# Innovation **Pulse**

The innovation landscape of
**Artificial Intelligence and Digital Twin Technologies: Driving Innovation and Transformation**

PNO INNOVATION

# Welcome to the Innovation Pulse

Based on insights from Wheesbee, PNO's proprietary Business Intelligence platform focused on research and innovation, Innovation Pulse delivers actionable intelligence to make informed decisions, drive innovation, and stay ahead in your industry. This report has been generated based on your selected topics: *Artificial Intelligence, Digital Twin*.

## The Approach & its Significance

Innovation Pulse is designed to guide readers through the dynamic landscape of the selected innovation sector. It begins with exploring **Patents**, which indicate the cutting-edge inventions shaping the future. This is complemented by in-depth Research **Papers**, which provide a deeper understanding of the scientific and technological principles behind these innovations.
Moving forward, **Projects** highlight the practical applications of these concepts, showcasing real-world implementations and the emergence of new opportunities. To empower engagement and investment, we present **Funding and Collaboration Opportunities**, followed by **Competitor Insights** to frame the advancements within the competitive market context.
The rationale behind this structure is to offer a panoramic view of the sector's trajectory, from conceptual inventions to market-ready applications. By navigating this path, readers can identify emerging trends, understand the current state of play, and anticipate future developments, thus enabling informed decision-making and strategic foresight.

## What to Expect

As a subscriber, you can look forward to regular updates that keep you abreast of the latest developments in your area of interest, ensuring you stay informed and ahead of the curve. Stay tuned for periodic insights to enhance your innovation strategy.

## About Wheesbee

Wheesbee is an information database platform created by Innovation Engineering, which is part of the PNO Group. It is a comprehensive resource for businesses seeking insights into historical and current innovations and future opportunities in the field. With its extensive database and analytical capabilities, Wheesbee enables informed decision-making by providing valuable historical context and updates on emerging trends. By leveraging this wealth of information, businesses can confidently navigate the world of innovation, staying agile and positioning themselves for success in an ever-changing market.

### Wheesbee numbers

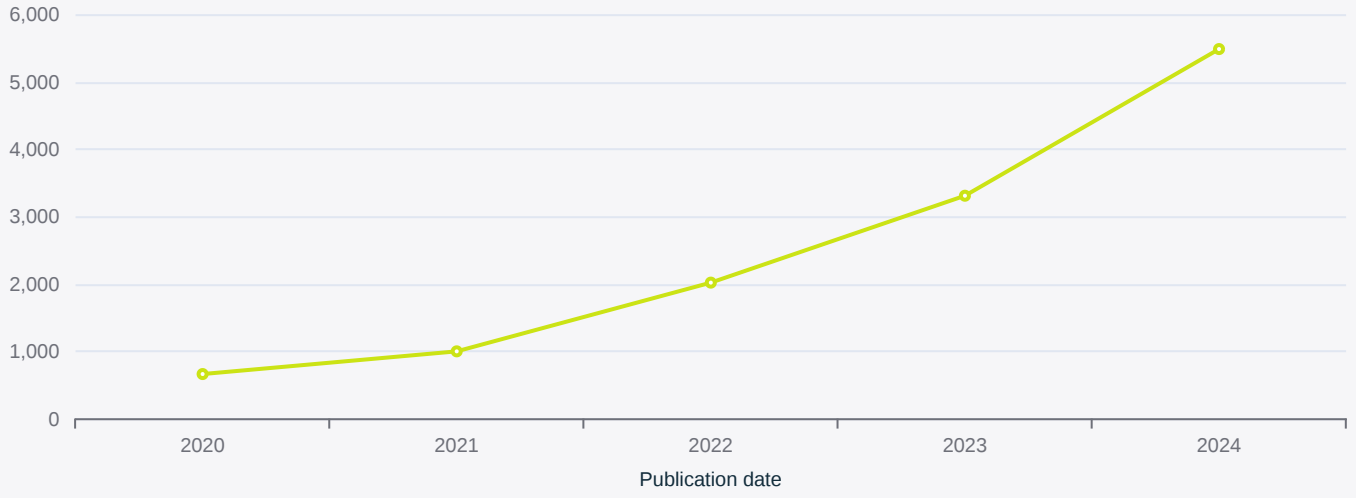
| +150 mln | +270 mln | +1 mln | +700 | +400 |
|---|---|---|---|---|
| PATENTS | PAPERS | FUNDED PROJECTS | FUNDING OPPORTUNITIES | COLLABORATION OPPORTUNITIES |
| 5.047 | 415 | 429 | 23 | 4 |
| on report's topics in the last 5 years | on report's topics in the last 5 years | on report's topics in the last 5 years | on report's topics in the last 5 years | on report's topics in the last 5 years |

## Inventiveness landscape

### Most relevant CPC categories of patents


The CPC (Cooperative Patent Classification) system categorises patents by technical content. This graph unveils innovation trends in *Artificial Intelligence, Digital Twin* research and development by analysing CPC code frequency. Utilise this analysis to identify emerging technologies, prioritise research areas, and make informed decisions on intellectual property strategies and investment opportunities.

