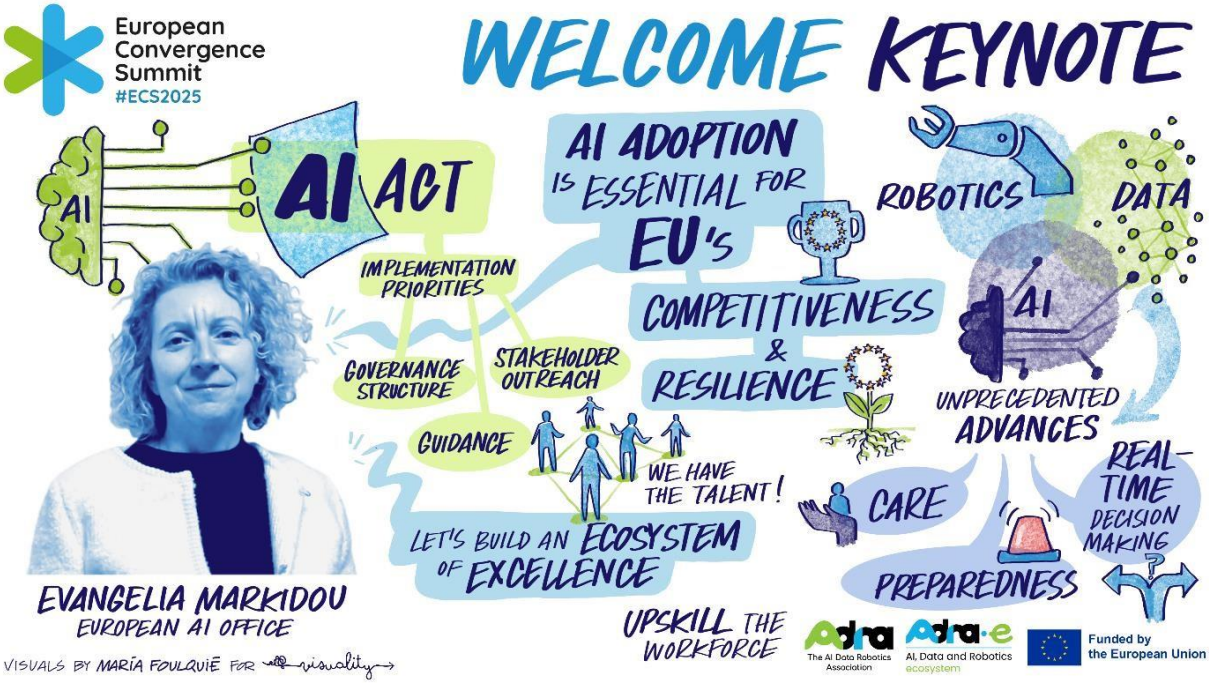


Figure 12: The Role of AI, Data, Robotics in Addressing Socio-Economic Challenges by Evangelia Markidou,

5.4 Civil security session

5.4.1 Programme of the session

The first session of the ECS "*ADR and Resilience in Civil Security: In the Event of Natural Disasters, Cybersecurity Challenges, and More*" broke down into

- A keynote speech: "*Enhancing resilience through AI in critical infrastructures*" from Martin Ubelhör, European Commission DG Home,
- Feedback about the preparatory workshop on civil security from Christophe Leroux, CEA, European Affairs.

- Followed by a panel discussion: "*ADR technologies in Civil Protection and Public Safety*" moderated by Marc Schoenauer, INRIA

The participants to the panel were

- Martin Ubelhor, European Commission DG Home
- Frédéric Perlant, Ministère de l'enseignement supérieur et de la Recherche, France
- Paul de Nazelle, Shark Robotics[22]
- Eduardo Quiñones, Barcelona Super Computing[23]
- Jesus Contreras, EIT Digital[24],
- Jaime Abad-Perez, European Civil Protection and Humanitarian Aid Operations

Figure 13: civil security session

[22] Shark Robotics - Leader in firefighting, EOD and security robots
[23] BSC-CNS | Barcelona Supercomputing Center..
[24] EIT Digital

5.4.2 Key note speech by Martin Ubelhor

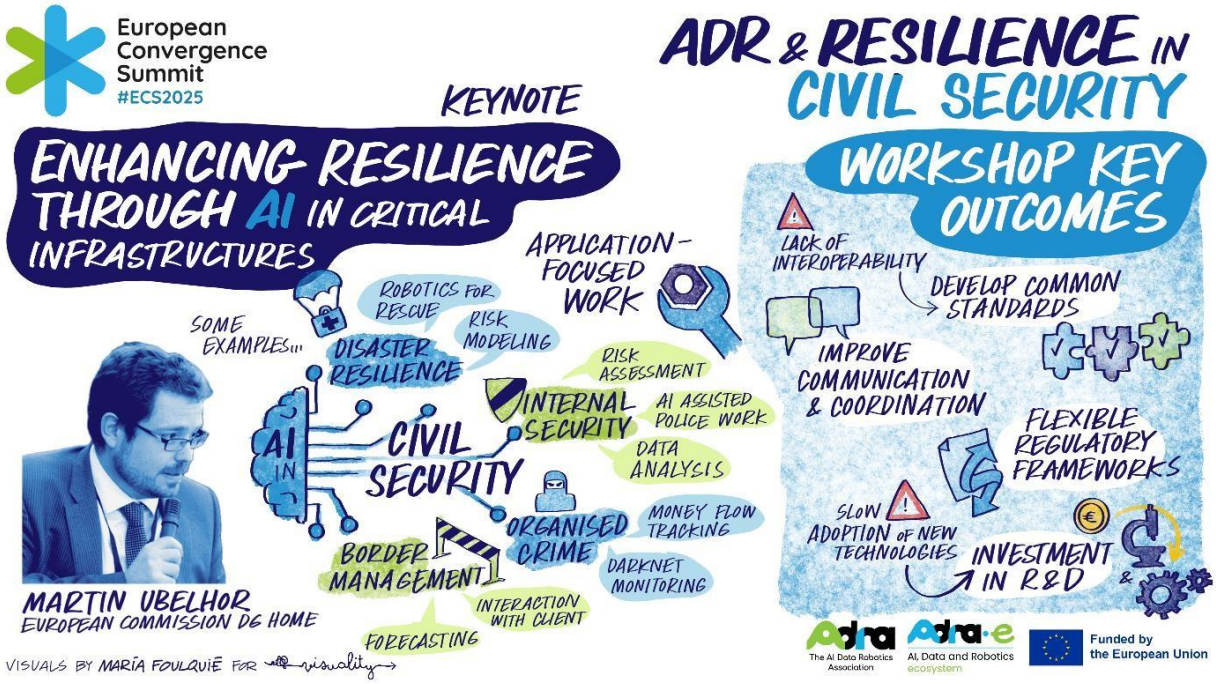


Figure 14: ADR and resilience in civil security key note speech

During the key note speech "*Horizon Europe Cluster 3: Civil Security for Society*" Martin Ubelhor from DG Home presented the six key areas on which the civil security focuses: fighting crime and terrorism, border management, resilient infrastructure, disaster-resilient societies, strengthened security research and innovation (R&I), and capability-based approaches. And the critical role of AI plays a critical role in enhancing these domains, with a focus on end-user needs, societal dimensions, and market creation. Some examples of applications in AI include:

- **Disaster Resilience:**
  - Remote biometric identification, data extraction, and pattern recognition for crime prevention.
  - AI-driven risk assessments and evidence analysis.
  - Administrative support, such as drafting warrants and reports.
- **Internal Security**
  - Risk modelling, situational awareness, and decision support.
  - Robots for emergency reconnaissance and CBRN threat detection.
- **AI Projects Addressing Organised Crime**
  - Drugs and Organised Crime: AI to combat illicit drug production and trafficking.
  - Darknet Monitoring: online illegal trafficking of NPS and medicines.
  - Human Trafficking: advanced technologies to disrupt trafficking networks.
  - Illicit Money Flows: illicit financial transactions.
  - Cultural Heritage: AI to combat trafficking of cultural artefacts.
  - Anti-Corruption: fights large-scale corruption and organized crime.
- **AI in Migration and Border Management**
  - Forecasting migrant flows and language identification.
  - Case management, workflow optimization, and client interaction through chatbots and translation tools.
  - Large-scale IT systems, biometrics, and identity fraud detection.
  - Risk assessment, screening, and tools like unmanned aerial systems for object recognition and geospatial analytics.

Martin Ubelhor mentioned datasets effort made for AI Model Training on civil security

- TESSERA: Preparatory work for high-quality, trusted, and shareable datasets for the European Security Data Space for Innovation.
- LAGO: Assessing barriers to data sharing and designing a governance framework for a trusted data space.

He also presented some practices of touching to civil security banned by the AI Act including

- Subliminal or manipulative techniques.
- Individual predictive policing.
- Untargeted scraping of biometric data.
- Real-time remote biometric identification in public spaces.
- Emotion recognition in workplaces and educational institutions.

He concluded with the Long-Term Vision of the European Security Data Space for Innovation (EU SDSI) aiming to create a trusted ecosystem for AI development, ensuring compliance with privacy and fundamental rights while fostering innovation in civil security.

Some of the outcomes are illustrated in Figure 14.

5.4.3 Civil security panel and discussion

Here is below a summary of the issues explored during the panel:

Civil protection definition variability: how does the definition of civil protection vary across countries? Does it include aspects like health, border security, and cybersecurity, or is it limited to natural disasters?

Role of AI in Civil Security: Can AI help address issues like immigration misconceptions and combat extremist ideologies spreading across Europe?

Preservation of Democracy is civil security. How can AI, data, and robotics help preserve democratic values, which are increasingly threatened? Is identifying fake news sufficient, or should we adopt tactics similar to those used by threats, such as repeating lies until they become accepted as truth?

General perspectives

- Utility of AI in Emergencies: how can AI, data, and robotics improve responses to civil protection emergencies?
- Integration Challenges: what are the main challenges in integrating these technologies into civil protection operations?
- Strengthening Resilience: how can European AI initiatives enhance the resilience of civil security systems across the continent?

End-User Perspective

- Needs of Frontline Responders: what are the most pressing needs of frontline responders that AI, data, and robotics could address?
- Perception of Current Technologies: how do European end-users perceive the effectiveness and reliability of current technologies in real-world scenarios?

Technology Providers' Perspective

- Impactful Innovations: what recent innovations in AI, big data, and robotics could significantly impact civil security in Europe?

- Tailoring Solutions: How can technology providers ensure their solutions meet the specific needs of civil security end-users?

Decision-Makers' Perspective

- Collaboration Encouragement: How can decision-makers foster closer collaboration between end-users and technology suppliers to develop effective solutions?
- Innovation Stimulation: How can we stimulate innovation and the creation of products and services in the civil security sector in Europe?

Use Cases and Case Studies**

- Successful Implementations: can you share examples where AI, big data, or robotics have been successfully used in civil security operations?
- Lessons from Failures: What lessons can be learned from the challenges encountered during the development and implementation of these technologies?

Training and Adoption

- Training Programmes: what training is needed to ensure frontline responders can effectively use these new technologies?
- Responsible Adoption: how can we accelerate the adoption of these technologies while ensuring they are used responsibly and ethically in accordance with European standards?

Future and Innovation

- Emerging Trends: what emerging trends in AI and robotics could transform civil security in the coming years?
- Anticipating Threats: how can the EU anticipate and prepare for new threats as these technologies evolve? Is "over-regulation" a barrier, and should more flexible regulation be allowed for R&D?
- Infrastructure Needs: what infrastructures are needed to advance the development and use of AI, data, and robotics in civil security?

