From Research to Reinvention: **AI Super-Integrators** and the future of European innovation

An actionable playbook for boosting innovation and competitiveness

The AI Data Robotics Association

This policy proposal proposes a major overhaul of Europe's collaborative structures to address the high-level calls for a more competitive and dynamic European innovation ecosystem. Realising this vision would involve the creation of ***European AI super-integrators – specialised public-private entities*** *that combine European industry, technology, research and investment. These super-integrators would help strengthen Europe's economic security, disrupt markets and enable European innovators to take on more established competitors. Acting as central nervous systems of the innovation ecosystem, they would connect artificial intelligence (AI) and advanced technologies with robotics, quantum, biotech and photonics – thus amplifying Europe's industrial strengths and driving multi-sectoral innovation.*

This transformative vision seeks to harness the potential of major EU-level initiatives – such as AI Factories, Common European Data Spaces, Apply AI and AI in Science strategies, the AI Skills Academy and the AI Act – alongside valuable national and regional assets, such as the European Digital Innovation Hubs (EDIHs), AI Regulatory Sandboxes and Testing and Experimentation Facilities (TEFs). In doing so, it aims to create a connected, vibrant European innovation ecosystem. Moreover, the AI super-integrator model aligns closely with the strategic objectives and priorities set out in the ADRA Strategic Research, Innovation and Deployment Agenda (SRIDA) for 2025-2027.[1] This strategy outlines the long-term vision for the development and deployment of trustworthy AI, data and robotics (ADR) technologies in Europe and provides key recommendations to guide future European work programmes.

[1] https://adr-association.eu/sites/default/files/2024-09/Adra%20Strategic%20Research%20Jul24_v2-2_0.pdf

Game-changing collaboration

The super-integrator model stands apart from existing European programmes in three key ways and is designed to accelerate impact, unlock investment and streamline management:

1. **Market pull over technology push:** Focus on market needs by using public procurement to create demand for European AI solutions and move away from the current technology-push approaches that lack clear commercial use.
2. **Increased private investment:** Use smart risk-reduction methods and government-backed venture funding to make European AI startups more appealing to private investors. This would directly address the chronic underinvestment that leaves breakthrough innovations stranded in the "death valley" between research and markets.
3. **Empowered, independent programme management:** Speed up innovation by replacing slow, bureaucratic systems with skilled, independent managers who focus on clear milestones and honest project evaluation. These managers, serving time limited three- to five-year terms, and perhaps being assigned by individual member states, would have the authority and time to solve problems effectively. This approach would encourage a "can-do" culture, respect European subsidiarity and support independent thinking and lead to faster, more dynamic programme delivery.

This super-integrator transformation is underpinned by five strategic enablers that go beyond current European approaches, building foundations for a more agile, impactful and value-driven ecosystem:

1. **Holistic ecosystem integration:** Combine technological progress with strong talent development by redesigning education, strengthening innovation infrastructure and aligning with major EU-level investments – such as AI Factories, Common European Data Spaces, Apply AI and AI in Science strategies, the AI Skills Academy and the AI Act. These combined initiatives would help create a fully connected European innovation ecosystem.
2. **Sophisticated impact assessment:** Use strategic foresight and modern evaluation tools to measure tangible economic and societal value creation. This ensures accountability, continuous adaptation and smarter use of resources based on demonstrated results rather than bureaucratic measures.
3. **International talent magnetism:** Encourage top international researchers and innovators to return or relocate to Europe to reverse the current brain drain, while also building resilient cross-border value chains to enhance European technological sovereignty.
4. **Values-based innovation:** Prioritise solutions that are not just technologically superior, but closely aligned with European values of human-centricity, trust and sustainability – thus turning ethical leadership into a competitive advantage.
5. **Cultural and structural transformation:** Shift Europe's innovation mindset away from risk-aversion and bureaucracy towards agile, honest and practical problem-solving that embraces complexity and encourages learning from failure.