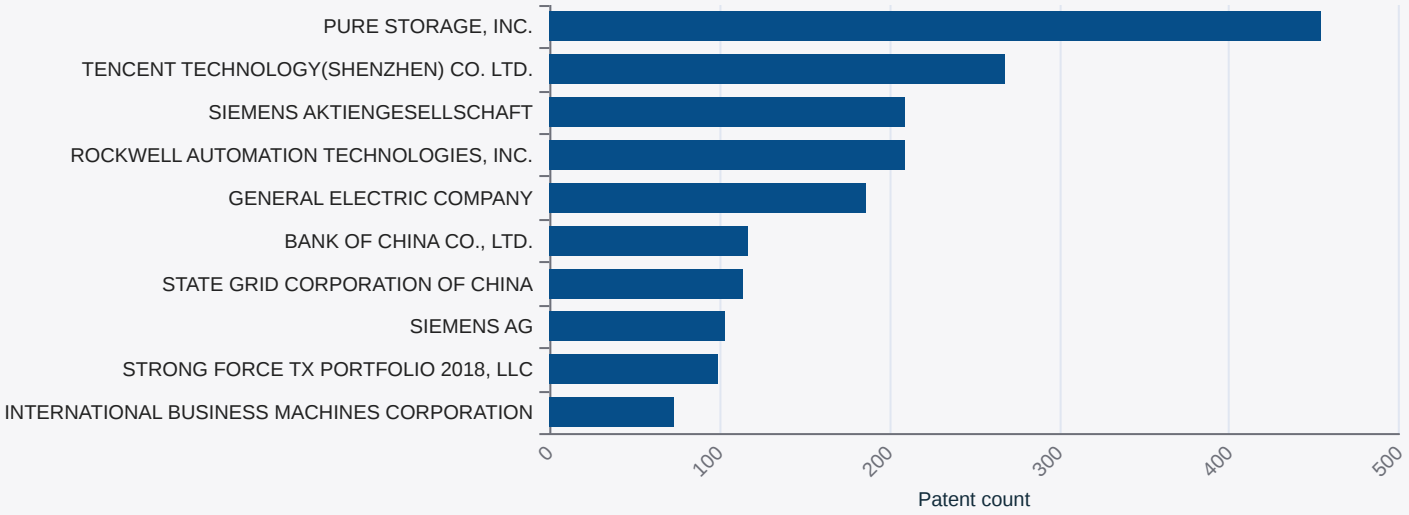
### Patents trend




Discover the patent landscape of *Artificial Intelligence, Digital Twin* over the past five years. Tracking annual patent filings reveals fluctuations and emerging patterns, reflecting the pace of innovation and technological advancements. Use these insights to drive strategic decisions regarding collaborations and investments in your field.

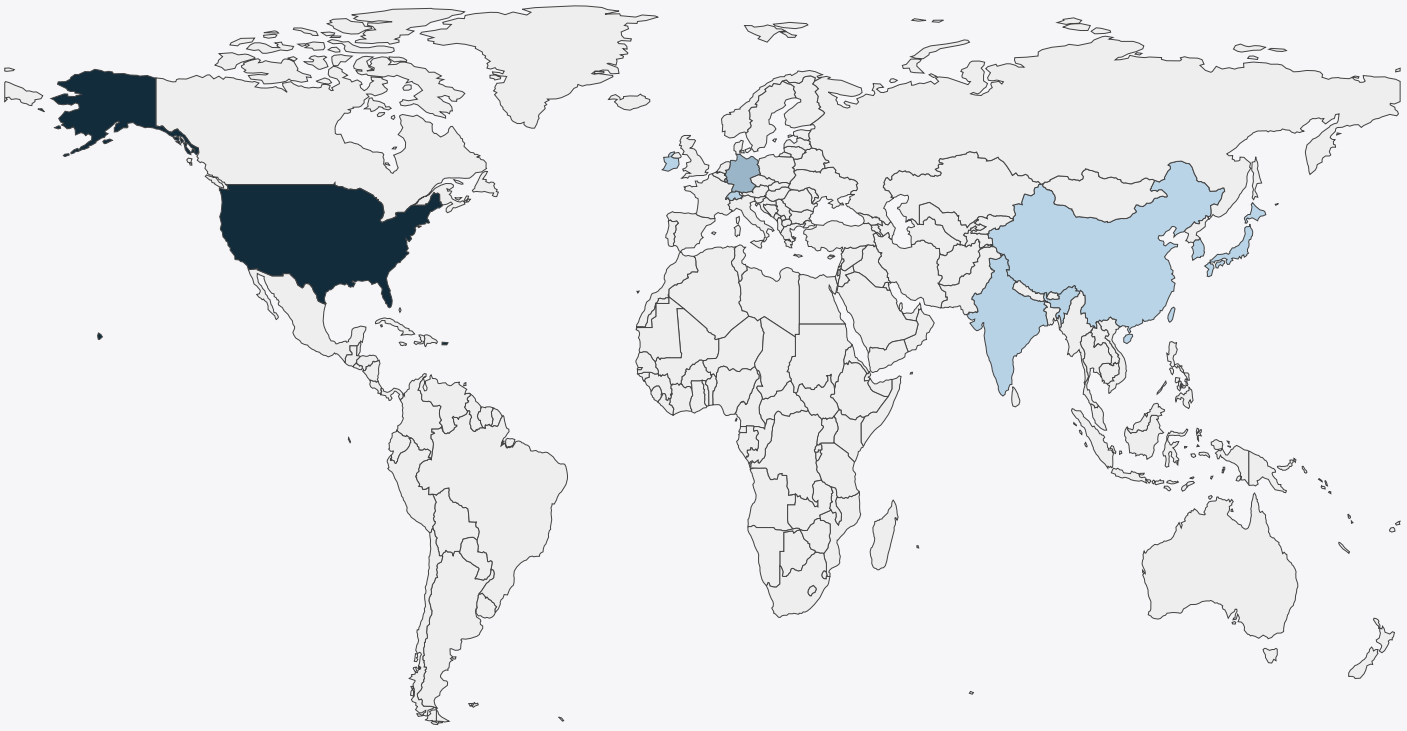
## Mapping intellectual property leaders: top patent applicants