The European Union is often accused, rightly or wrongly, of **lagging behind**. How can we anticipate and prepare for the **new threats** that could emerge as these technologies evolve? Does this have to do with « **over-regulation** », and should we allow more flexible regulation in the case of R&D?

What **infrastructures** are needed to push the development and use of ADR technology in civil security: **Eduardo Quinones (BSC, implementation)**

Some of the outcomes of the session are illustrated in the following figure 15:

Figure 15: ADR and resilience in civil security panel

5.5 Industrial production session

5.5.1 Programme of the session

Session 2: ADR and Resilience in industrial production: Case of Supply Chain Issues, Critical Materials, Energy Supply, and More broke down into

- A keynote address: *Manufacturing as a Service: Manufacturing as a Service: How AI, Data & Robotics are reshaping the manufacturing Industry*, from Pieter Kesteloot - Sirris
- A presentation of the preparatory workshop key outcomes by Andrey Girenko, DFKI
- A panel session: *ADR technology deployment in manufacturing* Moderated by Andrey Girenko, DFKI

The panel was composed with

- Patrick Schwarzkopf, VDMA[25],
- Sergio Gusmeroli, Politecnico di Milano
- Kosmas Alexopoulos, Laboratory for Manufacturing Systems & Automation
- Cornelia Amihalachioae, EFFRA[26]
- Valentina Ivanova, CEA List, AIMatters[27] European Testing and Experimentation Facility for Manufacturing

[25] Mechanical Engineering Industry Association
[26] The **European Factories of the Future Research Association** (**EFFRA**)
[27] AI Matters : AI in Manufacturing for EU industries

Figure 16: industrial production session

5.5.2 Key note speech by Pieter Kesteloot

The keynote speech presented the first outcomes of the foresight activities implemented by the EC-funded roadmapping initiative MASTT2040 “Manufacturing-as-a-Service for the EU’s twin transition until 2040”. The data presented reflexes the opinions of a representative cohort of experts identified across all relevant stakeholders.

5.5.3 Panel discussion and Outcome of the session

The panel discussion was articulated around the set of questions the panellists were confronted with:

Patrick Schwartzkopf: **VDMA has recently developed a brand-new European Strategy Paper for robotics and automation, could you please provide some details on this policy document and how it can impact on ADR research?**

Patrick briefly presented the Strategy paper focussing on the conclusions relevant for the ADR research community and policy-makers. The main challenges Europe faces in the area of Industrial production are linked to the decline in competitiveness, demographic changes, vulnerability linked to technological sovereignty, Europe’s commitment to carbon neutrality, etc. The industrial community represented by VDMA considers 8 focus areas where the efforts of all stakeholders should be concentrated:

- Industrial robotics and automation as a top political priority
- Attraction of world’s best talents to study and work in Europe
- Economic incentives for automation
- More investment capital for robotics and automation
- Forefront of industrial R&D
- Focus on economies of scale
- Lean regulation
- Public engagement and awareness raising.

Patrick called upon the audience to get the document and get acquired in detail.

Kosmas Alexopoulos: **What areas of research will benefit most thanks to the latest achievements in GenAI? Where do you see the opportunities for ADR convergence enabled by GenAI and how can GenAI provide more resilience for European manufacturing sector?**

Kosmas presented his vision of the role the GenAI technologies can and should play in the field of industrial automation and robotics. He also mentioned the activities of relevant ADRA topic group and its links to "Made in Europe" European partnership.

Sergio Gusmeroli: **In your view, how ADR research can facilitate the implementation of DPP, what research topics related to DPP should be on our agenda in the nearest future and what other research and innovation initiatives on the EU level can contribute?**

In his answer Sergio referred to the European Data Spaces initiative supported within the Digital Europe Programme of the EU as one of the major enablers for the DPP technologies proliferation.

Valentina Ivanova: **Could you please give us a vision of what the European AI&Robotics Testing and Experimentation Infrastructure will be in 2-3 years from now? And how it can facilitate manufacturing businesses to become competitive and more resilient?**

Valentina described the current status of the infrastructure and the set of services it provides to the research and innovation communities. As an important aspect she underlined the cooperation with other European initiatives, such as e.g. European Digital Innovation Hubs.

Cornelia Amihalachioae: **Manufacturing is an important application domain with multiple initiatives and stakeholders. From the EFFRA's perspective where do you see the potential for cooperation and coordination between various related efforts? What more can be done in this direction? And speaking about AI, Data and Robotics for Manufacturing, could you please briefly tell us what place these research areas will take in the Made in Europe's portfolio in the future?**

Cornelia indicated the close cooperation between Made in Europe and ADR European partnerships has already resulted in such join initiatives as upcoming Joint Calls in Cluster 4 of Horizon Europe Programme in 2025. Among other possible cooperative activities she mentioned joint topic groups, sharing information and networking resources, etc.

Some of the outcomes of the session are illustrated in the figure 17 below.

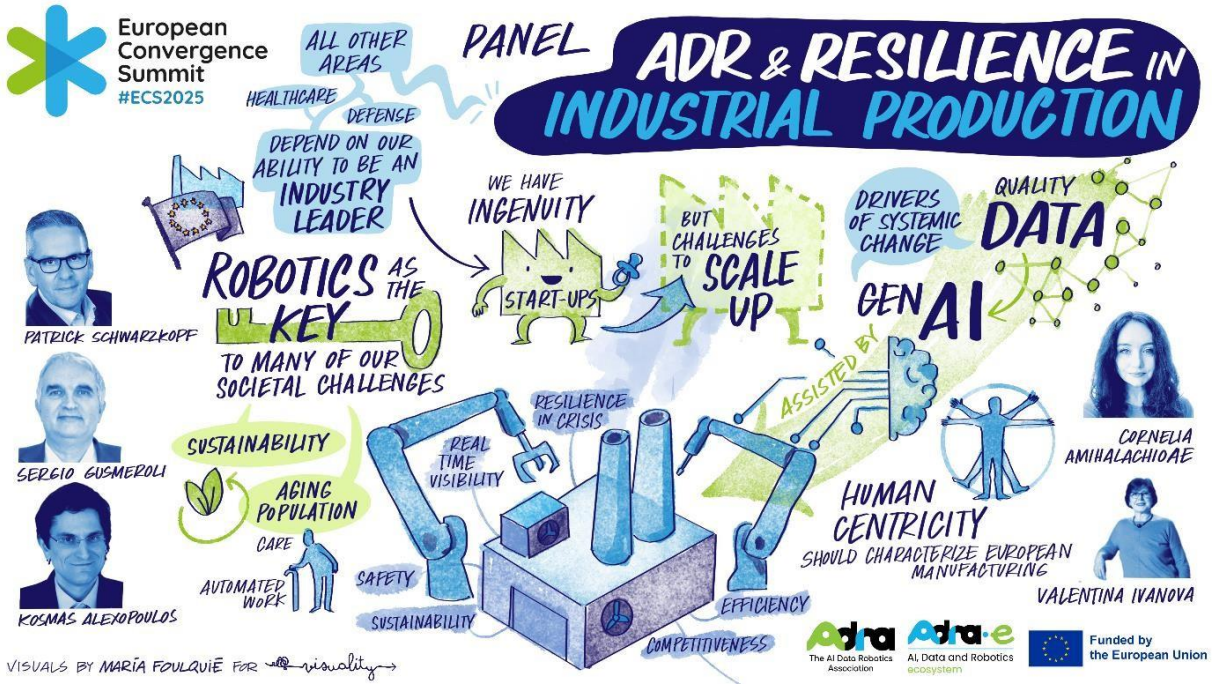


Figure 17: ADR and resilience in industrial production

5.6 Defence session

5.6.1 Programme of the session

The session three, "*ADR and Resilience in Defence: conflicts, defence industry*" broke down into

- A keynote "*Leveraging ADR technologies in national and European defense - insight from an industrial company"* from Pascale Betinelli, Thales
- A presentation of the preparatory workshop Key Outcomes by Christophe Leroux, CEA
- A Panel session: *ADR technologies for operational efficiency and threat detection m*oderated by Andrey Girenko, DFKI

The participants to the panel were

- Bjoern Juretzki, European Commission DG CNECT
- Olga Shapoval, Kharkiv IT Cluster[28]
- Pascale Betinelli, Thales
- Flavio Fusco, Leonardo[29]
- Benoît Wintrebert, INRIA
- Tomislav Vazdar, Riskoria[30]

[28] Kharkiv IT Cluster unites IT companies of the region
[29] Leonardo: Aerospace, Defence and Security
[30] Riskoria Advising & Professional Services

5.6.2 Keynote speech by Pascale Betinelli

The presentation included the examples of industrial innovation of the leading European defence company - Thales. The latest developments in warfare accelerated by the ongoing war in Ukraine require closer cooperation between defence industrial complex and research communities.

Figure 18: Key note speech by Pascale Betinelli, Thales

5.6.3 Panel discussion - Outcome of the session

Figure 19: Defence panel

The panel discussion included the following questions:

Bjoern Juretzki: **Do you expect that this policy (of only non-Defence research on European level) will be soon altered? If no, is there do you expect some new Defence-related research instruments related to ADR topics to be developed on the EU level? If yes, is there any timeline for that, will we see something new in upcoming FP10?**

The current European research landscape already includes the European Defence Fund's tools, which can be used for ADR research in the field of Defence. It is not planned to include defence-related topics to the next Framework Programme.

Benoît Wintrebert: **In the situation when Europe has to rapidly build Defence-related research capabilities, do you see as realistic the transition of existing research organizations/teams/individuals from civil topics to more Defence-oriented? How to ensure the circulation of knowledge between these two areas assuming the inevitable requirements of confidentiality? What would be the role of such community organizations as e.g. ADRA in this process?**

INRIA's defence department is a relatively new, but important structural unit of the RTO. It benefits from the cooperation with other departments of INRIA while certain limitations have to be observed. The conversion of researchers is also a potentially unavoidable process.

Pascale Betinelli: **Where do you see the most important and urgent priorities in ensuring the Europe's technological non-dependence in the field of ADR for Defence? Can you give us some examples of projects, which, in your view, are "good practice" examples in this direction? What would be the roles of companies like Thales in this process?**

The example of a research project was provided.

Flavio Fusco: **What research directions in ADR should be considered essential from your point of view? Whether and how does your company plan to extend its research activities in these domains? Who are your main partners in this process?**

The provided examples of priority research topics included the research in the field of AI methods for managing large constellations of small and ultra-small satellites. Such smart constellations can be used for observation purposes, battle-field communication, etc.

Olga Shapoval: **Could you please share with us how the IT industry in Ukraine managed to demonstrate such results and how the research-industry partnership evolved due to the war? What is your message to the audience regarding research for defence?**

The basis of success is in the traditional strengths of Ukrainian science system. Moreover, the conditions of war time put pressure on all stakeholders, thus reducing the duration of the development cycle: what required several years under normal conditions is now developed within weeks.

Tomislav Vazdar: **While working with your business customers, first of all SMEs, what are the main cybersecurity problems they are facing and how AI-based technologies can help them? What technological solutions focused on the needs of SMEs are missing or require major improvements? What related research topics should be, in your view, supported by European research programmes?**

The main challenges include:

- lack of available cyber-security solutions oriented to the needs of SMEs
- technological dependence on non-European technologies
- risk assessment in the light of the new EU regulation such as the EU AI Act.

