French-German Executive's Dialogue on Artificial Intelligence for Industry

A Report on Advancing Towards a Sovereign and Competitive European AI Ecosystem

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Summary

Introduction

After launching the French-German AI Industry Executives' Dialogue in January 2025, key actors from applied research, industry, innovation and academia are sharing their recommendations in 7 key sectors for the development of industrial AI in Europe. Initiated by the French Embassy in Berlin and led by Fraunhofer-Gesellschaft, Inria and Institut Mines-Télécom, the Dialogue's aim is to deliver concrete proposals for steps toward a sovereign, competitive and sustainable industrial AI ecosystem in Europe.

From Shared Priorities to Concrete Proposals

Held in Berlin in January 2025, the inaugural dialogue brought together over 40 French and German stakeholders to align on strategic priorities. This joint momentum, opened to both ecosystems in a coalition of the willing, reflects a shared ambition to create the conditions for a more competitive and sovereign AI ecosystem by defining coordinated roadmaps across major industrial domains and by sharing the following priorities:

1. **Simplified, business and innovation friendly regulations,** in particular the implementation of AI Act and Data act
2. A robust and scalable **AI infrastructure,** comprising a European cloud service ecosystem
3. Stable, affordable and sustainable **energy supply**
4. **Talent acquisition and development strategies** effectively attracting and retaining skilled professionals in Europe and from abroad
5. **Focus on strategic verticals** and applied language models and promotion of frugal and sustainable AI

Since this launching, multi-stakeholder vertical workshops have been conducted in the key sectors of energy, healthcare, manufacturing, agrifood, media and telecommunications. Over 100 industry representatives discussed with AI suppliers and academia on key AI use cases in their domain[1].

The outcomes of these workshops have been consolidated outlining concrete proposals, success indicators plus potential investment pathways for strategic AI applications and R&D funding opportunities. These results were partially revealed at the Adopt AI Summit in Paris in November 2025 and finally consolidated in the form of the present report, that was presented by its authors to the French and German ministries in charge of industry at the French-German Forum for Industrial AI in Paris on April 17, 2026.

1. The list of endorsing companies of the present report after participation in the workshops can be found in Appendix A.

Conclusions and recommendations for the key sectors

The following sections present the main industrial needs, challenges and recommendations identified during the French-German thematic workshops held in the Dialogue during the year 2025.

1.

European Digital Infrastructures for AI Solutions Deployment

We address the technological and economical challenges and recommendations regarding the development of European digital infrastructures for the deployment of European AI solutions. This includes the data spaces, telecommunication networks, and cloud infrastructures and services, that we shall refer as "the Telco/Cloud infrastructures" in the sequel.

Industrial Needs and Challenges

Scale-up of the digital infrastructures.
AI applications, especially generative AI and real-time analytics, require massive data processing, high-performance computing power, and low-latency networks. The European Telecommunication and Cloud industries have to heavily scale-up their infrastructures and services for the deployment of AI. This requires significant investments in infrastructures as well as in R&D activities to develop the related software stacks and services. **GPU computing power capacity is crucial for Europe, the EU AI factories and Gigafactories initiatives are a significant step towards bridging the gap in this area with respect to US or China capacities.** Europe struggles to match the scale of US/China in AI infrastructure (e.g., number of GPUs, energy costs, data center real estate in some countries). Also, the stakeholders highlighted the specific needs of the mission-critical sectors (Aerospace & Defense, Health, Public Services, Civil Security, Energy, Mobility), which have strong requirements regarding the dependability of the Telco/Cloud infrastructures and services providers.

Interoperability.
Interoperability refers to the ability of different data spaces, telecommunications systems, cloud infrastructures and services to work together seamlessly, exchange data, and enable end-to-end communication and service delivery independently from the underlying technologies, vendors, or providers. **Different EU players have to work together as one team to form a powerful and competitive offer, enabling seamless digital continuity for businesses across telco, cloud and edge computing, meaning interoperability is a must have.**

Market conceptions.
Today, silos persist due to historical cultural and market differences: in Germany IT vendors and Telecommunication operators compete in the data market whereas in France, telecommunication operators and Cloud providers are different actors.

In addition, there is lack of collaboration between Telco, Cloud, and end-user communities, as well as a lack of coordination between countries, companies, and industry sectors. The EU initiatives to support standardization in favor of interoperability are known, such as Gaia-X, SWIPO, Data Act (Article 35). However, these initiatives have today a limited operational and business impact.