### Leading patent applicants




The top patent applicants give you a clear view of the field's most active entities in patent filings. This data-driven analysis helps you identify the leading players driving innovation and technological advancements. Use these insights to make informed decisions and explore potential partnerships within the rapidly evolving industry in *Artificial Intelligence, Digital Twin*.

### Countries with the most patent applicants



This chart displays the top applicant countries within the *Artificial Intelligence, Digital Twin* industry, giving you a bird's-eye view of where the most patent applications originate and where innovation is thriving. By understanding which countries are leading the charge in research and development, you can pinpoint key players, spot emerging trends, and even uncover opportunities for collaboration or competition.

## Innovativeness: legal protection and innovation leaders

### Patents jurisdiction

Who's leading the innovation race? A patent jurisdiction map offers insights into geographic concentrations of innovation and considerations for companies regarding where to file patents over the past five years in the industry. If you seek to protect your intellectual property and maximise its competitive advantage, the map offers strategic guidance on where to prioritise patent filings.

## Curated patents and their applicants

The submitted patents highlight innovative approaches in leveraging digital twin technology and artificial intelligence for optimizing operations across various domains, from logistics and resource management to building maintenance and network policy determination. These patents emphasize creating digital replicas of physical environments and assets, coupled with AI, to enhance decision-making, predict outcomes, and improve operational efficiency across complex systems.

CONTROL TOWER AND ENTERPRISE MANAGEMENT PLATFORM FOR VALUE CHAIN NETWORKS: The patent describes a system utilizing machine learning and digital twins to provide logistics design recommendations. A machine learning system trains models that analyze logistic features and outcomes. An AI system generates design recommendations from these models, which a digital twin system simulates within a virtual logistics environment. This setup helps optimize logistics operations.

ENTITY-BASED DIGITAL TWIN ARCHITECTURE: The patent covers systems and methods for enhanced building management using entity-based digital twins. It involves modeling buildings in two or three dimensions or augmented reality, divided into manageable entities. A predictive AI model further allows more effective decision-making by managing these entities individually to improve operational efficiency.

Resource scheduling method and device and computer readable storage medium: This patent details a method for resource scheduling in networks. It involves acquiring user service intentions and assessing local computing power node states. A scheduling strategy then allocates computing resources across network nodes to meet user demands efficiently, improving resource management in network environments.

METHOD AND APPARATUS FOR DETERMINING POLICY: The invention proposes a method for formulating access and path selection policies in networks using AI models. The digital twin entity provides data to train AI models, which help optimize air interface access and user plane path policies, thereby minimizing network energy consumption while maintaining desired service experience levels.

Operations and maintenance systems and methods employing sensor-less digital twins: The patent presents an operations and maintenance system using distinct digital twins for multiple objects, without relying on physical sensors. It utilizes virtual sensors to emulate data, compares digital twin outputs, and makes maintenance decisions based on the comparisons, enhancing operation efficiency through virtual testing and optimization.