Super-integrators would connect end-user needs through a network of specialised technology providers – creating an ecosystem that translates user demands and aligns suppliers, while providing the tools, contracts and frameworks needed for results-oriented collaboration. Furthermore, they would drive innovation, ensure interoperability and deliver high-value, mission-ready solutions by harnessing the entire value chain around real-world user expectations, while contributing to scalable, coherent, adaptive high-value propositions.

Smart, inclusive and strategic innovation

As well as promoting technological advancement, the super-integrator model would further talent development through education, more robust innovation infrastructure, strategic public procurement and broader access to essential resources. A key part of this vision is the use of advanced strategic

foresight tools and rigorous impact assessment, helping to ensure tangible economic and societal value creation as well as accountability and continuous improvement. With a strong international focus, it seeks to attract global talent and create resilient cross-border value chains. At the same time, the super-integrator model enables Europe's diverse stakeholders to forge collaborative and novel AI solutions that are technologically superior, deliver wide-ranging benefits and are firmly aligned with European values – the key ingredients for building a prosperous, resilient and human-centric future in AI.

To realise this vision, AI super-integrators would help achieve a more agile and competitive Europe through the following initiatives:

- **Large-scale challenge-driven accelerators:** Tackle industry-prioritised challenges with significant, milestone-based funding (€2-€5 billion annually over 10 years), using compressed timelines (e.g., 24 months for core phases) and moving beyond established networks to support the best ideas.
- **Vanguard programmes:** Offer tailored support for high-potential ventures from the accelerators or the broader ecosystem by helping to monitor regulations and societal impacts.
- **Faster investment:** Structure funding to reward speed and results by fast-tracking promising Pillar II projects (e.g., via the European Innovation Council Accelerator) and connecting innovations to markets.
- **Ecosystem integration:** Strengthen collaboration by leveraging existing resources, such as the EDIHs, TEFs, AI factories, data spaces and national centres – possibly backed by incentive mechanisms.
- **Strategic levers:** Use public procurement to create markets for European AI solutions, broaden access to high-performance computers and AI factories and launch bold "talent magnet" programmes focused on attracting, retaining, reskilling and prioritising open innovation business models.
- **Cultural shift:** Promote agility, responsible risk-taking, rapid prototyping, real-world testing, intellectual honesty – including defunding unsuccessful ideas – and embracing complexity and potential failure as learning opportunities.
- **Independent foresight:** Establishing an independent foresight, anticipation and impact council to ensure strategic alignment, track progress and evaluate impact using meaningful, market-oriented indicators.

Europe at a crossroads

Despite the digital revolution, modern industry is still anchored in the physical world. Yet that is beginning to change, with AI transforming industries through advanced robotics and autonomous systems. For Europe, this evolution marks a unique strategic opportunity to take a lead in AI by combining its research excellence, industrial heritage and the significant value-adding capabilities of its strong internal service sector.

Nonetheless, Europe has struggled to turn breakthroughs into market leadership at the same rate as its key global competitors. Recent analyses underscore this widening innovation gap:

- 70% of AI foundation models since 2017 were developed in the US.
- No EU company with market capitalisation over €400 billion (NVIDIA $3.9 Trillion, Microsoft $3.7 Apple $3.2 Trillion) that has been set up from scratch has been created in the past 50 years, suggesting a static industrial structure.
- Nearly 30% of Europe's unicorns relocated abroad – mostly to the US – between 2008 and 2021, indicating a significant brain drain.

Current European funding programmes aimed at tackling global challenges and boosting industrial competitiveness are well-intentioned. These models include Pillar II partnerships, which constitute the

largest component of Horizon Europe with a €53.5 billion budget for 2021-2027. However, they are hampered by complexity, fragmentation, risk aversion, policy churn and strongly favour pre-competitive research over market-driven outcomes. Furthermore, the allocated budgets are not commensurate with stated ambitions, rendering them insufficient for cultivating strong deep-tech ecosystems. Programmes, such as the Partnership Knowledge Hub (PKH), highlight trust and value creation. But achieving success requires cultural and incentive structures to navigate the complex interactions between AI, physical systems and human workforces.