Energy & Environment.
The energy consumption and environmental impact of edge computing, networks communication, and cloud computing for AI are critical issues, especially as AI workloads grow in scale and complexity. This includes the carbon footprint through energy consumption, water usage for cooling, electronics waste due to the short lifecycle of modern chips. Data center deployment faces high energy costs and limited land availability and reminded that AI deployment must align with sustainability goals of EU. Despite data center energy consumption is measurable, it has been remarked that **tools for profiling and optimization of energy consumption in general, especially in AI-based schemes in the deployment phase, are lacking.** Interestingly, stakeholders have suggested that CO_2 emission may not be necessarily related to sovereignty, but it can be a differentiator from other international objectives.

Ecosystem Economics.
The U.S. model — in which large tech companies develop new services based on centralized datasets — cannot be the European approach. The European alternative model will instead be based on data that, while available in the billions (industrial data, machine data, mobility data, energy data, etc.), has not yet been available for AI training because it is distributed, kept internally for competitive reasons, and/or is sensitive under data protection laws. Therefore, to build a European AI ecosystem, it is necessary to convince data owners to share their data on a trustworthy, privacy-compliant platform. Previous sector-specific attempts to establish such platforms have shown that the organizational effort involved in sharing data can be managed if automated solutions are used. However, these solutions are not yet uniformly available and must first be developed and tested.

R&D Topics for a Lighthouse Project

The following series of AI challenges require innovative research and development regarding networks, which could be part of a lighthouse project.

TRUST AND SECURITY

- **Trustworthy and reliable AI**
- AI-Human interaction
- **Prove correct behaviour**
- **Explain behaviour**
- Hallucinations
- European technology mastering

FRUGALITY

- Low-energy alternatives:
  - *Spiking models, distillation, etc.?*
  - *Models routing (e.g. LLM vs. SLM)*
- **AI-based optimization for resource efficiency**
- Energy-efficient computing platforms
- Quantum ML for Quantum computing?

NETWORK MANAGEMENT

- **Management of AI agents, models, algorithms and data, network digital twin**
- Impact on end-to-end infrastructure
- How to ensure proper inter-working of multi- vendor AI-based functions and associated certifications?

In addition to these technological challenges, such a project should consider the Accessibility aspects, including:

- An ecosystem model in which everyone receives revenue from the AI model
- How to ensure that everybody benefits from the data put into the AI training?
- Revenue based on quality, quantity, usefulness of data and also on shared economics

Recommendations

Scale-up

The infrastructures and services should be tailored in a use-case perspective. *As today the business case is not clear, it is crucial to identify the EU strategic uses-cases and end-user industries and public institutions for the Telco/Cloud actors to assess the business potential and invest accordingly. However, regarding sovereignty, there is a need for a clear, multi-layered definition (hardware, software, data, services) and a "stamp of approval" for sovereignty-preserving solutions (these aspects are specially addressed in next section). About the development of AI models, the academic research institutes and universities can provide scientific and engineering support for the development of AI models, training and fine tuning.*

Interoperability

EU should promote further the development of ***Open-source decentralized standards (e.g. Gaia-X, OpenStack, SWIPO); automated interoperability checking; API harmonization; topology of use cases – at some point the need/architecture for computing capacity is very linked with the usage of this i nfrastructure*** *(small model vs large one, ...).*

Energy and environment

We should establish a ***co-design ecosystem gathering the energy sector, technology providers to profile the energy consumption, and authorities/ governments*** *to agree on the right level of sustainability goals to integrate as requirements in the design of solutions.*

Ecosystem Economics

We should develop a ***governance framework that enables the training of AI models using highly sensitive industrial data, while complying with applicable EU regulations and ensuring that each data provider receives appropriate compensation.***

2.

Sovereignty and Regulation of AI-Enabled EU Digital Infrastructures

We address European sovereign and secure AI-enabled digital infrastructures that comply with the EU regulation requirements such as Data Act and AI Act.

Industrial Needs and Challenges

Sovereignty.
Despite the EU definition of sovereignty, Europe still lacks of a clear and formal definition at the operational and industrial levels. There is a need for a common understanding of sovereignty, declined for each technology layer (hardware, software, data, services...) and in relation to how it would address use-cases' needs and risks. Typically, there is the need to address sovereignty for mission-critical use-cases – hospitals, public services, police operations, etc. We should perform a gap analysis of a given solution with respect to this common meaning in an efficient way. One of the highest challenges regards the cost of achieving sovereignty at a realistic and competitive price with respect to extra-European offers. In this respect, the question is how do we scale the EU solutions with regard to any sovereignty sets of requirements. The stakeholders made a focus on sovereignty in the angle of data and its value, which is at the core of AI, and which makes the power of the extra-European offers.