Some of the outcomes of the session are illustrated on the figure below

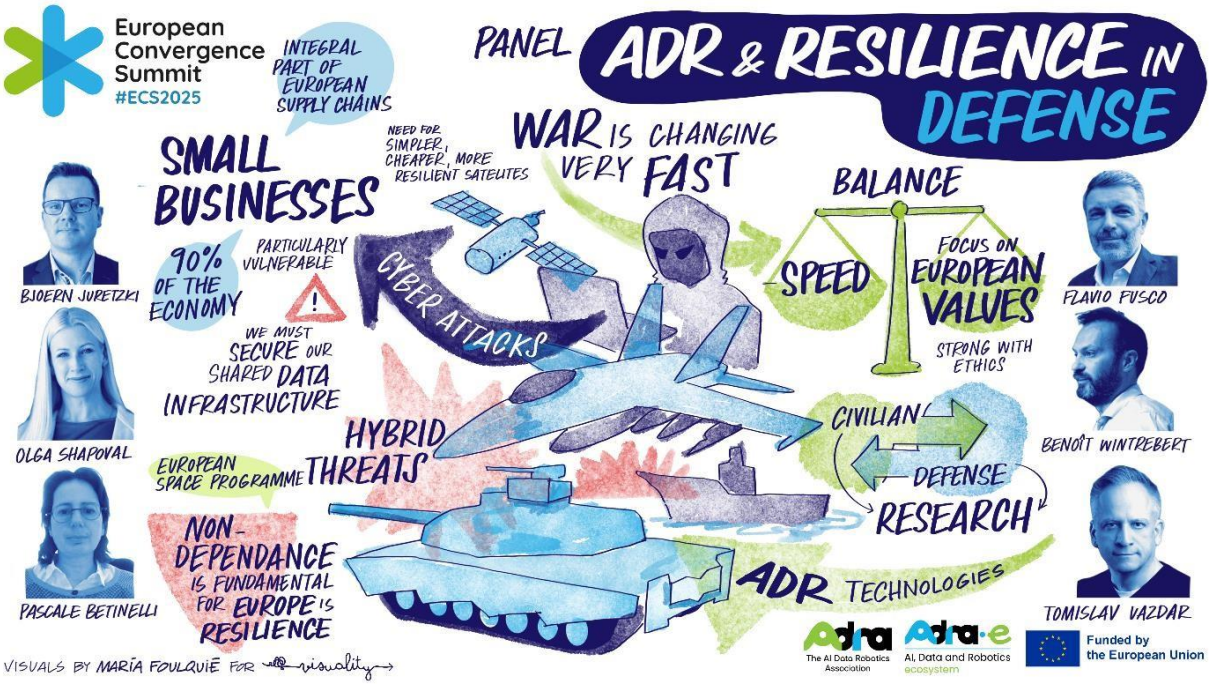


Figure 20: ADR and resilience in defence

5.7 Healthcare session

5.7.1 Programme of the session

The session four "*ADR and Resilience in Healthcare: For Example, in the Event of a Pandemic*" broke down into

- A keynote *ADR and patient care*, from Anastasiya Kiseleva, VUB
- A presentation of the preparatory workshop key outcomes by Françoise Siepel - University of Twente
- A panel session: Predictive diagnostics and personalized medicine moderated by Françoise Siepel, University of Twente

The panellists were

- Namir Anani – ICTC[31]
- Magí Dalmau Moreno – EURECAT[32]
- Juan Sánchez Margallo - Jesús Usón Centre
- Anastasiya Kiseleva – VUB[33]
- Tugce Schmitt - Maastricht University
- Janos Gabler – AppliedAI Institute for Europe

We started with a detailed introduction round to understand each other perspectives and addressed the following topics:

[31] CTIC - ICTC
[32] Eurecat Centre Tecnològic
[33] Vrije Universiteit Brussel

- Perspective on building resilient healthcare systems
- How AI, Data and Robotics can support resilience in healthcare?
- What constraints could be foreseen?
- What role does ADRA play in this case?
- How to align with EU-level policy?
- Recommendations to build long-term resilience

Figure 21: Healthcare panel

5.7.2 Outcome of the session

Some of the outcomes of the session are illustrated in the figure 22 below.

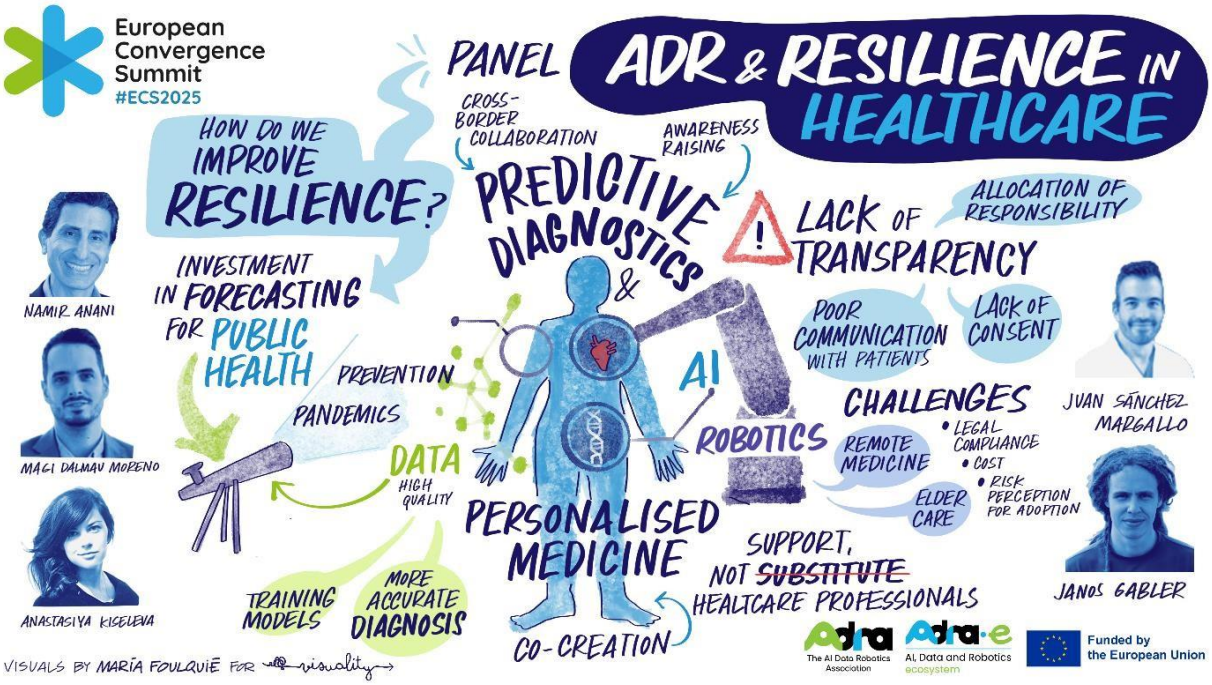


Figure 22: ADR and resilience in healthcare

Perspective on Building Resilient Healthcare Systems

Resilient healthcare systems must be adaptive, proactive, and capable of withstanding crises such as pandemics or demographic shifts. The panel highlighted that **investment in public health forecasting**, **cross-border collaboration**, and **data-driven decision-making** are critical to strengthen system-wide preparedness and adaptability.

How AI, Data and Robotics Can Support Resilience in Healthcare

AI, Data, and Robotics (ADR) technologies can:

- Enable **predictive diagnostics** and **personalised medicine**, allowing early intervention and targeted treatment.
- Enhance **remote healthcare** and **elder care**, ensuring continuity of service in resource-limited or remote environments.
- Support, not replace, healthcare professionals by automating routine tasks and improving operational efficiency.
- Leverage **high-quality data** to train models for more **accurate diagnoses** and **public health forecasting**.

What Constraints Could Be Foreseen

Several constraints and risks may hinder the adoption of ADR technologies:

- **Lack of transparency** in AI processes and decision-making.
- **Poor communication** and **lack of consent** from patients regarding AI use.
- **Legal compliance** complexities and regulatory hurdles.
- **Cost of implementation** and integration with existing systems.
- **Risk perception** and resistance to adoption among healthcare stakeholders.

What Role Does ADRA Play in This Case

ADRA and the **ADRA-e ecosystem** are central in:

- Coordinating **co-creation** efforts between stakeholders (industry, researchers, healthcare providers).
- Driving forward **awareness-raising** campaigns.
- Providing a platform for **collaboration and knowledge sharing** across Europe.
- Promoting alignment between technological development and public needs to ensure responsible innovation.

How to Align with EU-Level Policy

Alignment with EU policy can be achieved by:

- Ensuring compliance with **EU data protection** and **AI regulations**.
- Collaborating under EU-funded initiatives (like Horizon Europe) to scale solutions.
- Embedding ADR innovations into broader **strategies**.
- Addressing ethical, legal, and societal concerns through **transparent and inclusive policy design**.

Recommendations to Build Long-Term Resilience

1. **Invest in forecasting infrastructure** for public health.
2. Promote **interoperability** and **standardization** of ADR systems across borders.
3. Support **education and upskilling** of healthcare professionals in AI and robotics.
4. Ensure **patient-centric development** with transparency, consent, and communication.
5. Fund **multi-stakeholder innovation ecosystems** through initiatives like ADRA.
6. Create clear pathways for **ethical and legal integration** of ADR into healthcare.

5.8 Foresight session and conclusion

5.8.1 Programme of the session

The objective was to recap the recommendations of the four previous workshops and analyse the convergence between these recommendations.

The last session, *Foresight 2030: ADR Convergence & Policy* started with a key note speech from prof. Willem Jonker.

5.8.2 Key note speech

Willem Jonker brings a broad background in ICT. He worked at KPN Research, the European Computer Industry Research Centre in Munich, and Philips Research, where he was Vice President. As former CEO of EIT Digital in Brussels, he has extensive experience in building European innovation ecosystems. Today, he chairs the board of the AI Coalition for the Netherlands (AIC4NL) and is a part-time professor at the University of Twente (Netherlands).

Figure 23: Key note speech from Willem Jonker

Jonker's presentation was a wake-up call and call for action. In a dynamic manner he outlined the rapid international AI developments and the strengths and weaknesses of Europe. As crucial components to establish a robust European AI position, he highlighted the following:

- ***AI is about Talent:***
  Retain, Attract, and Connect diverse talent. None of us is as smart as all of us. Mobilize our diverse community behind common goals. At this, Jonker presented an overview of the global AL talent flow.

- ***AI is about Data:***
  Data is often referred to as the 'new oil', but it can also be as powerful and precious as 'plutonium'. Like oil, data holds enormous value for today's economies and societies. However, if not utilized thoughtfully, it can pose significant risks. We really have to think about the energy, and how we utilize it.

- ***AI is about Financing:***
  Research, Innovation, and Transition, all require distinct approaches to funding. Financing research entails a funding a plan, a credible consortium, knowledge, and is grants based. While financing innovation means rewarding achievements, winning teams, technology, and a challenge-based approach. As a cautionary example, Jonker highlighted the differences in AI start-up investments and the availability of AI venture capital in the USA compared to Europe.