### CONTROL TOWER AND ENTERPRISE MANAGEMENT PLATFORM FOR VALUE CHAIN NETWORKS

**ID:** WO2021092263A1 **Patent office:** INTERNATIONAL **Published on:** 14/5/2021

**Applicants:** STRONG FORCE VCN PORTFOLIO 2019, LLC

### ENTITY-BASED DIGITAL TWIN ARCHITECTURE

**ID:** EP4465234A1 **Patent office:** EUROPEAN UNION **Published on:** 20/11/2024

**Applicants:** DATAARROWS INC.

### Resource scheduling method and device and computer readable storage medium

**ID:** CN117395251A **Patent office:** CHINA **Published on:** 12/1/2024

**Applicants:** CHINA TELECOM CORPORATION LIMITED, TECHNOLOGY INNOVATION CENTER OF CHINA TELECOM CORPORATION LIMITED

### METHOD AND APPARATUS FOR DETERMINING POLICY

**ID:** EP4319059A1 **Patent office:** EUROPEAN UNION **Published on:** 07/2/2024

**Applicants:** HUAWEI TECHNOLOGIES CO., LTD.

### Operations and maintenance systems and methods employing sensor-less digital twins

**ID:** US12019963B2 **Patent office:** UNITED STATES OF AMERICA **Published on:** 25/6/2024

**Applicants:** INCUCOMM, INC.

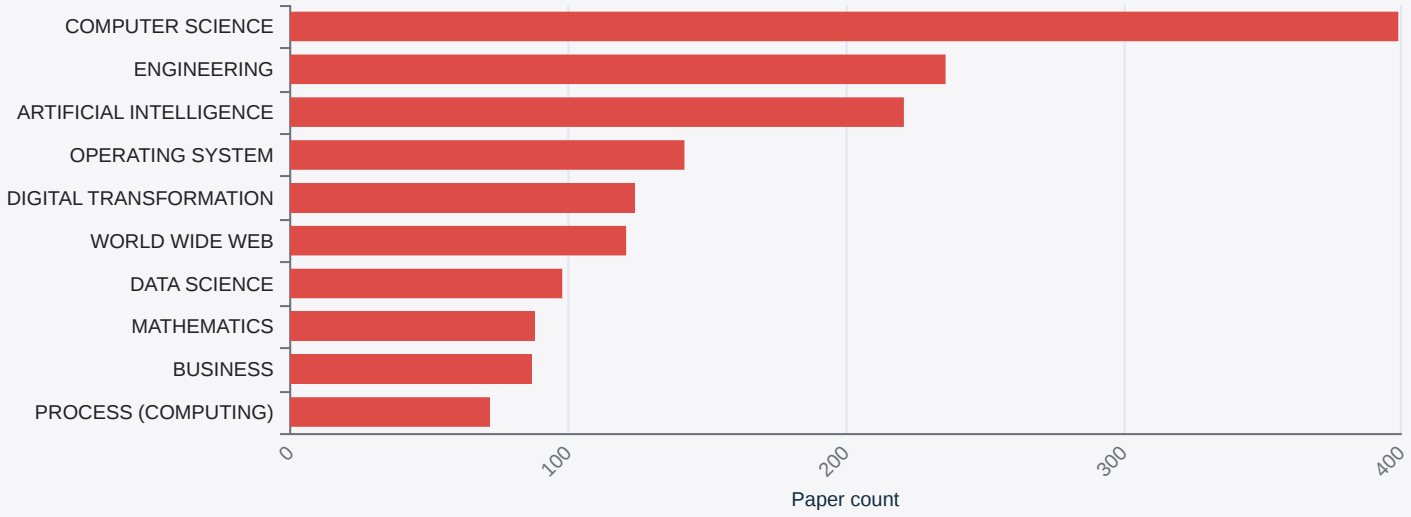
DID YOU KNOW?

Patents are valuable assets for companies, requiring investment to develop and protect. Their protection locations can indicate market growth areas. Examining applications and applicants reveals insights into technology, strategies, and key players. At PNO, we carefully analyse patents as a key element of market and technology intelligence.

For more insights into intellectual property and state-of-the-art developments about *Artificial Intelligence, Digital Twin*, contact us to unlock new pathways to innovation.