Regulation.
The infrastructures and associated services have to be compliant to the EU regulations, which increases further the complexity and R&D investments identified in the previous section. General Data Protection and Regulation (GDPR) and Data Act is a step in ensuring a certain level of sovereignty of data. However, this ruling could be a hurdle to the development and experimentation of EU solutions for AI if it is a strong prerequisite to access and use data. This means there is a need to find the right trade-off between functionalities/cost and sovereignty: if we put the bar too high, then this could heavily slow down the start. This means also to find a way to ease data access through secured means, e.g., Digital Identity.

R&D Topics for a Lighthouse Project

Here are the R&D topics suggested by the stakeholders that could take part in a lighthouse project:

- **Hardware and software decoupling: develop AI models and application independently from the target hardware through open hardware access and/or an abstraction layer.**
- **Development of an Open-Source Digital Identity concept from the EU requirements**
- Development of Open-source assessment tools to evaluate compliance level to EU regulation, sovereignty, security and interoperability level to create trust
- Development of a compliance framework to reduce the barriers for companies to share data by supporting the transformation of legal text and continuous compliance monitoring for accountability
- Development of agent-based systems with integrated compliance reasoning, automated trust negotiation, auditable decision trails, and human-in-the-loop patterns for critical applications

Recommendations

We should formalize further the definition of sovereignty according to the different technology layers, use-cases, domains, risks. This definition should integrate the ability to have the choice between alternative and interchangeable solutions all along the value chain as a way to achieve a certain level of sovereignty. In these settings, it would be useful to have an independent EU authority that would give the stamp of approval to label sovereignty-preserving solutions.

For example, the European Union Cybersecurity Certification Scheme (EUCS) label for Cloud could be extended to Data Spaces and telecommunication technologies (e.g. 5G toolbox). EU should also promote the development of technical interoperability standards in areas of the technology stack where non-sovereign de facto standards exist and are emerging. These ***standards development, as well as the automation of compliance to these standards for proposed solutions, should be Open-source and decentralized, in synergy with standardization institutions such as ETSI / CENELEC / CEN.*** *EU governments should find a way* ***to incentivize the use of sovereignty-preserving solutions, concentrate public fundings for the support of the development of EU solutions and for large marketing campaigns promoting "made in EU" solutions.*** *This is a global ecosystem to set up.*

AI for Healthcare

We address AI applications in the pharmaceutical industries as well as the healthcare and welfare systems in Europe.

Challenges & Industry Needs

Europe stands at a critical juncture in digital health. The goal is clear: to make Europe the global leader in trustworthy health AI, where medical innovations are developed, validated, and deployed rapidly, all while upholding the highest standards of safety, privacy, and ethics.

We outline three fundamental "moonshot" challenges that Europe must tackle immediately, along with key requests to the political level and investment priorities. Particular attention will be paid to coordination with existing measures or those currently being developed in each country and at the European level. These challenges are deeply interconnected and must be addressed in parallel. By tackling them together, the French-German axis can become an engine of digital health innovation for all of Europe.

From lab to bedside – Creating a superhighway for AI translation
Europe generates outstanding research in AI for health, yet many promising algorithms never make it into routine care. A structural gap separates proof of concept in the lab from safe, trusted use at the bedside. Current pathways for validation, certification, and adoption are slow, fragmented, and highly risk averse, which means that European innovators lose momentum and market share to more agile competitors in other regions. Both France and Germany have created accelerated reimbursement schemes for digital health, such as PECAN in France and DiGA in Germany. **The need for a "SUPERHIGHWAY FOR AI TRANSLATION" must be coordinated with existing programs in order to avoid redundancy or complexity when introducing new initiatives.** While national and European initiatives like PECAN, DiGA, SHAIPED (a European initiative for standardized AI device evaluation), or PARTAGES (a French national program developing healthcare-specific language models) provide a solid foundation, they must be **significantly strengthened and scaled to fully address the structural gaps in AI translation, data access, and clinical integration.**

The data dilemma – Powering the european health data space
The European Health Data Space (EHDS) aims to make health data accessible for improved care, research, and innovation, but France and Germany still face major challenges due to fragmented and non-interoperable systems. Although both countries have invested in strong national platforms—such as Germany's Medical Informatics Initiative and France's Health Data Hub—these infrastructures were not built for seamless cross-border collaboration, limiting joint and pan-European projects.