- ***AI is about Regulation:***
  AI development implies regulation to ensure its ethical and responsible growth. However, new regulation in the EU is growing faster than in other comparable economies. Think about the Digital Markets Act (DMA), Digital Services Act (DSA), General Data Protection Regulation (GDPR), EU Artificial Intelligence Act. In the United States, approximately 3,500 pieces of legislation and 2,000 resolutions were enacted

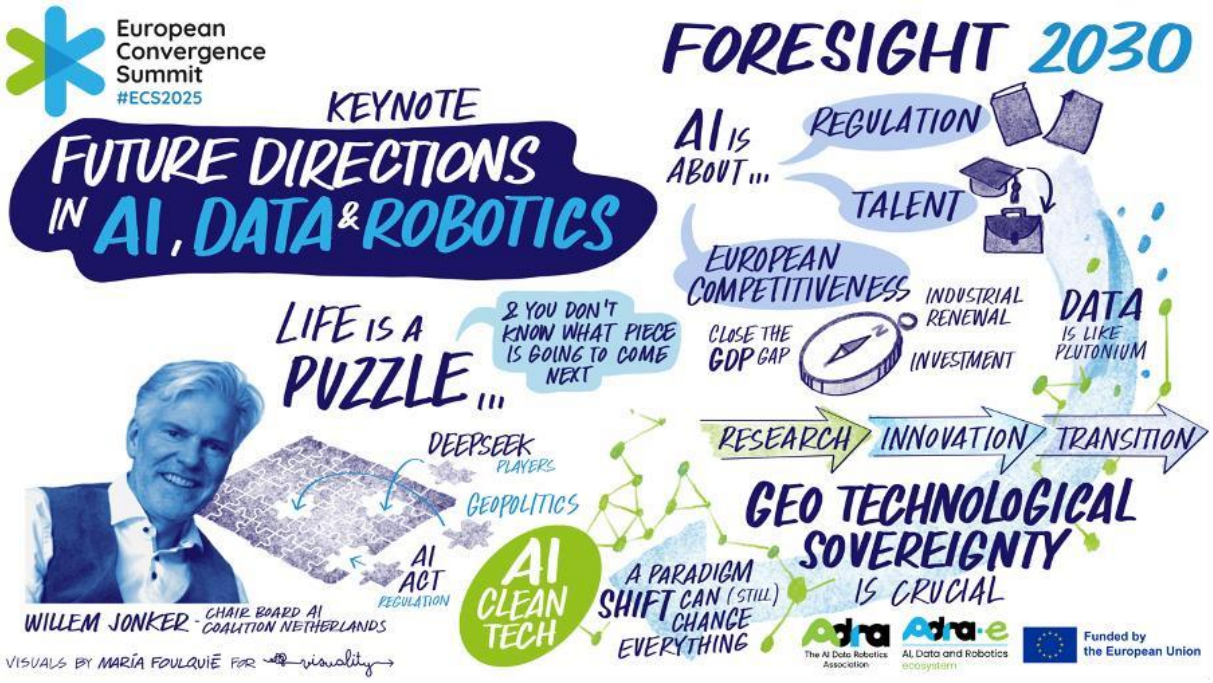
during the past three Congress mandates (2019-2024) at the federal level. The EU has passed around 13,000 Acts during the same period. Despite this increasing flow of regulation, the EU lacks a quantitative framework to analyse the costs and benefits of new laws.

- ***AI is about European Competitiveness:***
  Research → Innovation → Transition. Jonker referred to the key messages in the Draghi report: the starting point – a new landscape for Europe; closing the innovation gap; a joint decarbonization and competitiveness plan; increasing security and reducing dependencies; and the required financial investments.

- ***AI is about Technology and Infrastructure:***
  EU is far behind in AI computing infrastructure. Jonker stressed the importance of scaling the EuroHPC facilities and the need for a 'CERN'-like AI infrastructure.

- ***AI is about Geo Technological Sovereignty:***
  Global Technological Sovereignty is crucial. Jonker discussed globalization and its impact on economic growth by comparing the positions of the USA, China and EU in the car, space and AI sectors across the three axes: Ownership, Sharing, and Access. Car: all own. Space: All own and USA and EU also share. AI: USA and China own and the EU only has access.

- ***AI is about the Market:***
  Life is a puzzle, and you do not know what piece is going to come next. A paradigm shift can still change everything (think about AI Clean Tech). Close the GDP gap. Take care for industrial renewal and investments.



5.8.3 Panel Discussion

The keynote was followed by a panel moderated by Iddo Bante from University of Twente (Netherlands), co-chaired by Philip Piatkiewicz, secretary General of Adra. The panel was composed of:

- Namir Anani – President and CEO at Information and Communication Technology Council ICTC (Canada).

- Emanuela Girardi – President of Adra and Founder of Pop AI (Italy)
- Willem Jonker - Chair Board AI Coalition Netherlands (AIC4NL) and professor at the University of Twente (Netherlands)
- Pieter Kesteloot – Manager Future Technologies at Sirris (Belgium)
- Frédéric Perlant – French Ministry of Higher Education and Research (France)
- Tomislav Vazdar – CEO at Riskoria (Croatia)
- Kai Zenner - European Parliament

The objective of the Foresight Panel was to recap the recommendations of the four previous workshops and to analyse the convergence between these recommendations. Some of the outcomes of the session are illustrated in the figure 26 below.

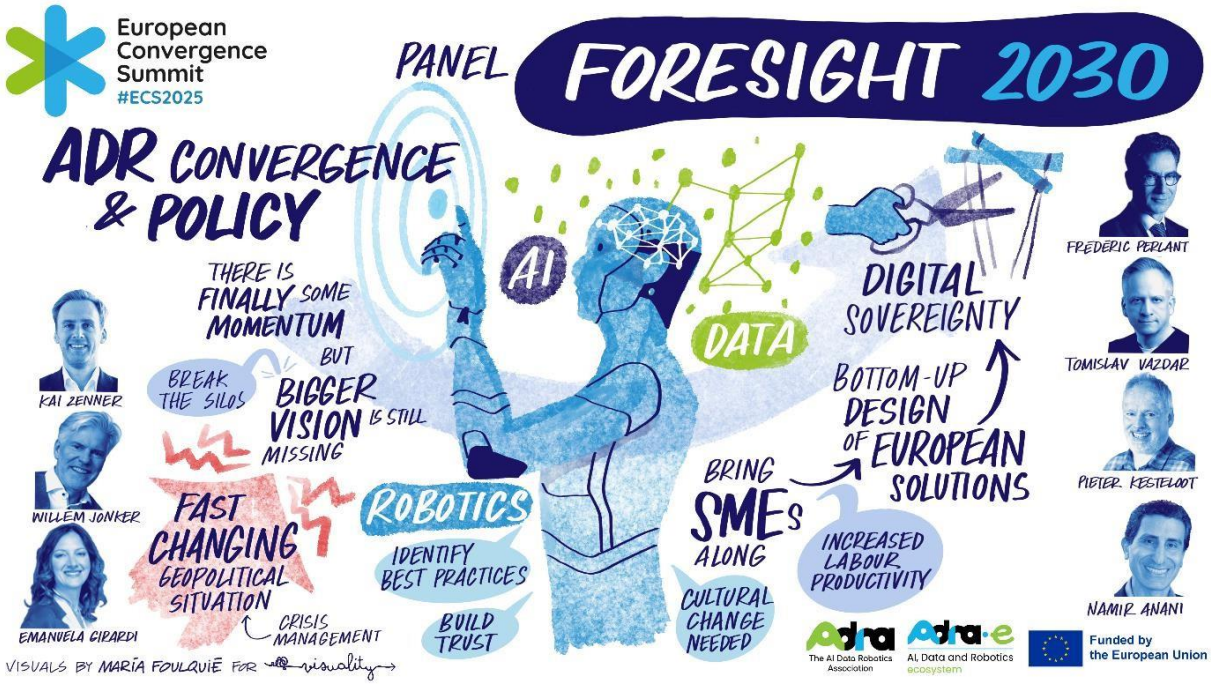


Figure 24: foresight 2030

It was stated that we are living in a challenging yet intriguing time, with some even calling it a multi-crisis period. Resilience in critical areas like defence, civil security, healthcare, and the manufacturing sector is essential for the stability of Europe. During this ECS, we did not cover all important domains. For example, climate change and carbon dioxide reduction were not discussed, but the potential of ADR technologies for carbon dioxide reduction already was the topic of the previous ECS. Perhaps these could be other challenging domains to explore in upcoming ECS events.

Despite the focus on increasing resilience in crisis situations, nowadays the atmosphere was anything but negative. That actually makes sense. It is often observed that challenges and pressure lead to real innovations and breakthroughs, new products and services, and new approaches. During the event, that positive vibe and innovation spirit was evident. There were great discussions, ideas, suggestions, and recommendations for a more resilient Europe. The challenges are so urgent that the panel didn't dwell on the far-away future; instead, it focused on the year 2030, asking what's needed to realize these goals, what the routes and roadmaps are, who the key players are who will take the lead, and how can we move from a reactive to a much more pro-active attitude?

Before these questions were discussed, four panel members briefly presented the outcomes of the previous panel discussions:

1. Civil Security: Frédéric Perlant.
2. Industrial Production: Pieter Kesteloot.

3. Defence: Tom Vazdar.
4. Healthcare: Namir Anani.

Challenges and words frequently mentioned in several of these recaps included:

- ***Data***:
  Data silos can hinder the flexible exchange of data. The low quality of the data available also often requires data enrichment. The growing need for data exchange platforms at both the national and European levels was mentioned several times.

- ***Fragmentation***:
  Fragmentation, both in national approaches and in the technology-standards used, hinders cooperation during crisis situations. This does not encourage the necessary cooperation, when there is often already a lack of coordination between the EU and Member States. It is also important to improve the interoperability of the technological systems.

- ***Communication***:
  There is a need to orchestrate the communication about AI. Europe is often too shy, and we must become prouder.

- ***Skills:***
  While the European education systems are creating highly skilled individuals, which was mentioned in all workshops and panel discussions and is certainly a competitive advantage for Europe, there are still significant labour shortages in various AI fields.

- ***Trust and slow adoption***:
  The slow uptake of ADR technologies is often due to a struggle between privacy and technological progress. It's both about building trust in technologies and in people. Chain responsibility was also mentioned as being often a concern. Who is ultimately responsible when things turn out differently than expected? A lack of resources, especially private investments, is also resulting in the EU lagging behind competitors.

- ***AI-on-the-Edge / Access to Internet and networks***:
  During crisis situations caused by floods, earthquakes and wars, there is often no access to internet and computer networks. This calls for the development of off-line working AI-on-the-Edge technologies.

- ***Other topics:***
  High costs of innovation were also mentioned several times during the earlier discussions. Crises is not a use-case in regulation; that is highly recommended though. We need to build crisis-ready expertise. The high-quality of European infrastructure in general was mentioned several times, but also the need for specific large-scale AI-infrastructure.

There were also evident connections between the various domains discussed during the ECS25:

- Full control of supply chains was mentioned as a challenge both for the advanced manufacturing domain and in the defence sector.
- Cybersecurity was a challenge discussed both during the civil security and the defence sessions.
- Healthcare resilience can be a primary challenge, such as during pandemics, or a secondary effect resulting from another crisis.

In the following panel discussion, various questions were discussed, including: What are the necessary steps to implement these outcomes? Does this align with Europe's strengths? Can the EU undertake this independently, or are we reliant on external players? What distinguishes our European ADR approach from those in the USA and

Asia? How can we move from a reactive to a much more pro-active attitude? Who should take the lead, who is in the driving seat? What is the role of Adra?

Trust was mentioned several times during the discussion. Social acceptance requires that Europe build trust and ensures trustworthiness in ADR technologies. *Without trust, there will be no progress in AI adoption in Europe.* European AI legislation provides a special positioning for Europe but should not lead to strong delays in the innovation process. The importance of balancing the rapid pace of AI developments with European values, legal, and ethical considerations was pointed out several times. The new European AI Office has an important role to play here and during the discussion, there were several references to Evangelia's presentation on the role and activities of the AI Office.