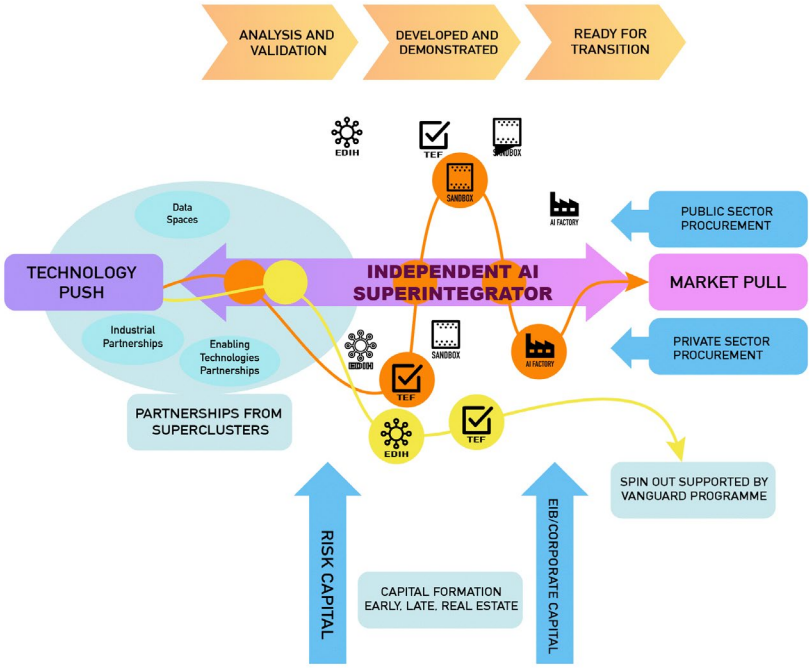

Figure 1 Innovation pathways across the super-integrator

As Europe reconsiders the future of research and innovation funding, it could draw lessons from the US Defence Advanced Research Projects Agency (DARPA). DARPA exemplifies how public-sector support for high- risk, high-reward research can transform economies.

Even conservative estimates show that every $1 billion invested in DARPA's IT programmes has generated $3.2 to $28 trillion[2] in long-term value a minimum 3,000-to-1 return, coming from funding breakthrough ideas the private sector cannot. DARPA was involved in the development of the Internet, GPS, modern robotics[3] and mRNA vaccines, as well as other world-changing innovations.

Powering innovation at every level

Our vision recognises that innovation can emerge in many different settings and at various scales. The super-integrator ecosystem is designed to support this full range of innovation. In fact, it can be a powerful implementation framework for many of ambitions outlined in the SRIDA, including:

- **Championing grassroots innovation** by targeting small and medium-sized enterprises (SMEs) and startups through accessible and proof-of-concept financing, alongside helping to identify and reduce early-stage risk. In addition to funding, the SRIDA emphasises expert technical support to validate feasibility, mentorship networks from the broader ecosystem and tailored business services to support market entry. A faster, simpler application process is key to ensuring accessibility.[4]

Large-scale, industry-driven innovation is catalysed through the ambitious Grand Challenge Initiatives. These endeavours, often housed within dedicated accelerators, are designed to address major industrial and societal needs in alignment with the strategic priorities of Pillar II clusters. They are aimed at fostering dynamic collaboration across sectors and disciplines by bringing together leading universities, Research Technology Organisations (RTOs), established industry participants, innovative

2 https://itif.org/publications/2023/08/21/darpas-outsized-impact-on-the-u-s-economy/

3 https://spectrum.ieee.org/how-the-darpa-grand-challenge-transformed-the-robot-industry

4 A response within days and contractual agreement in a matter of weeks.

startups and agile SMEs.[5] The initial high-risk R&D phases are designed to focus on achieving breakthrough technologies and approaches.