Despite existing standards like HL7 and FHIR, true semantic interoperability remains rare because implementation differences and local practices prevent structured data exchange. This also hinders the portability of electronic patient records and citizen portals. Beyond technical barriers, there is an economic issue: hospitals and regional providers bear the high costs of preparing and connecting data, while the main benefits often go to researchers, industry, or public health authorities. **This imbalance slows the development of a functional data foundation for the EHDS.**

Experimenting to quantify AI-based prevention and cares financial benefits for the whole healthcare system

health financing in France and Germany is still largely built around reimbursing activity rather than measurable improvements in health outcomes. Systems such as *Tarification à l'activité* in France and Diagnosis Related Groups (DRG) in Germany reward the volume and type of procedures delivered within hospitals. They do not systematically account for long term patient benefit, prevention, or continuity of care across settings.
As a result, digital health and AI solutions that prevent illness, avoid hospital admissions, or streamline care pathways often undermine existing revenue models instead of being rewarded, which creates a structural barrier to their adoption. **Supporting industrial projects in a controlled, experimental framework could help objectify this value and provide evidence-based insights to competent authorities, paving the way for more adaptive and outcome-driven financing models.**

Recommendations

Key requests to the political level

1) Regulatory clarity	Ensure stable, predictable decisions.
2) Fast-track pathways	Introduce clear, time-boxed routes for AI diagnostics and digital care tools (extended PECAN, DiGA).
3) Early pre-submission dialogue	Enable pre-submission consultations with regulators and payers.
4) Practical data access	Provide interoperable, privacy-safe, cross-border health-data environments by leveraging national platforms and the European Health Data Space (EHDS).
5) Strategic European investment	Focus EU and national funds on a few sovereign platforms for data, compute, and tools.
6) Enabling centralized AI-driven diagnostics	Allow accredited national centers to deliver reimbursable AI-based services.

Investment priorities

TOP-4 EUROPEAN INVESTMENT PRIORITIES	GOAL	IMPACT
Franco-German "AI Translation Super-Highway"	Build embedded "build–validate–deploy". Teams through research organizations and hospitals to take AI from lab to care in months, not years.	Demonstrated patient outcomes, faster innovation cycles, and a European clinical AI excellence network.
European Trusted Health Data Space (E-THDS)	Deploy a cross-border, privacy-preserving health-data architecture aligned with EHDS, with shared governance and interoperability standards.	Unlock data-driven innovation for SMEs and hospitals while ensuring European data sovereignty.
Validation and Benchmarking Consortium for Medical AI	Establish European reference datasets, metrics, and benchmarks for regulatory- grade validation and performance comparison, in articulation with the existing framework, notably the MDR/IVDR and AI Act.	Enable regulatory clarity, faster approvals, and global trust in European AI solutions.
Outcome-Based Reimbursement Pilot Program	Test dual-track payment models linking provisional reimbursement to real-world health outcomes.	Align incentives toward prevention and value, accelerating uptake of clinically proven AI innovations.

Newt-wave European investment priorities

NEXT-WAVE EUROPEAN INVESTMENT PRIORITIES	GOAL	IMPACT
Secure Compute and Edge Infrastructure for Health AI	Develop certified, sovereign compute and edge environments for training, hosting, and inference of medical AI systems.	Strengthen Europe's digital autonomy and competitiveness in health technology supply chains; ensure trusted operation and scalability of health AI.
Digital Pathology and Imaging Acceleration Network	Co-fund digitization of pathology and imaging workflows across major European hospitals to enable scalable AI integration.	Accelerate diagnostic innovation, improve accuracy and throughput, and support a robust European Medtech and software ecosystem.
Franco-German Health AI Talent and Mobility Program	Train and exchange interdisciplinary teams (clinicians, engineers, data scientists) across flagship sites.	Build a bilingual, execution-oriented workforce capable of scaling AI innovation across Europe's health systems.
European Inter-operability & API Standardization Taskforce	Develop and test minimal viable APIs and data contracts for cross-border healthcare AI services.	Reduce integration friction, lower system costs, and enable cross-vendor interoperability and SME participation across Europe.

AI-supported operations in manufacturing

We discuss AI-supported operations in manufacturing, with a strong emphasis on identifying and lowering the remaining bottlenecks to a decisive, human-centered shift to sustainable industrial growth, using AI.

Challenges

The challenges are twofold: both organizational and thematic. There are persistent barriers to AI adoption in industrial settings (especially by SMEs) under operational constraints such as time pressure, safety requirements, legacy systems, heterogeneous data, skill scarcity. All including knowledge capture and transfer, economic AI-uptake, AI-centered support for design and engineering, logistic and production flow optimization or cloud-to-edge deployment.

AI adoption is hindered by a set of practical organizational obstacles. First, many companies have not yet reached a stable level of digitalisation (for example, some still rely heavily on spreadsheets and do not have sufficiently structured data and processes to support robust AI deployment).

Second, significant time is spent searching for information, entering it into systems, dealing with software, which reduces time for operational value creation and creates reluctance regarding new solutions.

Third, workforce constraints are a major barrier, with skills scarcity, training needs, an ageing workforce, and knowledge-transfer challenges limiting the capacity to deploy and sustain AI solutions over time. Finally, SMEs face a specific issue: existing solutions are often perceived as difficult to purchase or adapt to highly specific industrial contexts, with integration effort and costs often prohibitive and ROI uncertain. In parallel, participants pointed to high requirements around trust and deployment conditions: trusted and secure data handling, edge-related constraints, and the need for an industrial-grade framework and replicable best practices to enable adoption at scale.