A lack of resources, especially private investments, is also resulting in the EU lagging behind competitors.

Namir Anani from Canada frequently reflected on the discussions between the European panel members. He referred to Europe's favourable starting position. But he also emphasized the urgent need for Europe to accelerate its AI developments. He stressed that mere talk and consensus-building are insufficient; Europe must take tangible action to make progress. And he underlined the important role that the European partnership Adra can play.

How can Europe transition from a reactive to a much more proactive attitude? Panel members referred to the regulatory complexity (e.g. between the EU and its Member States), the slow decision-making processes, and the reactive rather than proactive policies. Instead of chasing competitors, we should adopt a forward-looking research attitude and prioritize European R&I funding allocation more effectively. By identifying priority niches, finding champions, and capitalizing on the EU's natural advantages and cross-cultural richness, we can achieve greater success. It also helps to make Europe more attractive for global talents. For that, Europe need a comprehensive vision for ADR research and innovation and there is a need for a coherent narrative and cultural change. Adra, through Emanuele, immediately took the lead on the questions of who should take action and who is currently in the lead. This is precisely the role Adra desires to play. Adra can play an important role in breaking down the silo's, the needed European defragmentation, and to stimulate cross-sectoral collaboration.

The session ended with a short statement from each panel member. These were clearly aligned with the earlier presented topics.

Figure 25: Foresight panel

Figure 26: Foresight panellists

5.8.4 Outcomes of the session

- **Fragmentation:**
  European research and innovation are too fragmented. Adra can be instrumental in mobilizing the diverse stakeholders of the AI community to achieve common goals, break down silos, stimulate collaborative research and innovation projects, and promote cross-sector and cross-border collaboration.

  The systematic fragmentation, evident in national approaches and technology standards, also hinders cooperation during crisis situations. Improving interoperability of technological systems and strengthening cross-Member States coordination are recommended.

- **Trust is needed for AI adaptation - Tech and ELSE must go together:**
  AI developments necessitate regulation to ensure shared European values and the ethical and responsible growth of AI. However, slow uptake of ADR technologies in society is often a result of the struggle between privacy and technological progress. New regulation in the EU is growing faster than in other comparable economies and to analyse the costs and benefits of new laws, the EU needs a quantitative framework.

  Foster trust, actively work on social acceptance, and address societal resistance to ADR technologies. Engage citizens in shaping policies. Balance rapid AI developments with the time needed to secure European values. Prioritize AI trustworthiness, transparency, and explainability. A human-centric approach should be followed, giving room for the role of humans in AI-based decision-making. Additionally, chain responsibility should be put on the agenda to ensure clarity in determining ultimate responsibility when things don't go as planned. Develop a risk-based regulatory framework that provides greater flexibility for low-risk uses and during crisis situations.

- **Technology, Data and Infrastructure:**
  Data silos can hinder the flexible trans-Member State exchange of data. Additionally, the low quality of the available data often necessitates data enrichment. Europe must address its growing need for data exchange platforms at both the national and European levels, and it is crucial to develop EU-wide data standards that facilitate high-quality interoperability among systems, sectors, and Member States.

  The EU lags significantly in its AI computing infrastructure, requiring the establishment of specialized large-scale AI infrastructure. It is imperative to implement robust infrastructures, data management systems, and access mechanisms and to scale up AI computing-specific EuroHPC facilities.

- **Shift from reactive to proactive strategies:**
  Europe should adopt a much more forward-looking and proactive approach, moving away from the current slow and reactive style. To achieve greater success, Europe needs a comprehensive vision for ADR research and innovation, a coherent narrative, and cultural change. This also involves effectively prioritizing strategic European R&I funding allocation, identifying priority niches, finding champions, and capitalizing on the EU's natural advantages and cross-cultural richness. By doing so, Europe also becomes more attractive to global talents and focuses on the future rather than trying to catch competitors. The aspiration for European sovereignty requires Europe's transition towards Geo-Technological Sovereignty.

  Adra can play an important role in breaking down silos, facilitating European defragmentation, and stimulating cross-sectoral collaboration. This will help move Europe from a reactive AI ecosystem to a proactive and integrated one. Adra can also be instrumental in the necessary orchestration of communication about AI. Europe often lacks confidence and must cultivate a sense of pride.

- **Talent, Skills:**
  The education systems are creating highly skilled individuals, which provide Europe with a competitive advantage and strength. However, there are still significant workforce shortages in various sectors. It is advisable to focus on retaining, attracting, and connecting AI talent.

  Promote dual-domain education in sectors such as healthcare to stimulate the fast uptake of AI in those sectors.

- **Right time**:
  Europe urgently needs to accelerate its AI developments. To make progress, Europe must take tangible actions. Challenges and periods of pressure, which we also face now, often lead to real innovations and breakthroughs, new products and services, and new approaches.

  European AI legislation provides a special positioning for Europe, but it should not lead to strong delays in the innovation process. It's important to balance the rapid pace of AI developments with European values, legal, and ethical considerations.

- **Securing access to Internet and networks**:
  During crisis situations such as floods, earthquakes, and wars, Internet and computer network access is often limited. For such situations, the development of off-line working AI-on-the-Edge technologies is crucial to enable real-time processing and compensate for the lack of connectivity.

- **Building crisis-ready expertise**:
  We must build crisis-ready expertise and develop knowledge and ADR-technologies-based applications to enhance the resilience of critical domains, including industrial production, civil security, defence, and healthcare.

  Crises are not a use-case in regulation; that is highly recommended though.

- **Market / Closing the innovation gap:**
  Europe must close its GDP gap and prioritize industrial renewal and investments. It must address challenges in scaling up and facilitating the rapid growth of start-ups and SMEs. By fostering experimentation, co-creation, and standards alignment, Adra can help transition from innovation potential to widespread, impactful implementation.

  A lack of resources, particularly private investments, contributes to the EU's lagging behind competitors. Innovation is costly, requiring distinct organizational approaches and funding models for the research, the

innovation, and the transition trajectories. It is also crucial to provide more support for start-up investments and increase the availability of AI venture capital.

- **Defence:**
  A dual-use strategy connecting civil and defence research and innovation can significantly strengthen Europe's position. Cybersecurity, for instance, poses challenges in both the civil and defence sectors. Integrating AI into such dual-use technologies through use cases and pilot studies can address joint challenges. Europe must also revise its industrial manufacturing strategy in the defence sector to enable swift adaptation of production.

The ECS wrapped up with closing remarks from Christophe Leroux - CEA

6 Outcomes and next steps

6.1 Recommendations, support to ADR policy

The main suggestions and outcomes of the ECS 2025 for ADR research and innovation in Europe are summarized below, which would support building resilience at European level and to address socio-economic challenges:

Vision, strategy

- Need a comprehensive vision for ADR research and innovation.
- Need for a coherent narrative and cultural change.
- Need to move towards European Sovereignty.
- Need for an ethical and interoperable European ecosystem rooted in shared European Values
    - Prioritise transparency and explainability, in other words demystify AI and foster trust by ensuring that information about AI decisions making process is accessible to public
    - Engage citizens in shaping the policies via surveys and feedbacks
- Break down silos and promote cross-sector collaboration.
- Shift from Reactive to Proactive Innovation Strategies
    - Focus on the future rather than try to catch competitors
    - Build innovation hubs that anticipate technology shift
    - Keep calm and carry on
- Applications of ADR technologies critical for resilience in industrial production, civil security (immigration, disaster resilience, security) as well as for defence readiness and healthcare
    - Support pilots/ use cases that integrate AI into dual use technology (civil + defence)
- Create bootcamps, workshops to train/re-train/educate policymakers at national and EU level so as to support them to be future ready
    - Launch digital literacy programs to support public and policy makers

Acceptance

- Consider social acceptance (AI, robotics, data defence), build trust, address societal resistance to ADR technologies.
- Balance rapid action with European values.

Competitiveness

- Identify best practices.
- Involve, address challenges in scaling up and foster growth of start-ups and SMEs.
- Ensure technologies are fit for purpose and address mismatches between results and desired outcomes, bring advantages to the Companies
- Develop DARPA type challenges to stimulate Research and Innovation and Tech Transfer
- Implement a risk-based regulatory framework that imposes stricter regulation on applications in health or civil liberties but allow more flexibility for low-risk uses

Collaboration

- Fund and expand Strategic R&I collaborations making them as a cornerstone
    - Such as Horizon Europe funding supporting collaborations between different countries and R&I organisations
- Support and favour solution to avoid fragmentation of research
- Favour collaborative projects and cross border collaborations

Recommendations related to the segments of analysis

Civil security

- Effective crisis management and opportunities from crisis situations.
- Swift adaptation of production and R&I.
- Address hybrid threats and supply chain dependencies.

Defence

- Address fast-changing political situations and war conditions.

- Connect civil and defence research and innovation.
- Need advanced manufacturing technologies applied in the defence context
- Revise industrial strategy in defence to enable swift adaptation of production, dual use

Healthcare

- Support healthcare professionals with ADR technologies.
- Improve predictive diagnostics, transparency, and communication with patients.
- Invest in forecasting for public health, prevention, and pandemic management.
- Automated work to address population aging.

Recommendations about technological Focuses

- AI, genAI, data, and robotics crucial for competitiveness, resilience, efficiency, safety, and sustainability.

- Mandate high-quality, Interoperable Data infrastructure
    - Develop EU wide data standards that allow interoperability especially in healthcare
    - Put appropriate infrastructures, data management and access in place
    - Secure shared data infrastructures and cybersecurity for SMEs.
    - Prioritize datasets collection, small datasets, and data protection.
    - Ensure high data quality for training models and reliable results, for accurate diagnostics and decision support.

- Follow human-centric approach, respecting European values and the role of humans in decision-making.
- Promote frugality in innovation and deployment.
- Develop AI on the edge for real-time processing and to compensate for lack of access to internet and/or IT systems.
- Ensure trustworthiness in ADR technologies.
- Foster explainability and transparency in ADR systems.
- Ensure interoperability between systems and sectors.
- Cheaper, more resilient satellites.

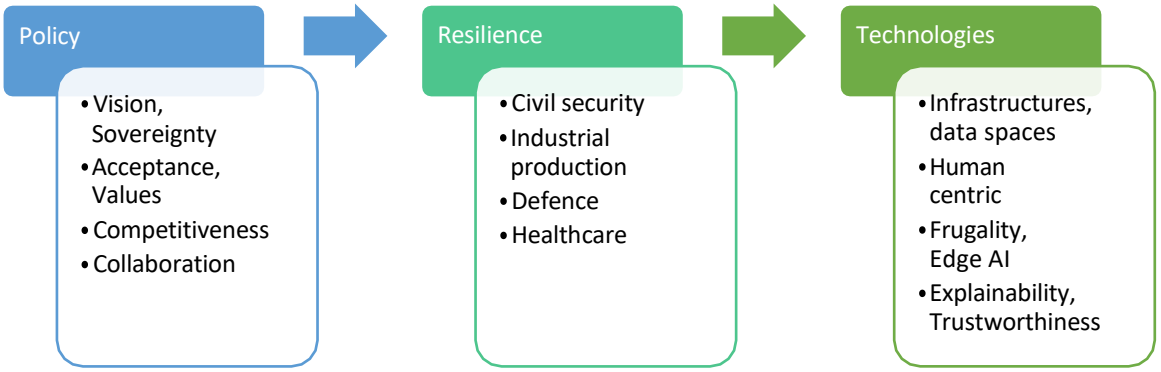


Figure 27: synoptic of recommendations per category

6.2 Communication

Presentation of the outcomes about the ECS 2025 in the media:

- Video from the ECS on the ADRA portal
- Witnessing and posting on the social media such as LinkedIn, Instagram or X

- Recompiling in media and content materials about the ECS in Spain: video of the Spanish mission in Brussels[34], press release[35], digital material[36], news in Navarra Televisión (minute 7:50 - 9:45)[37]

6.3 Lessons learnt

Satisfaction from all participants, speakers and panellists.