- **Grand Challenge Initiatives will use outcome-based funding,** linked to clear goals and milestones, replacing traditional practices where funding tranches are tied to pre-defined objectives and milestones. Clear success criteria will attract a diverse range of participants and encourage disruptive ideas. Projects that succeed can move towards industry adoption, backed by a dedicated Vanguard Programme with well-defined contracts and intellectual property terms.[6] Research that does not reach the market can be considered for strategic open-sourcing, helping to share knowledge and inspire future innovation.
- **Community-driven innovation** involves soliciting and supporting novel ideas from citizens and civil society organisations, among others. Proposals would undergo ethical and expert review, followed by transparent and inclusive community-driven validation processes, potentially employing mechanisms such as participatory budgeting or up-voting systems. Expanded community involvement could lead to promising low-to-medium technology readiness level (TRL) projects, while providing useful practical feedback and potential integration into broader initiatives.

Key performance indicators for AI super-integrators

Category 1: Leading KPIs (years 1-3): Measuring ambition and agility These KPIs measure whether the entity is set up correctly to foster innovation. They are about the *process* and *inputs*.	
Description	*KPI*
1. Portfolio risk profile	Percentage of projects funded that have no existing commercial path and are deemed "too risky" for venture capital or traditional corporate R&D. This KPI ensures the super-integrator is not just funding safe, incremental research and shows that a high "failure" rate is a sign of ambition.
2. Time-to-funding	Average time from initial project pitch by a programme manager to a signed contract and the first funds are disbursed. This measures agility and the rejection of bureaucracy. It's a key indicator of whether the super-integrator can move at the speed of innovation.
3. Talent magnetism	Number and calibre of world-class scientists and engineers recruited as programme managers from academia and industry for short-term tenures (3-5 years). Attract recognised leaders in their fields who are taking a sabbatical or leaving a top-tier position to join.
4. Cross-border collaboration index	Percentage of projects that combine top-tier talent from research institutions and startups from across multiple member states. Demonstrates the super-integrator is breaking down national silos and creating a truly European innovation ecosystem.
Category 2: Transition KPIs (years 3-7): Measuring the bridge to market These KPIs measure whether the agency is successfully moving technologies out of the lab and across the "death valley".	
1. Follow-on funding multiple	Total private sector investment (venture capital and corporate) raised by companies and projects that originated from super-integrator funding. For every €1 of funding, projects should attract at least €5-€10 in private follow-on capital. This is the ultimate validation that the super-integrator is de-risking technology effectively.
2. New venture creation	Number of new deep-tech startups founded based directly on super-integrator-funded technology.
3. Technology	Percentage of projects that are either (a) licenced by an established European industrial giant, (b) spun out into a new company, or (c) adopted as a new platform technology by other research programmes. This directly measures the success of bridging the lab-to-market gap.

[5] If you want to think outside of the box, don't bring the box.

[6] IP sharing through collaborative projects, open-source initiatives and programmes that prioritise reuse and integration of existing technologies should be encouraged. When a contractor brings pre-existing IP to a super-integrator, rights and licenses are negotiated.

transition rate	
Category 3: Impact KPIs (years 10-20): Measuring societal and economic return on investment (ROI) These are the ultimate, long-term measures of success, analogous to the ROI of the Internet or GPS.	
1. Creation of new industrial sectors	Did the super-integrator create a globally competitive European industry that did not exist before? (e.g., a European quantum computing, synthetic biology, or advanced battery manufacturing ecosystem). The creation of at least one to two new, multi-billion-euro sectors per decade.
2. Contribution to strategic autonomy	Measurable reduction in Europe's dependency on foreign technology in critical areas targeted by Super-integrator programs (e.g., percentage of next-gen semiconductors, AI models, or pharmaceutical APIs produced within the EU). A quantifiable shift in supply chain resilience and technological sovereignty, tracked against strategic goals set by the European Commission.
3. Global market share of "graduates"	The global market share captured by companies and technologies that originated from the super-integrator. Graduates should not only be "European champions" but top three global players in their respective niches.