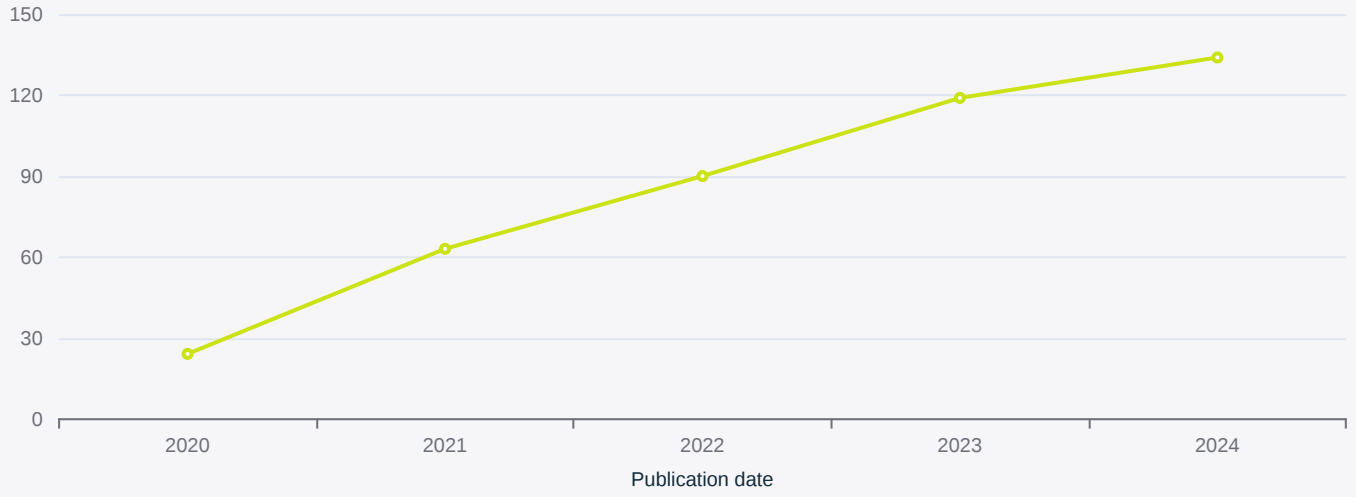
## Insights into research trends

### Most relevant scientific topics



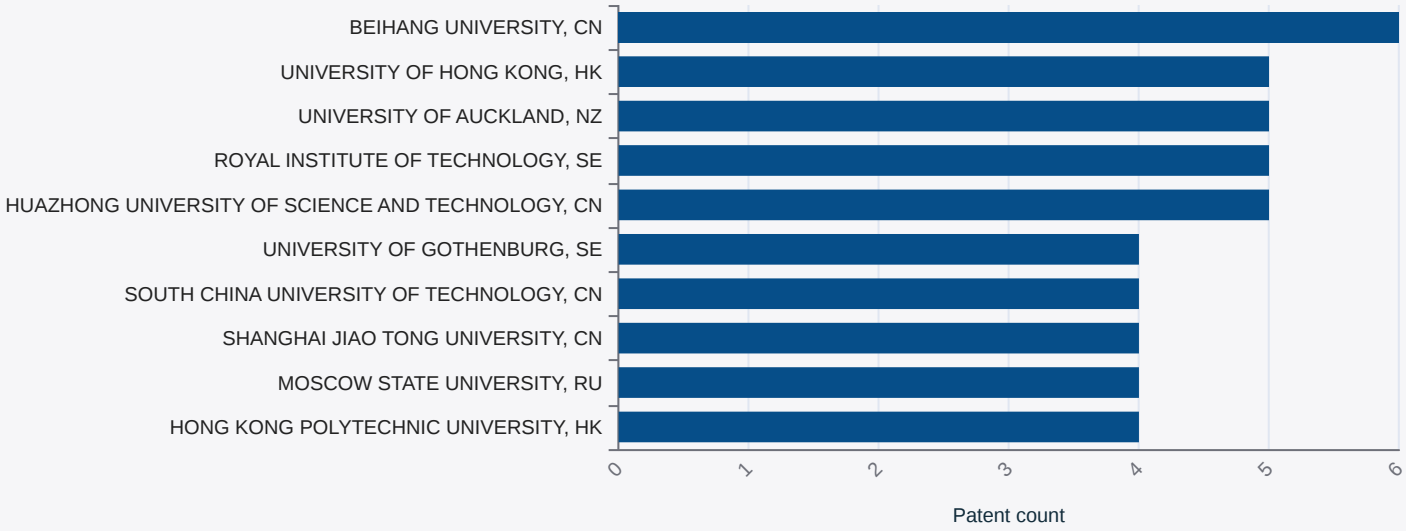

Analysing key scientific topics uncovers fundamental themes that can guide the direction of upcoming research. This approach identifies current areas of focus and predicts future trends, ensuring that research efforts are aligned with the most promising and impactful areas of innovation.

### Papers trend



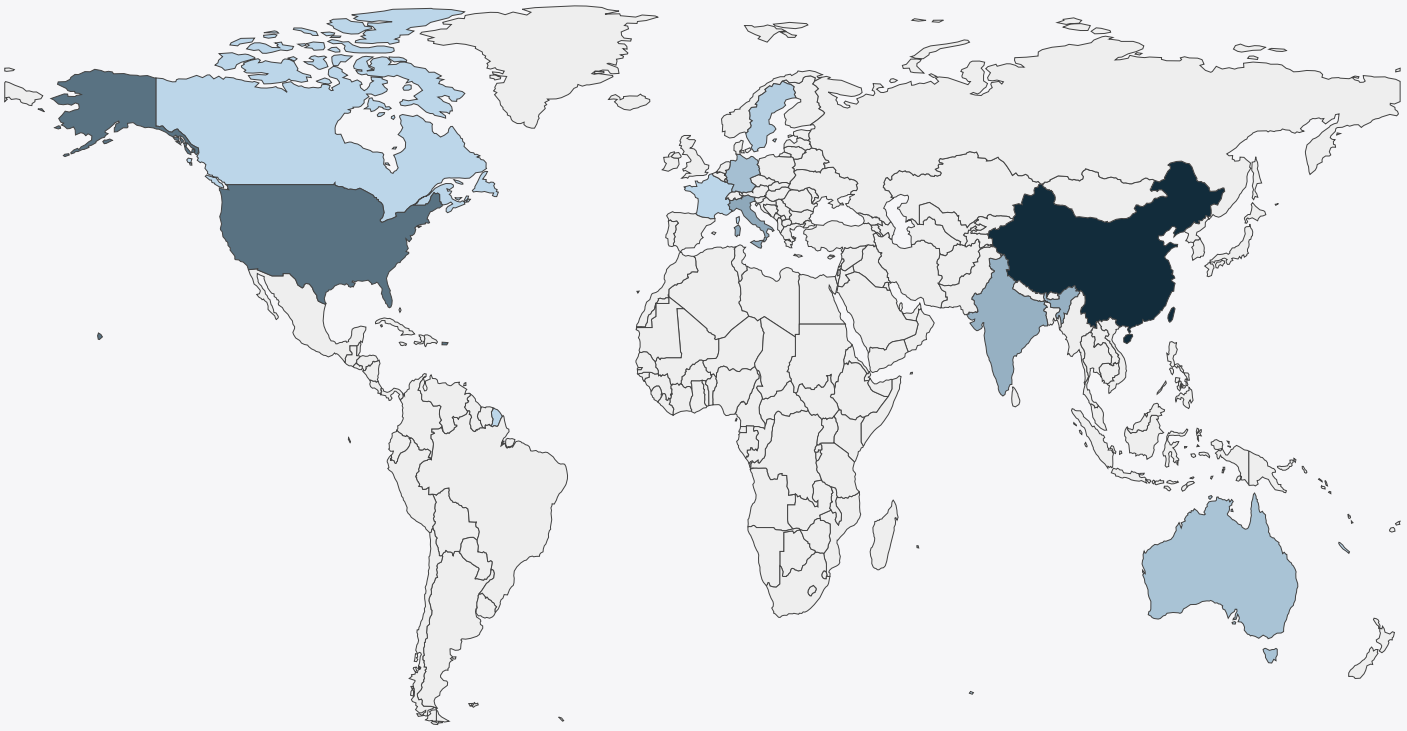

Research Papers are pivotal in highlighting research and innovations that dictate an industry's direction. They offer a window into the intricacies and advancements within a subject area.