Very dense event with **many information shared about strengths, threats, weaknesses, and opportunities** for research and innovation in AI, Big Data and Robotics in Europe.

Forum helping to **consolidate alliances**, **break the silos** and **build a consensual vision**.

Forum very appropriate to **share point of views between experts** in AI, Big Data and robotics technologies and specialists of different sectors of applications around socio economic topics of interest for EU.

Key note speeches, panels, breakout sessions very much appreciated to provide the opportunity to share points of views and thoughts.

The **one-track** session formulation was also very well appreciated as it allowed to mobilize attention of the participants on the same topics all along the day.

Reduced number of participants appreciated as it facilitated the participation of all.

6.4 Sustainability of the ECS

The success of the ECS and the interest of the participant for this event to support policy- making motivates for a replication of the ECS in the next year and make it one of the lighthouses for the ADRA association as well as the ADR forum. Discussions are going on.

The ECS proposes a global methodology with several stages, which can be summarised as:

1. The choice of a socio-economic topic to investigate the possible contributions of ADR technologies
2. The identification of a set of experts, interested in public policies and in the socio-economic topic chosen and/or in AI, Big Data and Robotics technologies
3. The organization of preparatory workshops to analyse the position of Europe with respect to international competition and to propose suggestions for a vision in R&I in Europe
4. The organization of a one-day event in Brussels gathering expert from research, industrials, social sciences, ethics, laws, regulation, involved in public policies, in order to consolidate the results from the preparatory workshops and to build a consensual vision for R&I in Europe.

The resources for the organization of this ECS are rather light, relying on limited human resources. The preparatory workshops are organized online, reducing needs for travel costs. The organization of the event in Brussels can also be very light. The ADRA association is studying several options for the coming years. One consisting on using the support of the AI Office to provide the venue. ADRA is also investigating the possibilities to use its own facilities.

[34] https://youtu.be/D-298YibN2Y

[35] https://www.aditech.com/es/9-entidades-navarras-viajan-a-bruselas-para-impulsar-su-participacion-en-proyectos-europeos/

[36] https://navarracapital.es/nueve-empresas-y-entidades-navarras-buscan-colaboraciones-europeas-en-bruselas-con-aditech/

[37] https://www.navarratelevision.es/alacarta/ab92da79-91b1-b9d4-b3a7f52a566ec730/noticias-1

7 Key takeaway messages

Review of Key Themes and Ideas from the European Convergence Summit - 2025 Edition

This section summarises the key themes as well as the most important ideas and facts presented during the 2025 edition of the European Convergence Summit held in Brussels at the Concert Noble. The primary objective of the Summit was to address crucial questions surrounding research and innovation in AI, robotics, and data, with an emphasis on achieving convergence and building resilience within Europe.

The summit revolved around several interconnected themes, highlighting Europe's ambitions and challenges in the technological landscape:

☑ **"Why" European Research and Innovation in AI:**

A fundamental question addressed was the purpose and motivation behind Europe's investment in research and innovation in AI. The speakers emphasised the importance of establishing both the necessary "**infrastructure in place**" and ensuring the availability of "**data fit to destinations.**" This suggests a focus not only on technical foundations but also on data sovereignty and control within Europe.

☑ **Focus on Practical Application and Competitive Advantage:**

The summit aimed to move beyond theoretical discussions and explore the practical application of technological solutions. A key question posed was "**which of those solutions are available and do they really bring competitive advantages to the companies.**" This highlights a desire to translate research into tangible benefits for European businesses and industries.

☑ **Future-Oriented Strategy and Moving Beyond Catch-Up**:

A strong emphasis was placed on the need for Europe to be proactive and forward-looking in its technological development. The speaker states, "**we need to be more focused on the future rather than trying to catch up with our competitors.**" This reflects an ambition to lead in certain technological domains rather than simply follow trends set elsewhere.

☑ **Convergence of Advanced Technologies for Defence**:

The application of advanced manufacturing technology within the defence context was specifically mentioned. This indicates a focus on leveraging technological advancements, including those in AI and data, to enhance European defence capabilities.

☑ **The Criticality of High-Quality Data**:

The importance of data quality was explicitly linked to the quality of AI systems. The statement "it's going to be data of high quality it means that AI will be also of quite high quality" underscores the fundamental role of robust and reliable data in achieving effective and trustworthy AI.

☑ **Building Resilient Systems with Technology**:

A significant theme was the use of AI, data, and robotics to construct resilient systems across various sectors. The specific mention of "**healthcare systems across Europe**" provides a concrete example of the application of these technologies to enhance resilience in critical areas.

☑ **Navigating Global Turbulence**:

The current global environment, described as "**all these turbulences going on around us**," was acknowledged as a factor creating confusion and uncertainty about the best path forward. This highlights the external pressures and complexities that influence Europe's technological strategy.

☑ **Pathways to Harnessing Research: Dialogue, Collaboration, and Interoperability**:

The concluding statement of the summit offers a clear direction for leveraging research in AI, robotics, and data. The conclusion is that to achieve this, Europe should invest in:

- **"A sustained dialogue"**: Emphasizing the need for ongoing communication and exchange of ideas.
- **"In a cross- sectoral collaboration"**: Highlighting the importance of collaboration between different industries and domains.
- **"In an interoperable ecosystem"**: Stressing the necessity of systems and technologies that can work together seamlessly.
- These efforts are explicitly stated as being **"all rooted in shared values in Europe."** This underscores the intention to develop and deploy technology in a consistent manner with European ethical and societal principles.

The European Convergence Summit - 2025 Edition provided a platform for discussing Europe's strategic direction in AI, data, and robotics. **The key takeaways point towards a future-oriented approach focused on practical applications, competitive advantages, and building resilient systems across various sectors.** The emphasis on high-quality data, cross-sectoral collaboration, and an interoperable ecosystem, all grounded in shared European values, outlines a clear pathway for harnessing the potential of these technologies for the benefit of Europe. The acknowledgment of global turbulence highlights the challenging context within which these ambitions are being pursued.

8 Appendices

8.1 List of contributors

Abad-Perez, Jaime - European Civil Protection and Humanitarian Aid Operations

Alexopoulos, Kosmas - Laboratory for Manufacturing Systems & Automation

Amihalachioae, Cornelia - EFFRA

Anani, Namir - ICTC

Bante, Iddo - University of Twente

Baric, Lorena - CROAI

Betinelli, Pascale - Thales

Contreras, Jesus - EIT Digital

Dalmau Moreno, Magí - EURECAT

de Nazelle, Paul - Shark Robotics

El Haddad, Elizabeth - INRIA

Fusco, Flavio - Leonardo

Gallegos, Belen - EVIDEN

Geurts, Joost - INRIA

Girardi, Emanuela - Adra

Girenko, Andrey - DFKI

Gusmeroli, Sergio - Politecnico di Milano

Habert, Viviane - INRIA

Hacque-Cosson, Francoise - CEA

Ivanova, Valentina - CEA

Jonker, Willem - Chair Board AI Coalition Netherlands, professor at University of Twente

Juretzki, Bjoern - European Commission DG CNECT

Kesteloot, Pieter - Sirris

Kiseleva, Anastasiya - VUB

Klanjcec, Dora - CROAI

Leroux, Christophe - CEA

Makrogamvraki, Katerina - UvA

Markidou, Evangelia - European AI Office

Perlant, Frédéric - Ministère de l'enseignement supérieur et de la Recherche

Piatkiewicz, Philip - Secretary General ADRA

Quinones, Eduardo - Barcelona Super Computing

Schoenauer, Marc - INRIA

Shapoval, Olga - Kharkiv IT Cluster

Siepel, Françoise - University of Twente

Ubelhor, Martin - European Commission DG Home

Vazdar, Tomislav - Riskoria

Villar Acevedo, Eloisa - EVIDEN

Wintrebert, Benoît - INRIA

Zazzeri, Niccolò - Trust-IT Services

Zenner, Kai - European Parliament

Iglesias Diaz, Maitena - UvA (University van Amsterdam)

Sanchez Margallo, Juan - Jesús Usón Centre

Schmitt, Tugce - Maastricht University

Schwarzkopf, Patrick – VDMA

8.2 ECS 25 Committees.

8.2.1 The programme committee

In charge of the agenda, of the recruitment of experts. The program committee was composed of

- Christophe Leroux, CEA
- Andrey Girenko, DFKI
- Françoise Siepel, University of Twente
- Iddo Bante, University of Twente

8.2.2 The organization committee

In charge of the venue, the logistics and organization of the workshops and event.

- Elizabeth El Addad, INRIA
- Lorena Baric, CROAI
- Dora Klanjec, CROAI

8.2.3 The communication committee

In charge of the communication and dissemination actions,

- Niccolo Zazzeri, Trust-IT
- Mei-Shan Krishnan, ADRA

8.3 ECS 2025 agenda

Time		Session title	Speaker
08:00	09:00	Registration and Welcome coffee	
09:00	09:10	Welcome and Introduction to the European Convergence Summit	Christophe Leroux - CEA, European Affairs
09:10	09:30	Keynote from the AI Office	Evangelia Markidou - European AI Office
Session 1: ADR and Resilience in Civil Security: In the Event of Natural Disasters, Cybersecurity Challenges, and More			
09:30	09:50	Keynote address: Enhancing resilience through AI in critical infrastructures	Martin Ubelhor - European Commission DG Home
09:50	10:00	Workshop key outcomes	Christophe Leroux - CEA, European Affairs
10:00	10:40	Panel session: ADR technologies in Civil Protection and Public Safety *Moderator: Marc Schoenauer - Inria*	Martin Ubelhor - European Commission DG Home Frédéric Perlant - Ministère de l'enseignement supérieur et de la Recherche Paul de Nazelle - Shark Robotics Eduardo Quiñones - Barcelona Super Computing Jesus Contreras - EIT Digital Jaime Abad-Perez - European Civil Protection and Humanitarian Aid Operations
10:40	11:00	Networking Break over coffee	
Session 2: ADR and Resilience in industrial production: Case of Supply Chain Issues, Critical Materials, Energy Supply, and More			
11:00	11:20	Keynote address: Manufacturing as a Service: Manufacturing as a Service: How AI, Data & Robotics are reshaping the manufacturing Industry	Pieter Kesteloot - Sirris
11:20	11:30	Workshop key outcomes	Andrey Girenko - DFKI
11:30	12:10	Panel session: ADR technology deployment in manufacturing *Moderator: Andrey Girenko - DFKI*	Patrick Schwarzkopf - VDMA Sergio Gusmeroli - Politecnico di Milano Kosmas Alexopoulos - Laboratory for Manufacturing Systems & Automation Cornelia Amihalachioae - EFFRA Valentina Ivanova - CEA-LIST, European Testing and Experimentation Facility for Manufacturing
12:10	13:10	Lunch Break	
Session 3: ADR and Resilience in Defence: conflicts, defence industry			
13:10	13:30	Keynote address: Leveraging ADR technologies in national and European defence - insight from an industrial company	Pascale Betinelli - Thales
13:30	13:40	Workshop Key Outcomes	Christophe Leroux - CEA, European Affairs
13:40	14:20	Panel session: ADR technologies for operational efficiency and threat detection *Moderator: Andrey Girenko - DFKI*	Bjoern Juretzki - European Commission DG CNECT Olga Shapoval - Kharkiv IT Cluster Pascale Betinelli - Thales Flavio Fusco - Leonardo Benoît Wintrebert - Inria Tomislav Vazdar - Riskoria
Session 4: ADR and Resilience in Healthcare: For Example, in the Event of a Pandemic			
14:20	14:40	Keynote address: ADR and patient care	Anastasiya Kiseleva - VUB
14:40	14:50	Workshop key outcomes	Françoise Siepel - University of Twente
14:50	15:30	Panel session: Predictive diagnostics and personalized medicine	Namir Anani - ICTC Magí Dalmau Moreno - EURECAT

