

Strengthening Europe's AI Position

– Summary of Round Table Discussion –

AI Action Summit 2025 Side Event @ Bildungscampus Heilbronn
organized by Collège des Ingénieurs, November 28, 2024

Strategic Importance of AI for Europe

The round table discussed the urgency for Europe to secure its position in the global AI landscape dominated by the U.S. and China. The participants emphasized leveraging Europe's existing strengths in engineering, industrial data, and domain knowledge, while addressing challenges such as limited technological sovereignty, disparity between academic and private sector, underinvestment in infrastructure, research, and fostering cross-border entrepreneurship.

This document covers the core discussions and points raised by the panelists.

Key Challenges and Insights

1. Academic-Private Sector Gap

- Universities lack computing resources compared to industry giants like Microsoft, creating significant disparities in research output.
- Academic research contributes fewer breakthroughs compared to the private sector, raising concerns about maintaining a competitive edge.

2. Resource Limitations

- Dependence on external technologies from the U.S. and China is a strategic vulnerability.
- AI's growing energy demands highlight the need for energy-efficient algorithms and alternative computing paradigms.
- Human generated knowledge to train LLM is finite.
- Combination of autonomous models increases complexity and instability of the system. We need academic research to understand the mechanisms.

3. Bureaucratic Inefficiencies

- Europe's fragmented and bureaucratic funding mechanisms hinder agility and collaboration across countries and institutions.

4. European Competitiveness

- We must accept that there is competition with the U.S. and Asia and therefore join forces in Europe.
- To remain competitive, Europe must understand and embrace AI, as competition is increasingly driven by AI technologies.

5. Cultural Barriers

- A risk-averse culture and lack of urgency impede Europe's ability to innovate and adapt quickly, unlike competitors in Asia or the U.S.

Strategic Directions and Proposals

1. Collaboration and Integration

- Foster stronger partnerships between universities, startups, and corporations across Europe.
- Develop shared European infrastructure, akin to CERN, for AI research and computing capabilities.
- Build alliances that unite startups and large enterprises to address challenges collaboratively.

2. Focus and Prioritization

- Adopt a selective approach by focusing on areas where Europe has competitive advantages, such as industrial AI and energy-efficient technologies.
- Let go of less promising projects to concentrate resources on high-impact areas by playing competition, a practice common in successful Asian economies.
- Combine European industry domain knowledge and engineering capabilities with computer science or AI, (-> physical-informed systems).

3. Energy-Efficient Technologies

- Prioritize the development of energy-efficient AI systems and explore disruptive paradigms like neuromorphic computing, quantum computing.

4. Support for Academic Research

- Create schemes to boost university computing power and ensure academic research remains competitive with private sector advances.
- Invest in attracting top global talent and improving researcher compensation and resources.

5. Developing European AI Sovereignty

- Establish European champions in AI that reduce dependency on non-European technologies.
- Propose a pan-European DARPA-like agency to coordinate and fund radical innovation.

6. Startups to turn research into value added

- Need of European platforms of collaboration: Build European startups, foster collaboration with corporations across Europe.
- Focus on selected technologies, then scale, foster competition. (Example of SPRIND)

Specific Recommendations for Action

1. AI Summit in Paris

- Leverage the summit as a platform to unite stakeholders from academia, industry, and startups. Challenges and collaborative problem-solving activities should feature prominently.

2. Alliance Building

- Encourage partnerships between startups and large corporations, particularly across borders, focusing on industrial and multimodal data.

3. Focus on Strategic Value Chains

- Identify critical elements of AI value chains to secure Europe's technological independence and develop policies to support these areas.

4. Revise Bureaucratic Models

- Streamline funding mechanisms to make them agile and impact-driven, learning from initiatives like SPRIND in Germany.

Forward-Looking Statement

As AI reshapes economies and societies, Europe's response must be both strategic and united. By focusing on collaboration, disruptive innovation, and intelligent resource allocation, Europe can find a path toward technological sovereignty.