## Leading institutions contributing to papers publication




These top contributors drive research in the field with innovative approaches, groundbreaking discoveries, and influential publications. Identifying these key players offers invaluable insights into the evolving landscape, fostering collaboration and exchange within the research community.

## Countries with the most active publishing institutions



This graphic highlights the countries at the forefront of research and development on *Artificial Intelligence, Digital Twin*. Showcasing the most active participants in R&D provides a clear picture of global innovation dynamics and the leading hubs of research activity. Use this knowledge to forge strategic partnerships, anticipate emerging trends, and cultivate collaborative opportunities worldwide.

## Top papers about Artificial Intelligence, Digital Twin

The collection of academic papers explores the intersection of modern digital technologies and their transformative impact on industries, particularly focusing on smart manufacturing, architecture, engineering, and construction (AEC). The papers cover the integration and application of emerging technologies like Building Information Modeling (BIM), Digital Twins, the Metaverse, and Industry 4.0 technologies. They examine how these innovations enhance real-time monitoring, predictive maintenance, and process optimization in sectors ranging from manufacturing to architecture, emphasizing the potential for increased efficiency, cost reduction, and overall improved quality of production and infrastructure management. These discussions highlight ongoing challenges, including issues of integration, standardization, and data security, while underscoring the potential of these technologies to revolutionize industry practices and drive future developments.

**Transitioning from BIM to Digital Twin to Metaverse:** This paper explores the evolution from Building Information Modeling (BIM) to Digital Twins and the Metaverse in the Architecture, Engineering, and Construction (AEC) industry. It highlights the benefits of integrating these technologies to improve project delivery, stakeholder engagement, and operational efficiency. BIM provides detailed building models, Digital Twins offer real-time data integration for improved asset management, and the Metaverse allows immersive virtual interactions. Challenges include interoperability, data security, and standardization, but the integration promises enhanced productivity and innovation in the AEC sector.

**Digital Twin Technology:** The paper discusses Digital Twin technology as a virtual simulation of physical assets that evolves with AI and IoT input. It is poised to be a key component of Industry 4.0, integrating industrial processes for better asset monitoring, predictive analysis, and cost savings. It supports manufacturing, healthcare, and smart cities by improving safety and advancing product development. Challenges include integration with existing systems and data management.

**Industry 4.0:** This paper delves into Industry 4.0, characterized by the integration of cyber-physical systems, IoT, AI, and big data into manufacturing. It aims to enhance productivity, adaptability, and global competitiveness. The paper covers the design principles and challenges of Industry 4.0, including upskilling the workforce, integrating with legacy systems, and ethical considerations. The shift towards smart factories enables real-time operation monitoring and decision-making, paving the way for Industry 5.0.

**Smart Manufacturing with Digital Twins: Real-Time Optimization and Process Innovation:** This paper examines how digital twin technology transforms smart manufacturing by enabling real-time optimization and process innovation. By simulating and monitoring physical processes, digital twins improve efficiency, quality, and agility in industries like automotive and pharmaceuticals. The paper explores challenges and the need for innovation and standardization to maximize the benefits. Technologies such as IoT and AI are crucial, enabling predictive maintenance and supply chain optimization within an Industry 4.0 framework.

**Smart Manufacturing Using Internet of Things, Artificial Intelligence, and Digital Twin Technology:** The chapter explores smart manufacturing, focusing on how IoT, AI, and Digital Twin technology optimize production processes. IoT enables device connectivity and real-time data collection, which AI analyzes to optimize processes. Digital Twins simulate assets to identify issues and enhance performance. This integration enhances efficiency, reduces costs, and improves product quality by enabling comprehensive, connected smart manufacturing environments.