Industry needs

Workforce and knowledge.
The most prominent industrial need is to prevent knowledge loss and accelerate capability building, and thus to: (i) capture and structure know-how (procedures, diagnosis heuristics, maintenance narratives); (ii) transfer expertise from experienced (possibly retiring) employees and workers to new hires; and (iii) embed continuous training into daily operations, supported by AI. By addressing skills scarcity, AI can empower employees and workers in increasingly complex environments and make industrial work more attractive.

Operations Intelligence.
The second-ranked challenge focuses on transforming operational data into real-time insights for monitoring, analyzing, predictioning, decision-making and re-designing across the engineering and manufacturing value chain - actually along the product life cycle. This reduces development effort and administrative burden by consolidating dispersed information and shifting from dashboards to contextualised decision-support assistants (AI agents).

Industrial AI Platforms and Models.
We express a need for industry-specific LLMs (rather than generic models), synthetic data generation where real data is scarce or sensitive, AI services and orchestration aligned with industrial workflows, and trusted data governance and secure sharing. The underlying objective is to reduce cost and time of adoption (especially for SMEs) by providing adaptable building blocks. Indeed, the direct application of general-purpose large language models (LLMs) in production environments often delivers limited value, as these models are not grounded in company-specific industrial data. Yet it is precisely this operational knowledge that constitutes competitive advantage. For many companies, especially SMEs, the cost, integration effort, and organizational constraints make AI adoption complex.

Human-centric advanced interaction.
Human-centric interaction is a core enabler for future factories, with the promise of reduced cognitive load through voice and multimodality for hands-free operations, operator guidance for training and intervention support, and effective human-machine teaming strategies (clear roles, safe handover), aligned with collaborative and humanoid robotics to improve performance and safety.

Maintenance.
AI can enhance maintenance and quality by enabling early detection, predictive diagnostics, and more resilient industrial systems.

Digital Twins and Digital Threads.
Finally, we express interest in connecting design, production, and operations through lifecycle integration, digital twin data generation and exploitation, and alignment between design intent and industrial reality.

Recommendations

- *Identifying and launching joint pilot initiatives in high-impact manufacturing use-cases, serving as foundation for sector-specific AI-models.*
- *Designing modular industrial AI building blocks that integrate knowledge-centric and human-centric approaches, with open interfaces to ensure interoperability and scalability across sectors.*
- *Defining a trusted deployment framework enabling secure cloud-to-edge and edge-to-cloud architectures, aligned with industrial cybersecurity, data governance, and real-time operational constraints.*
- *Establish concrete and specific manufacturing SME support mechanisms to reduce integration costs and accelerate adoption.*

5.

AI in Media

We address the applications of AI in the media and cultural sectors.

Challenges & Industry Needs

The rise of AI foundation models presents a transformative opportunity for the media landscape, provided that Europe succeeds in exploring the integration of these technologies, while simultaneously addressing the consequences of using copyright-protected material for the training or the inference of AI models. The enforcement of the EU regulatory framework may strengthen the economic resilience of the sector and reinforce the free press, a cornerstone of our democracy.

Furthermore, to empower the European generative AI sector, there is a strategic need to facilitate access to legally organized high-quality content. The goal is to foster a collaborative ecosystem where sustainable remuneration mechanisms are identified for both AI model providers and publishers, ensuring the innovative framework and fair compensation that is necessary to train competitive, high-quality European models.

The keys topics are:

- Copyright, Licensing & Monetization: Creating sustainable frameworks to protect intellectual property, secure fair remuneration for AI model providers and copyright holders, and enable innovative business models in the AI era.
- Trusted Franco-German AI Models: Exploring the development of independent, sector-specific AI systems for media that uphold transparency, editorial standards, and public service values.
- Cross-Border R&D Cooperation: Launching joint Franco-German research and innovation projects to strengthen technological sovereignty in media AI.

Recommendations

We recommend special attention to the following points.