		Moderator: Françoise Siepel - University of Twente	Juan Sánchez Margallo - Jesús Usón Centre Anastasiya Kiseleva - VUB Tugce Schmitt - Maastricht University
15:30	15:50	Networking Break over coffee	
15:50	16:10	Keynote Speech: Future Directions in AI, Data and Robotics	Willem Jonker - Chair Board AI Coalition Netherlands
Session 5: Foresight 2030			
16:10	16:50	Foresight 2030: ADR Convergence & Policy *Moderator: Iddo Bante - University of Twente* *Co-chair: Philip Piatkiewicz - Adra*	Kai Zenner - European Parliament Willem Jonker - Chair Board AI Coalition Netherlands Emanuela Girardi - Adra Frédéric Perlant - Ministère de l'enseignement supérieur et de la Recherche Tomislav Vazdar - Riskoria Pieter Kesteloot - Sirris Namir Anani - ICTC
16:50	17:00	Wrap-up and closing	Christophe Leroux - CEA, European Affairs

8.4 Speakers and panellists

Emanuela Girardi,

Adra

Emanuela Girardi currently serve as President of Adra. She is the founder and president of Pop AI (Popular Artificial Intelligence), and the founder and CEO of AI Value.

She is a member of the group of artificial intelligence experts appointed by the Italian Ministry of Economic Development to elaborate the Italian national AI strategy.

She holds positions on the boards of AIxIA (the Italian Association for Artificial Intelligence), the Advisory board of CLAIRE (Confederation of laboratories of AI in Europe), Fondazione per la Scuola of Compagnia San Paolo and IGF Italy (Internet Governance Forum by the United Nations).

She teaches AI & Sustainability at Politecnico University of Turin and was honoured in 2021 as one of the "Inspiring Fifty," recognising her as one of the most inspiring women in tech in Italy.

Christophe Leroux,

CEA

Christophe Leroux received a PhD degree in Decision Theory from the Sorbonne University in Paris in 1990.
He is a senior researcher in AI for robotics. He is currently Manager of European Affairs at the LIST institute from CEA Paris-Saclay. He coordinates and represents CEA in several research and innovation projects on AI and robotics.
He is member of the Board of Directors of the ADRA association as well as in the euRobotics association.

Christophe Leroux is the author of several scientific papers in international conferences and journals, on the applications of AI to robotics, on ethical, legal and socioeconomic issues in robotics and on support to innovation in robotics.

Iddo Bante, University of Twente

Iddo is Business Director European Partnerships at the University of Twente in the Netherlands. At the university, he is also business director of the Digital Society Institute and member of the core team of the Strategic Business Development department.

Many of Iddo's activities take place at the intersection of technology-ELSE-innovation to embed digital technology in society and to create social and economic impact. He is coordinator of the Adra Topic Group 'Innovation, Uptake and Deployment of AI-Data-Robotics technologies', and member of the Supervisory Board of EIT Digital, Europe's largest digital innovation ecosystem.

Francoise Siepel

University of Twente

Françoise Siepel received her M.Sc. in Technical Medicine with specialization Robotics and Imaging in 2010. She obtained her PhD in 3 years and has spent more than 15 years on research, winning approx. 1 million euros of personal awards including one PhD and 2 Postdoc grants and has currently 50+ publications. She has international experience from the University of Bergen, Kings College and more than 5 years at the Stavanger University hospital where she worked out various technical medical related projects. In 2016 she joined the Robotics and Mechatronics group, and focuses on medical technology and especially image guided robotic interventions and is involved in research/education. She performs the coordination of the European DIH-HERO, MURAB and national SUNRAM, Nextgen project.

Philip Piatkiewicz

Adra

Philip Piatkiewicz is a seasoned leader in European affairs and project management, currently serving as the head of Adra – the AI, Data, and Robotics Association. Adra is a leading strategic technology network of stakeholders from academia, industry, and the public sector, dedicated to advancing and adopting AI, data, and robotics technologies across Europe. Adra acts as the private side for the AI, Data, Robotics public-private partnership in Horizon Europe.

Philip's expertise encompasses strategic planning, stakeholder engagement, policy analysis, and project execution. He has successfully managed and coordinated complex collaborative projects that support the research, innovation, and industrial agendas of regional, national and EU level, with a particular focus on key enabling technologies and digital industries.

Martin Ubelhor

European Commission DG HOME

Martin Übelhör works in the European Commission, Directorate-General for Migration and Home Affairs (DG HOME) as Deputy Head of Unit for Innovation and Security Research. His unit manages EU funding for R+I in topics such as fight against crime and terrorism, critical infrastructure protection, border management, and disaster-resilient societies. Prior to that, he worked the Commission's DG Connect as Head of Sector for Cybersecurity Industry and Innovation, setting up a European Cybersecurity Competence Centre and Network in Bucharest. He joined the European Commission in 2008, where we worked on various topics in relation to digitisation and helped set up and manage a number EU funding programmes, such as the Connecting Europe Facility and the Digital Europe Programme.

Andrey Girenko

DFKI

Dr. Andrey Girenko, Research and Development Administrator at DFKI, German Research Centre for Artificial Intelligence, responsible for European relations. Starting from the EU's 4th Framework Programme he has been involved in the acquisition, coordination and evaluation of more than 100 European research and innovation projects across several thematic areas. In 2013-2020 he worked as a DFKI's master contact to EIT (KICs Digital, Manufacturing and Health) and until now is an evaluation expert of EIT Manufacturing. The manager of several significant European projects in the field of Industrial AI, such as RICAIP, MAS4AI and RAASCEMAN. In the Adra-e project he leads the activities in the area of Industrial Production.

Patrick Schwarzkopf

VDMA

Patrick has been advancing automation technology at VDMA since 1999. Having connected various disciplines in the VDMA Factory Automation Forum, he began focusing on machine vision, robotics and integrated assembly solutions.
Between 2000 and 2013 he served as General Secretary of EFAC, the European Factory Automation Committee uniting national associations from 7 European countries. From 2004 to 2012 he was General Secretary of EMVA, the European Machine Vision Association.
He was appointed Managing Director of the VDMA Robotics + Automation Association (VDMA R+A) as of May 2014. Patrick is currently a member of the Executive Board of the International Federation of Robotics (IFR).

Sergio Gusmeroli

Politecnico di Milano

Sergio Gusmeroli is Research Coordinator at Politecnico di Milano, Industrial Engineering Department. He has been and is coordinating several H2020 and HEP projects in the domain of Digital Manufacturing, especially focusing on Data Technologies and Artificial Intelligence. Sergio is also co-leading the BDVA working group about Smart Manufacturing Industry and is work package leader of the SM4RTENANCE deployment action in the Digital Europe Programme about Data Spaces for Manufacturing.
The key question to be debated in the panel is: how is the convergence of AI Data and Robotics solutions affecting sustainability and resilience of Manufacturing value chains? I can bring the experience from the Circular TwAIn (ADRA MiE) and MAASive (MiE) projects.

Kosmas Alexopoulos

Laboratory for Manufacturing Systems & Automation

Dr. Kosmas Alexopoulos has graduated from the Computer Engineering and Informatics Department of University of Patras, Greece in 1999. He has received a Ph.D. in engineering (2006) from the University of Patras – Greece. Since October 1998 he has been working at the Laboratory for Manufacturing Systems and Automation (LMS) of the University of Patras as a software engineer, senior researcher and project manager in more than 30 European and National research projects. Since November 2024 he is Associate Professor in the department of Digital Industry Technologies of University of Athens, Greece. SYRIOS, RealMan, VIRTUE, LicoPro, x-Change, MyCar, DIFAC, VISION, Sense&React, INTERACT, ICP4Life, MANUWORK, MARKET4.0, Connected Factories II, MAS4AI, OPENZDM and FLEX4RES are indicative projects.

His research area and expertise are in the fields of smart factory, digital factory, flexibility of manufacturing systems, digital transformation, virtual and augmented reality, internet of things, industrial dataspaces, cyber-physical-systems, industrial product service systems, computer-aided ergonomics analysis and modelling, human motion modelling and simulation, semantics, production scheduling and artificial intelligence. He has been leading research teams towards accomplishing technical engineering achievements in manufacturing mainly by investigating new technology for the digital and smart factory. He is the coordinator of Gaia-X Hub in Greece and leads the International Dataspaces Association (IDSA) Competence Center in Greece. He has currently more than 100 publications, including papers in international refereed scientific journals, chapters in books, and papers in conference proceedings with review in the full paper

Valentina Ivanova

CEA

Dr Valentina Ivanova (F) is chemical engineer from Chemical Technological and Metallurgical University, Sofia, Bulgaria. Her research career started in the Institute of Physical Chemistry of Bulgarian Academy of Sciences, Sofia, Bulgaria, where obtained her PhD degree in Physical Chemistry. In the period 1999–2005 she was successively appointed as Senior Scientist at the Université Libre de Bruxelles, Belgium and at the University of Ulm, Germany.

In that period, her scientific activities were devoted on the development of new technique for metallization of thin organic films and molecular electronics. Since 2005, Dr Ivanova is employed at CEA. She was leading a research team in the domain of wide bandgap semiconductors, optoelectronics and nanostructured solar cells. She habilitated from Institut national polytechnique de Grenoble (INPG). Presently, she is Deputy Director of CEA-List Institute in charge of European and International affairs and is coordinating the project AI-METTERS (Artificial Intelligence Testing Experimentation Facilities (TEF) for Manufacturing). Dr Ivanova is member of the Board of the European Partnership Made in Europe. She published 60 scientific papers in scientific journals as Nature Materials, Advanced Materials, Advanced Energy Materials, is co-author of 10 patents, and is Fellow of Global School for Advanced Studies.

Willem Jonker

AIC4NL

Willem Jonker currently is Chairman of the Board at AIC4NL.

Prof. Willem Jonker brings a broad background in ICT. He worked at KPN Research, the European Computer Industry Research Centre in Munich and Philips Research, where he was Vice President. As former CEO of EIT Digital in Brussels, he has extensive experience in building European innovation ecosystems. He is also a part-time professor at the University of Twente.

Kai Zenner

European Parliament

Kai Zenner is Head of Office and Digital Policy Adviser for MEP Axel Voss (European People's Party Group) in the European Parliament. Describing himself as a digital enthusiast, he focuses on AI, data and the EU's digital transition. Currently, he is involved in the political negotiations on the AI Act, AI liability directive, eprivacy Regulation and GDPR revision. In his individual capacity, he is pushing for reforms within the European Parliament and for bringing back the Better Regulation agenda to EU policymaking. Mr Zenner graduated in political science (M.Sc. at University of Edinburgh, B.A. at University of Bremen) and in law (State Exam at University of M‚¼nster). Before moving to the European Parliament, he worked as research associate at the European office of the Konrad Adenauer Foundation in Brussels. He is member of the OECD.AI Network of Experts since 2021, was awarded best MEP Assistant in 2023 ("APA who has gone above and beyond in his duties") and ranked Place #13 in Politico's Power 40 - class 2023 ("top influencers who are most effectively setting the agenda in politics, public policy and advocacy in Brussels").