### Transitioning from BIM to Digital Twin to Metaverse

**Authors:** Ehsan Noroozinejad Farsangi, Alaa O. Shehata, Maria Rashidi, Nargess Ghassempour, Seyedali Mirjalili

**Published on:** 05/12/2024

### Digital Twin Technology

**Authors:** Abdulrahman Yarali

**Published on:** 08/10/2021

### Industry 4.0

**Authors:** K.K. Girish, Sunil Kumar, Biswajit R. Bhowmik

**Published on:** 05/4/2024

### Smart Manufacturing with Digital Twins: Real-Time Optimization and Process Innovation

**Authors:** Murali Krishna Pasupuleti

**Published on:** 23/8/2024

### Smart Manufacturing Using Internet of Things, Artificial Intelligence, and Digital Twin Technology

**Authors:** Amit Kumar Tyagi, Richa Richa

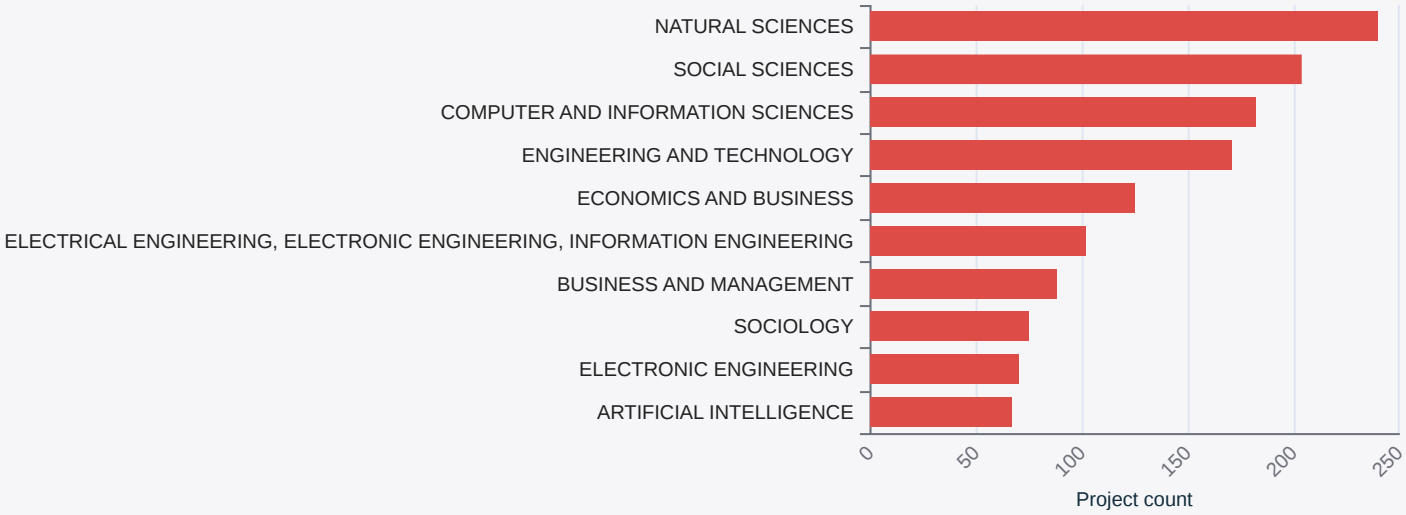
**Published on:** 16/6/2023

DID YOU KNOW?

Papers offer valuable technological details and reveal the scientific community's focus over time. They help identify real experts and their collaborations. However, finding and reading through them can be challenging, so selecting the right topics carefully is important.

Please contact us for deeper insights into relevant scientific publications and expert guidance on *Artificial Intelligence, Digital Twin*.

## Most relevant fields of science



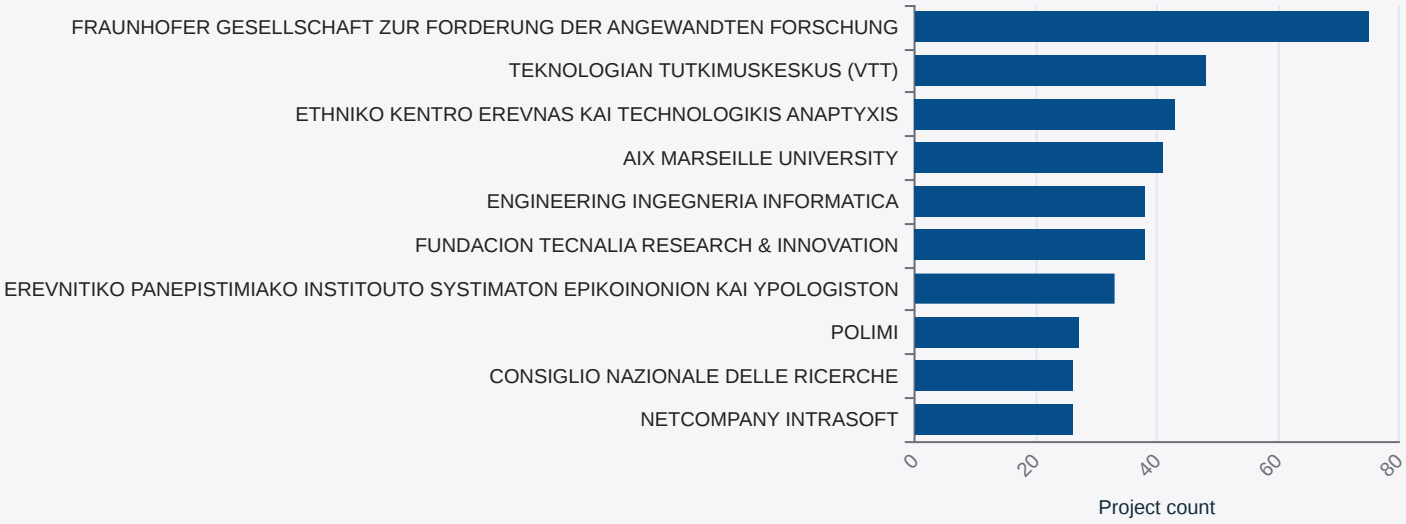

Identify critical innovation and research focus areas to streamline your efforts and stay aligned with current trends with this focused view of the top scientific sector of public-funded projects related to *Artificial Intelligence, Digital Twin*.