- *Fully trusted and sovereign LLMs are needed to help protect democracy, media diversity and press freedom; pluralism of press media is essential rather than relying solely on AI-generated summaries.*
- *High-quality corpora from the media sector are crucial for performant and reliable LLMs. The publishers need a pricing and licensing model that compensates them when AI models are trained with their data, a sustainable remuneration system that respects copyright and the value of journalistic content (innovation in business and economic models is required). Publisher data may be used to train non-commercial baseline models to quickly demonstrate competitiveness with non-commercial usage licenses, but agreements must be established for commercial use.*
- *Regulatory action on AI summaries and clarification of the legal situation surrounding text and data mining are also desired.*
- *Participants would also like to see stronger support from politicians at both the national and European level, for example through the use and promotion of EU-compliant AI models.*
- *Technical measures such as the effective blocking of data crawlers and the introduction of monitoring systems to prevent the unauthorized use of content and to be able to detect violations have to be reinforced.*
- ***Further research is required, for example on multimodal models, bias, security and energy consumption; innovation in UX and usability for chatbots is also needed.***
- ***Joint work forces of leading European tech providers and the media industry are necessary. Opening this initiative to additional stakeholders including regional press and fostering unity of publishers and the media industry are key to achieving a strong position in the geopolitical context.***

The European media and technology industry faces the challenge of developing innovative AI solutions that meet the interests of rights holders as well as the requirements for transparency and quality. We want to explore ways to create a balanced and innovation-friendly ecosystem for foundation models in Europe – through close cooperation between research, industry, and media companies.

6.

AI and Energy

We address both the stake of AI application to the energy sector and adaptation of the energy system to the emergence of wide-spread AI applications. No specific focus is placed on a given energy source (e.g., nuclear energy) but on cross-cutting AI challenges applicable to the entire energy value chain.

Strategic Context and Challenges

AI for Energy
AI is becoming a structural component of modern energy systems. Its deployment, however, raises challenges that go far beyond performance optimization.
The energy sector is a critical infrastructure domain, and therefore issues of sovereignty, security and trust are central.

Sovereignty must be understood across the entire energy value chain, from data acquisition and model training to operational deployment and infrastructure control. Europe must progressively build autonomous and fully independent solutions, particularly in digital infrastructures and AI capabilities. Any future collaborative project in AI and energy should systematically integrate this sovereignty dimension from the outset.

Trustworthiness is equally decisive. Scaling up AI in energy systems requires solutions that operators, regulators and citizens can rely upon. This implies **robust cybersecurity guarantees, transparency of models, explainability of decisions and verifiable reliability under real operational conditions, in line with the requirements for critical electrical infrastructures under the AI Act.**

Another fundamental issue concerns data. The development of high-quality AI solutions depends on access to representative and reliable datasets. In the energy sector, data sharing remains constrained by regulatory, commercial and security considerations.
Accepted **mechanisms for trusted data sharing, together with a coherent legal framework governing access and usage rights, are essential to unlock AI innovation while preserving sovereignty and confidentiality.**

Energy for AI

Furthermore, Infrastructure-specific and energy-aware models are required to capture the physical, operational and regulatory constraints of the energy sector. The interdependence between the energy system and digital infrastructures is increasing. Energy and IT systems can no longer be planned or operated independently; their integration must be anticipated at the design stage. In particular, the rapid growth of AI capabilities depends heavily on data centers. Their integration into the power grid in terms of capacity planning, flexibility services and geographic location has become a structural issue. **AI expansion must therefore be coordinated with grid planning and infrastructure resilience.**

Finally, digital sovereignty must be recognized at the political level as a long-term strategic priority. Developing, maintaining and scaling European technologies within Europe is not only an economic matter but a condition for strategic autonomy.

Technological Foundations and Current Assets

Europe is not starting from scratch. Several technological building blocks already exist and can be mobilized to address these challenges.

Technologies enabling sovereign data usage, such as data spaces, federated learning approaches and business data cloud architectures provide mechanisms to exploit distributed datasets without compromising ownership or confidentiality. These tools can support cross-border cooperation while preserving national and industrial interests.

Research in advanced AI methodologies is progressing rapidly. Approaches such as physically informed AI, reinforcement learning, graph neural networks and large language models adapted to industrial contexts open promising perspectives. However, significant work remains to adapt these techniques to the strict reliability standards required by critical infrastructures.

Europe also benefits from a strong network of research institutions and specialized companies in AI, energy systems and digital technologies. This ecosystem represents a strategic asset. In addition, Europe possesses a robust electrical infrastructure on which digital expansion can build.

Energy-aware computing is emerging as a discipline in its own right, aiming to reduce the energy footprint of AI training and inference. At the same time, dedicated AI infrastructures such as AI factories and high-performance computing centers—are becoming available and can support sovereign model development.

The ongoing effort toward a common European Energy Data Space further strengthens the structural basis for collaboration and innovation.

Policy and Strategic Recommendations

To accelerate progress while preserving sovereignty, ***regulatory frameworks should evolve. Easier access to relevant datasets for training purposes must be balanced with stricter requirements regarding data governance, security and European control of strategic technologies.***

European expertise in both AI and energy should be mobilized *to develop trustworthy, safe and sufficiently accurate models for critical infrastructures. This includes systematic methods for automatic data validation and quality control, leveraging domain knowledge to support AI systems and prevent inconsistent or unsafe outputs.*

The experience accumulated during the energy transition should be used to build a resilient and sovereign AI-enabled energy system. Europe has developed unique expertise in grid integration of renewables, flexibility management and system balancing; these competencies should inform AI system design.