Flavio Fusco

Leonardo

Flavio Fusco is the Head of Civil RD&I Cooperative Projects & Grants at Leonardo, a multinational company in the sector of Aerospace, Defence & Security.
He is an active member of several national and European associations and coordination bodies.
Studies: graduated in physics. Technical background: worked as a systems engineer and project manager in different areas of space robotics, aeronautical systems and air traffic control. Management background: leading a team of senior engineers for 15 years.

Paul de Nazelle

Shark Robotics

Paul de Nazelle is Chief Technology Officer (CTO) at Shark Robotics, the European leader in ground robotics applied to civil security. With a doctorate in mechanical structure optimisation from the École Centrale de Lyon, Paul has over 15 years' experience in R&D, the development of complex systems and the management of multidisciplinary teams.

Over the course of his career, he has held key positions in technological innovation, notably as head of the mechanical engineering department and technical leader for batteries at Forsee Power, as well as head of the 'Simulation and Optimisation' research team at the SystemX Technological Research Institute. He also co-founded iOpti S.A.S, a company specialising in design optimisation.

His expertise covers the design of embedded systems, the development of traction batteries, digital simulation and the optimisation of mechanical structures. Today, he brings his technical and strategic leadership to Shark Robotics to steer the technological development of innovative robotic solutions for extreme environments.

Paul is passionate about technology and is convinced that artificial intelligence will profoundly transform the robotics sector, particularly in the key areas of perception of the world and control of autonomous systems.

Olga Shapoval

Kharkiv IT Cluster

Executive Director of Kharkiv IT Cluster, leader of EEN Ukraine, and implementation coordinator of Eastern Ukraine EDIH.

A visionary leader with 17 years in C-level positions, Olga holds a master's degree in finance and international marketing and an AMBA-certified MBA. She has led 75+ transformative projects, including the launch of Diia City and Eastern Ukraine EDIH. Since 2022, she has been the Lead of EEN Ukraine's local contact point. Thanks to her proactive efforts, Kharkiv IT Cluster united over 625 IT companies and partners in 2024 and earned the ECEI Bronze Label from ESCA. As a 2024 Red Kalyna Award finalist, she inspires innovation and empowers women in tech.

Pascale Betinelli

Thales

Pascale Betinelli-Deck has extensive experience in digital transformation, data science and interactive systems. Since May 2023, she has been working as a technical leader in data transformation and data science at Thales LAS OME, where she is responsible for deploying and executing data governance, as well as building funded or collaborative research projects with other industry and academia.

Benoît Wintrebert

Inria

Director of Strategic Anticipation at Inria Defense, I explore and shape technological futures in cybersecurity, AI, drones and space technologies. With over 15 years' experience in strategic innovation and cutting-edge research, I help large organizations turn scientific discoveries into competitive advantages.

Formerly in charge of the research and innovation program at the French Ministry of Defence, I structured a confidential innovation pipeline, exploiting the best advances in the civilian world to meet strategic and sovereign challenges. My approach combines technological exploration, secret innovation strategy and pragmatic deployment on a European scale.

Pieter Kesteloot

Sirris

Electromechanical engineer graduated from KU Leuven.
Project engineer and leader of regional, national, and European R&D projects.
Currently active as manager future technologies within the corporate development department of Sirris, an industry-driven collective RTO for the Belgian technology industry.

Since 2003, fascinated by and working in the domain of Future technologies for the Belgian technological industry:- Technology Watch- Roadmapping and Masterplan development - Community-driven innovation, development of research and technology transfer projects - R&D Program Management. Currently focus theme of Manufacturing as a Service (MAAS),as project coordinator of MASTT2040, a CSA foresight project on “Manufacturing as a Service for the EU's twin transition until 2040”

Eduardo Quiñones

BSC

Dr. Eduardo Quiñones is a Group Leader and Senior Researcher at the Barcelona Supercomputing Center, specializing in the integration of cutting-edge technologies like artificial intelligence, data mining, advanced computing, into real-world applications. He has a strong background in edge, cloud and HPC systems, and his work focuses on leveraging these technologies to enhance decision-making in urban environments, including in crisis management scenarios. Eduardo leads numerous European- and nationally funded projects across several European cities that work at the intersection of research and practical implementation.

Cornelia Amihalachioae

EFFRA

Cornelia Amihalachioae is the Innovation and Programme Management Adviser in the European Factories of the Future Research Association (EFFRA) – the industry-driven European association promoting the development of innovative production technologies, and the European Commission's private partner in the "Made in Europe" PPP under Horizon Europe.

Innovation and programme management practitioner with >20 years' experience in the private, public and associative sectors, Cornelia has worked since 2005 in development programmes funded by the World Bank, UNDP and SIDA in such areas as Digital Governance and Public Services Modernization, Energy and Water sectors reform, and in the last years - in the manufacturing industry-related R&I initiatives. Her focus is digital transformation, research and innovation, twin digital and environmental transition, human-centric innovation, open governance, and tech for development.

Bjoern Juretzki

European Commission DG CNECT

Head Of Unit - European Commission, Directorate-General for Communications Networks, Content and Technology (DG CONNECT) Björn Juretzki is Head of Unit for "Data Policy and Innovation" in the European Commission's Directorate General for Communications Networks, Content and Technology (DG CONNECT). The Unit supports the European data economy through policy initiatives such as the Data Act and the Data Governance Act. The Unit is also responsible for coordinating data spaces and steering the strategic research and innovation agenda in the sector. Mr. Juretzki has previously worked as a policy officer in artificial intelligence and robotics in DG CONNECT. Prior to becoming Head of Unit for "Data Policy and Innovation", he was the Assistant to the Director-General in DG CONNECT.

Anastasiya Kiseleva

Vrije Universiteit Brussel

Anastasiya Kiseleva is doing international and interdisciplinary PhD research funded and supported by the EUTOPIA program. Her research is about balancing AI's transparency in healthcare with its safety and quality from legal and technical perspectives. The project is organised in collaboration between Vrije Universiteit Brussels as a home university (represented by the Research Group Law, Science, Technology and Society (LSTS) responsible for legal expertise) and CY Cergy University Paris as a host university (represented by ETIS Research Lab and leading the technical area of the project).

Anastasiya works on different topics in health law and technologies, including the European Health Data Space, AI-based medical devices, genetic testing and editing with AI. Her papers in the mentioned areas were top listed by the publishing journals and cited by the European Parliament and the European Commission. She is a

member of Ethics Advisory Boards in several EU-funded projects such as DigiCare4You and Marvel. Since June 2023, she joined the Editorial Board of the European Health & Pharmaceutical Law Review. She acts as an external AI Policy Expert at EUMASS (the European Union of Medicine in Assurance and Social Security).

Anastasiya holds an LL.M. in IP & IT Law (EULISP) from Leibniz University Hannover (magna cum laude). Before fully focusing her career on academia, she has been previously practicing intellectual property and information technology law for more than 8 years.

Namir Anani

Information and Communications Technology Council

Namir Anani is the President and CEO of the Information and Communications Technology Council (ictc-ctic.ca). He is the chief strategist and driving force in bringing ICTC's world-class centre of expertise and services to industry, education and government, shaping Canada's digital advantage in a global economy.

Before joining ICTC, Namir previously led Policy Development & Research at the Canadian Radio-television and Telecommunications Commission (CRTC).

Tomislav Vazdar

Riskoria

Tomislav Vazdar has been working at the intersection of cybersecurity and artificial intelligence for over two decades.

As CEO of Riskoria, he focuses on helping organizations develop integrated strategies for secure digital transformation, compliance, and AI governance.

He serves as Area Chair for Enterprise Cybersecurity at the Open Institute of Technology, where he leads postgraduate programs on cybersecurity leadership and risk.

Tomislav is a board member of CroAI, contributing to national dialogue on responsible AI adoption and innovation.

He regularly lectures and mentors in global AI accelerator programs, supporting non-profits and start-ups working on high-impact technologies.

Evangelia Markidou

European AI Office

Magí Dalmau Moreno

EURECAT

Frédéric Perlant

Ministère de l'enseignement supérieur et de la Recherche

Frédéric Perlant is National Contact Point (NCP) and expert for Program Committee Representation (PCR) for the « Civil Security for Society » Cluster of Horizon Europe program at the French Ministry of Higher Education and Research (Ministère chargé de l'enseignement supérieur et de la Recherche). He is seconded from Airbus Defense and Space where he has been Key Account Manager for European R&T Public funding since around 10 years.

Before he was Head of European projects and Manager of Special projects at ASTRIUM Chief Technical Office. He has been working with EC funding for 27 years, and in particular with security for more than 20 years. He owns an engineering diploma from « Ecole Nationale Supérieure de l'Aéronautique et de l'Espace » and a Master degree in Artificial Intelligence and Image Processing from « Ecole Nationale Supérieure des Télécommunications ».

Marc Schoenauer

Inria

Marc Schoenauer, Emeritus Principal Senior Researcher (DR0) with INRIA, is the scientific coordinator of Adra-e, the Coordinated Support Action that supports the AI, Data, Robotics partnership.

After 20 years with CNRS at CMAP of Ecole Polytechnique, he joined Inria in 2001 and founded the TAO team at Saclay together with Michèle Sebag in 2003. Since then, he has been working at the border between Evolutionary Computation (EC) and Machine Learning (ML), author of more than 200 papers, (co-)advisor of 43 PhD students.

He has been Chair of ACM-SIGEVO (2015-2019), was the founding president (1995-2002) of Evolution Artificielle, and president of AFIA (2002-2004). He has been Editor in Chief of Evolutionary Computation Journal (2002-2009), is or has been in the Editorial Board of the most prestigious journals in EC and ML, including Action Editor of JMLR (2013-2024).

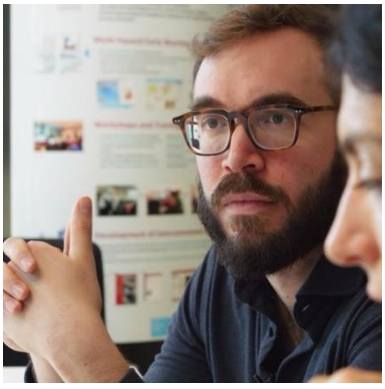
He seconded Cédric Villani in writing his report on the French Strategy for AI delivered to President Macron in March 2018, and has been Deputy Research Director of Inria in charge of AI (2019-2024).

Jesus Contreras

EIT Digital

Dr. Jesus Contreras has experience in innovation related activities within the ICT sector since 1998. He received his PhD from the Universidad Politécnica de Madrid in Artificial Intelligence in 2004 and an MBA in 2006.

His career includes positions as research engineer in Software A.G., acting as Director for R&D in Intelligent Software Components (iSOCO), Head of Business Development at Denodo, and Chief Operating Officer at Taiger, all companies dealing with edge technologies creating new products or services. During his career, he was also part time teacher at several universities: Universidad Carlos III de Madrid, Universidad Rey Juan Carlos and evaluator of funded projects for the European Commission and Spanish government.



Jaime Abad-Perez

European Civil Protection and Humanitarian Aid Operations

Jaime Abad Pérez is a natural hazards risk engineer with 14 years of experience. He works as a scientific analyst in the Analytical Team of the European Commission's Emergency Response Coordination Centre (ERCC), providing situational awareness to the Union Civil Protection Mechanism.