A pathway to a more competitive Europe

The AI super-integrator framework offers a concrete pathway to supercharge Europe's innovation capacity, industrial competitiveness and technological sovereignty while also realising the core objectives of the SRIDA. It translates strategic priorities into action by creating the structures, incentives and capabilities needed to accelerate innovation across the ADR landscape.

At the heart of this framework is the ambition to transform Europe's research excellence in ADR into market-leading products and services is key to ensuring industrial leadership. The super-integrator model is designed for this purpose by creating ecosystems capable of turning frontier research into working products at industrial scale. With a focus on rapid prototyping, agile development, real-world testing, it creates minimum viable products, especially through its large-scale challenge-driven accelerators, and seeks to bridge the gap between research and the market.

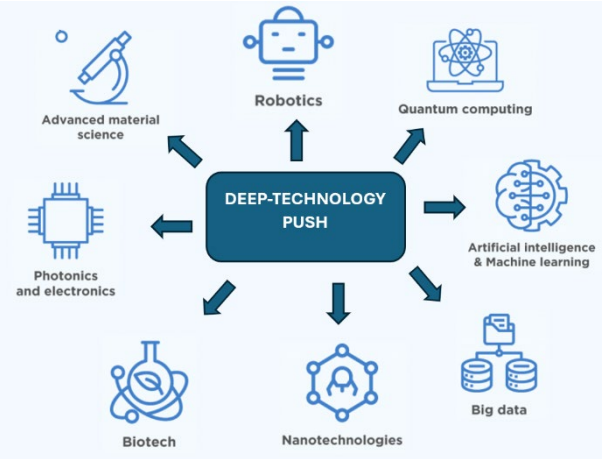

Figure 2 AI as an enabler in supporting European deep-technology development and AI for science

In addition, the framework ensures a vibrant, interconnected and collaborative European ADR ecosystem that leverages existing assets, including EDIHs, TEFs, data spaces and competence centres. The super-integrator model mirrors this by incorporating ecosystem integration to connect and leverage these entities to support development of a cohesive and effective ecosystem.

The super-integrator model also embraces ambitious, mission-driven initiatives – often termed "flagships" or "missions" – to tackle major challenges and achieve significant breakthroughs in strategic ADR areas as reflected in the super-integrator's large-scale challenge-driven accelerators. These accelerators, with substantial milestone-based funding (e.g., €2-€5 billion annually over 10 years) and operating on compressed timelines, would help provide focused, well-resourced support for the key health, climate/energy/mobility and agri-food sectors.

To address Europe's innovation funding challenges, the super-integrator model focuses on speeding up financing and attracting private capital – especially for high-risk, high-potential innovations. It calls for using smart de-risking strategies, such as using EU funds to underwrite venture capital costs, or government-backed venture capital as a market certification and offering progress-based rewards. These efforts would make European AI startups more attractive to private investors.

Moreover, the super-integrator model supports foundational ADR technologies that are vital for Europe's future. These technologies include trustworthy AI, AI for science, advanced robotics, data management and AI hardware. The super-integrator's five core focus areas — advanced deep-learning applications, autonomous AI agents, foundation models, cyber-physical intelligence and AI-optimised hardware — emphasise integrating technologies to achieve practical solutions.

The model also puts talent development at the centre of its strategy. Through the "talent magnet" approach, it seeks reimagined career pathways for local and international experts. The result will increase the diversity and supply of top researchers within Europe, delivering greater mobility between industry and academic careers. These efforts work towards enhancing Europe's strategic autonomy and technological sovereignty in critical ADR fields by fostering a robust domestic innovation ecosystem, advancing critical technologies and creating lead markets for European AI solutions — for instance, through strategic procurement.

In conclusion, while ADRA's SRIDA articulates the strategic "what" and "why" of achieving European leadership in ADR, the AI super-integrator model provides the "how." It delivers a clear, well-funded and agile framework that turns goals into actions, bridging the gap between research and real-world impact to drive industrial-scale innovation and market success.