Given the central role of data centers in AI development, a holistic and coordinated design methodology is needed to better integrate them with energy, telecommunications and territorial infrastructures. *Planning must anticipate capacity needs, flexibility services and resilience constraints.*

Finally, incentive schemes that support research, innovation and industrial growth in the AI-energy domain should be strengthened to ensure that European companies can scale while remaining anchored in Europe.

A Moonshot Vision: TRAnsFORmES

A transformative initiative could take the form of a large-scale program tentatively named TRAnsFORmES – Trustworthy AI Model Ecosystem for Resilient and Sustainable Energy Systems.

Current general-purpose large language foundation models do not meet the precision, reliability and physical consistency requirements of the energy sector. There is an urgent need to combine domain-specific knowledge with advanced AI techniques in order to achieve physically plausible and operationally robust solutions.

Trustworthy AI for energy infrastructures requires a systematic and rigorous methodology to embed energy knowledge directly into AI models. Research directions such as graph neural networks and physics-informed learning provide promising foundations, but they are not yet mature enough for full deployment in critical infrastructures.

By combining AI excellence with Europe's unique expertise gained through the energy transition, it is possible to bridge this gap and position Europe at the forefront of reliable, industry-grade AI. Such a vision would encompass the entire AI and energy value chain: structured data availability and trusted data sharing through data spaces, foundation models adapted to infrastructure constraints, automated sanity-check methodologies, digital twins, intelligent agents and operational cybersecurity frameworks.

7.

AI for Agrifood

We discuss the application of AI to the agricultural and agro-industrial sectors, in a context marked by climate pressure, market volatility, and the strategic need to reinforce Europe's food sovereignty.

Challenges and Industry needs

AI can significantly improve the precision, efficiency, and cost-effectiveness of agricultural and agrifood processes, particularly in areas such as input optimization, environmental protection, and early detection of plant health issues. However, adoption remains uneven. **Many farmers and industrial actors still lack awareness of AI's potential, and the sector faces a persistent need for education, training, and dissemination.**

Trust is another central issue. For AI systems to be widely accepted, they must be explainable, reliable, and robust across diverse operational conditions. The workshops also underscored the strategic importance of sovereignty: Europe must ensure safe and reliable food production, which requires control over critical technologies, infrastructures, and data.

Data fragmentation remains a major bottleneck. Agricultural data is often scattered across incompatible silos, limiting the ability to train high-quality models or develop interoperable services. Ensuring secure, high-quality, and accessible data flows across the food chain is therefore essential for unlocking the full potential of AI.

Technologies Available to Address These Challenges

A broad range of base technologies is already available or rapidly maturing. Edge-deployable AI models, hybrid approaches combining physical models with machine learning, and synthetic data generation techniques are increasingly used to address the complexity and variability of agricultural environments. Advances in agronomic machine's connectivity as well as remote sensing—through satellites, drones, and high-resolution imaging—enable more accurate monitoring of crop conditions, soil characteristics, biodiversity, and agroecological infrastructures.

Domain-specific ontologies are very important, as well as knowledge-integrated AI approaches such as RAG, and emerging standards like Digital Product Passes to support traceability and environmental impact assessment. The European **Agricultural Data Space is seen as a cornerstone for enabling interoperable, sovereign, and large-scale AI use cases.** AI solutions must be designed to minimize resource consumption and remain compatible with real-world agricultural constraints.

Strategic priorities and R&D Topics for a Scaling Up

The following priority axes appear critical to enable the large-scale deployment of AI solutions in the European agrifood sector.

- **First,** the establishment of an integrated European agrifood data infrastructure constitutes the primary structural lever. The current fragmentation of datasets limits model quality, prevents service interoperability, and restricts the replicability of use cases. The effective operational deployment of the European Agricultural Data Space, supported by harmonized and open standards, should therefore be treated as a strategic priority.

- **Second,** the development of explainable, robust, and domain-integrated AI systems is essential to strengthen trust among stakeholders. Hybrid approaches combining physical models with machine learning, together with sector-specific ontologies and explainability mechanisms, are critical to ensuring durable and large-scale adoption.

- **Finally,** a structuring use case could play a catalytic role: the automated monitoring of climate resilience across European agricultural systems, combining process data, product data with environmental information from satellite data, in-field sensors, and making use of explainable AI models. Such an initiative would federate stakeholders, enhance the implementation of agricultural policies, and demonstrate the tangible value of sovereign AI in support of food security.