Based on both academic research and perspectives from industrial and institutional experts, the climate and exponential growth of AI calls for a unified European approach to meet the global competition for AI leadership. The discussions highlighted the importance of leveraging upcoming initiatives like the AI Summit in Paris to catalyze actionable strategies and initiatives.

Concurrently, specific action must be taken to consolidate efforts from leading industrial and academic experts to secure significant increases in selective, targeted investments for AI in Europe.

Round Table Participants

Arno Amabile

- Advisor to the Special Envoy for AI of the French President
- AI Action Summit 2025

Dr. Emmanuel Basset

- Deputy Director, in charge of Strategy and Development of the École Normale Supérieure – PSL

Prof. Dietmar Harhoff, PhD

- Director of the *Max-Planck-Institut für Innovation und Wettbewerb* (Innovation and Entrepreneurship Research)
- Member of the supervisory board of *SPRIND, Agentur für Sprunginnovation* (the German Agency for Disruptive Innovation)

Dr. Michael Bolle

- Chairman of the shareholder council of the *Carl Zeiss Foundation*
- Chairman of the supervisory board of *Carl Zeiss AG* and *SCHOTT AG*
- Spokesperson of the quantum systems program committee of the Federal Ministry of Research and Education (BMBF)
- Member of the board of trustees of *Max-Planck-Institut für Intelligente Systeme in Tübingen* (Intelligent Systems)

Prof. Dr. Ali Sunyaev

- Vice president of TU München, leading the TUM Heilbronn campus
 - Full professor for Information Infrastructures at the TUM School of Computation, Information and Technology (CIT)
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Summary of SPRIND (Federal Agency for Disruptive Innovation, sprind.org)

Description and Operational Model

SPRIND, established in Germany, was inspired by the U.S. Defense Advanced Research Projects Agency (DARPA) and officially began operations in 2019. Its primary goal is to foster radical innovation in key technological areas. Unlike traditional funding bodies, SPRIND focuses on "betting on the race, not the horse." It identifies broad challenges rather than supporting specific companies or technologies.

SPRIND's main mechanism is its technology challenges. These challenges:

- define a high-impact technological problem (e.g., federated learning for distributed AI model training).
- invite participation from teams across the European research area, including international collaborators.
- follow a staggered funnel approach:
 - Initial Phase
Up to 12 teams receive funding (ranging from €800,000 to €2 million) for a year.
 - Selection Phase
The pool is reduced to six teams, each receiving increased funding (~€3 million).
 - Final Phase
A smaller subset of teams receives even greater resources for final development.

This staged model creates an ecosystem where expertise circulates even as teams are narrowed, ensuring knowledge and talent remain within the broader innovation landscape.

Examples of Challenges

SPRIND has addressed diverse fields, including:

- Green Technology and Sustainability: Projects targeting decarbonization and environmental challenges.
- Energy Storage: Long-term solutions for sustainable energy.
- Advanced Computing: Exploration of non-conventional architectures like neuromorphic computing.
- Environmental Impact: Addressing issues such as microplastics in water.

One prominent example is the federated learning challenge, aimed at overcoming Europe's data limitations by enabling AI models to train on decentralized datasets.

Key Advantages of SPRIND

1. Fostering Radical Innovation
 - Encourages transformative ideas that could create entirely new industries.
 - Supports disruptive technologies with potential for significant societal impact.
2. Collaborative and Open Approach
 - Open to international teams within the European research area.
 - Promotes cross-border knowledge sharing and collaboration.
3. Efficient Resource Allocation
 - The funnel model ensures that only the most promising teams receive progressively larger funding, optimizing investment impact.
 - Teams that do not continue benefit from exposure and training, enriching the broader ecosystem.
4. Flexibility and Agility
 - Operates independently of traditional bureaucratic constraints.
 - Recently gained the ability to make equity investments, enabling deeper partnerships with private companies.

Forward-Looking Potential

SPRIND exemplifies a forward-thinking approach to innovation, blending competition with collaboration to address critical global challenges. By scaling successful concepts and fostering a robust ecosystem, it aims to solidify Germany and Europe's positions as leaders in transformative technology development.