Recommendations

First, there is a need to intensify foresight and awareness-raising activities to help end-users anticipate the transformations required to adapt to climate change. Strengthening easy access to agricultural data from distinctive processes and agricultural products and food up to satellite data—both in terms of volume and accuracy—will be crucial for supporting innovation in agricultural policies and operational decision-making.

We must coordinate progress in trustworthy and sovereign data acquisition and its use in AI models, enabling more precise, scalable, and automated execution of agricultural production systems. This evolution must be accompanied by efforts to simplify data collection, validation, and ground-truthing across the entire value chain, from field to fork.

Finally, ***the sector requires a concerted effort to bridge data sources, harmonize processes, and reinforce interoperability and traceability.*** *Only by connecting sensors, equipment, datasets, and digital platforms will Europe be able to deploy trustworthy, efficient, and widely adopted AI solutions in the agrifood domain.*

Appendice A

List of Companies involved in each working group of the Dialogue

European infrastructures and regulation for AI deployment

Workshop was held on November 7 in Paris - France (Orange)

Cloud Temple	Germany
Deutsche Telekom	Germany
Ericsson	France
Eviden	France
Nokia	France
Numspot	France
Orange	France
OVHCloud	France
Scaleway	France
Suse	Germany

AI enabled digital infrastructures and telecommunications

Workshop was held on November 7 in Paris - France (Orange)

Deutsche Telekom	Germany
Ericsson	France
Eviden	France
Hivenet	France
Nokia	France
Numspot	France
Orange	France
OHB	Germany
Scaleway	France
Scality	France
Siemens	Germany
StackIT	Germany
Suse	Germany

AI for Healthcare

Workshop was held on November 3 in Paris - France (videoconference PariSanté Campus)

Aignostics	Germany
Bayer Pharmaceuticals	Germany
Dassault Systèmes Deutschland	Germany
Doctolib	France
EssilorLuxottica	France
Fresenius Group	Germany
Kairntech	France
Karl Strorz	Germany
Philipps Healthcare	Germany
Siemens Healthineers	Germany
Skillcell-Alcen	France
Smart Reporting	Germany

AI supported operations in manufacturing

Workshop was held on November 7 in Troisdorf - Germany (Cityhall)

Airbus	France
Berger-Levrault	France
Cetim	France
Consenses	France
Conweaver	Germany
Deutsche Bahn	Germany
Eurodifroid	France
Fives Group	France
ILAG	Germany
LaborAI	France
Lacroix Group	France
Mercedes	Germany
Michelin	France
Treedy	Germany
Wallix	France
Wandercraft	Germany

AI in Media

Workshop was held on October 29 in Cologne - Germany (RTL)

ARTE	Germany/France
b<>com	France
Botscorner	France
Bunka.AI	France
Cafeyn	France
Corint Media	Germany
Die Neue Welle	Germany
Die ZEIT	Germany
KIBV	Germany
Mars-IP	Germany
NDP Nieuwsmedia	Netherlands
ProSiebenSat.1	Germany
RTL Deutschland	Germany
SEPM	France
Spiegel Gruppe	Germany
Table Media	Germany
Taz	Germany/France
Teklia	France
WDR	Germany

AI and Energy

Workshop was held on September 23 in Brussels - Belgium (Franhaufer EU office)

EDF	France
EON	Germany
RTE	France
SAP	Germany
Siemens	Germany
Siemens Energy	Germany
TenneT	Germany

AI for Agrifood

Workshop was held on November 3 in Senlis - France (Cetim)

Airbus	France
Algocorp	France
Axema	France
Bayer	Germany
Cetim	France
Claas	Germany
DIG	Germany
Doriane	France
France Pulve	France
Institut Agro Dijon	France
JohnDeere	Germany
Lexagri	France
LVMH Gaia	France
Manitou Group	France
Pessl Intruments	Germany
Rauch	Germany
Xarvio	Germany

Longstanding Franco-German Commitment

Inria, the French national institute for research in digital science and technology, brings its expertise in world-class research, innovation and startup creation. Inria also acts as the Digital Programs Agency on behalf of the French government.

Fraunhofer-Gesellschaft, Germany's leading organization for applied research, plays a key role in transferring cutting-edge technologies to industry, combining public research with strong industrial partnerships to support economic and societal impact.

IMT, as a founding member of the German-French Academy for the Industry of the Future, French leading federal institute of Technological Universities of science and management for sustainable economic development, supports this dialogue as part of its commitment to fostering European technological sovereignty through joint research, innovation, and education.

As Europe strives to reconcile competitiveness with sovereignty in the age of AI, Franco-German leadership stands as a cornerstone for shaping the future.

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