## Funded projects trend


By analysing the number of projects funded in these five years, you'll gain valuable insights into shifting priorities and strategic allocations within the R&D investment landscape. Use this data to inform your strategic decision-making and resource allocation in the field.

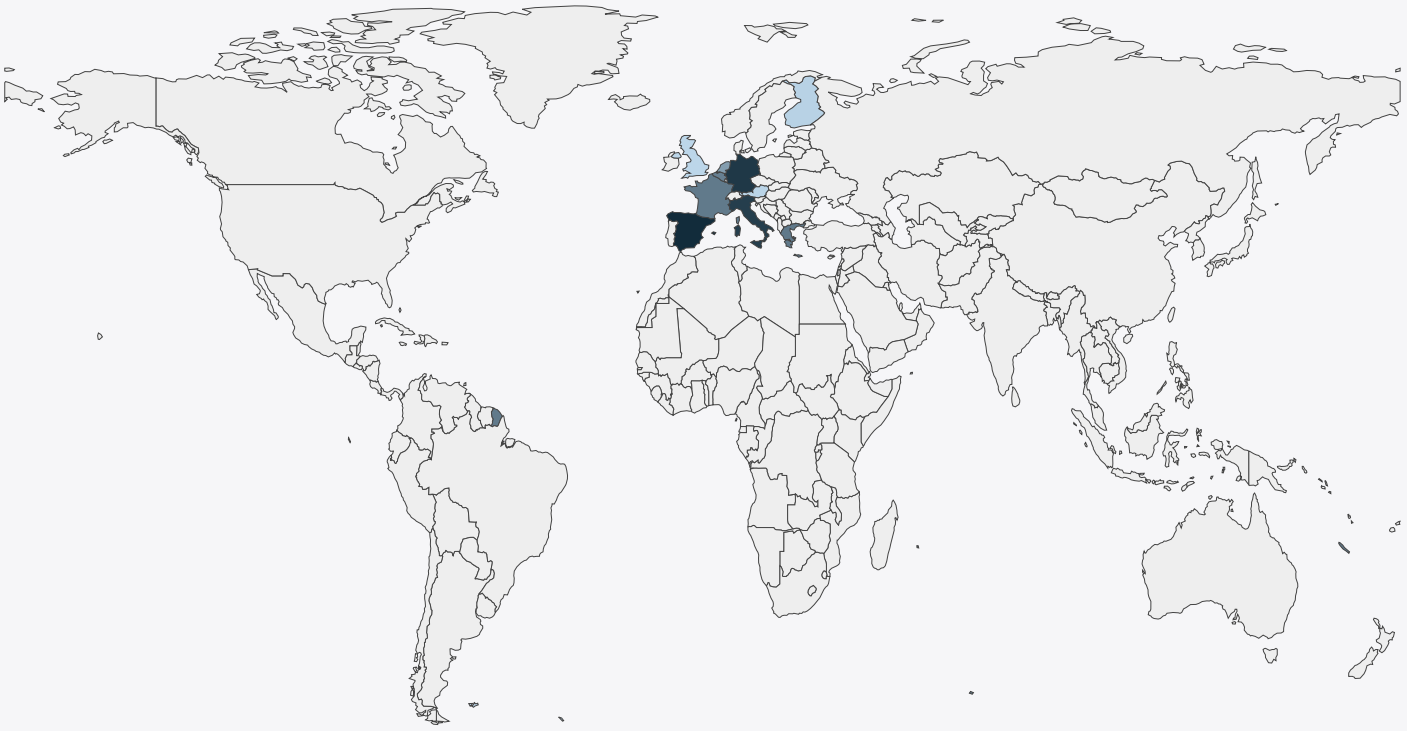
## Mapping Collaborative Dynamics: Most Active Participants in R&D&I Projects

### Most active projects participants




By identifying key contributors to *Artificial Intelligence, Digital Twin* projects, you can discern the driving forces behind innovation and collaboration in the field, enabling you to make informed decisions and foster potential partnerships.

### Countries with the most active projects participants



The geographic distribution of these top participants provides insights into global collaboration patterns and regional expertise on *Artificial Intelligence, Digital Twin*

## Top R&D Funded Projects

The projects presented showcase advancements in Industry 4.0 technologies, emphasizing the integration of robotics, digital twins, and AI to enhance manufacturing processes. These initiatives aim to improve efficiency, versatility, and resilience across various manufacturing sectors, from integrating multipurpose robotics and building industrial ecosystems to utilizing data-driven strategies for sustainable production. Efforts include developing smart sensors, cloud-connected systems, and creating accessible digital twin technologies for SMEs. Collaboration across European countries is a common thread, aiming to bolster the global competitiveness and innovative capabilities of the European manufacturing industry.

**multipurpose robotics for mAniPulation of defoRmable materIaLs in manufacturing processes:** The APRIL project focuses on deploying cost-effective multipurpose robots to support semi-automatic tasks in manufacturing that involve flexible or deformable materials. Utilizing advanced grasping, computational vision, and sensor technology, APRIL aims to improve safety, productivity, and quality in industries by connecting robots to a cloud-based knowledge system. The initiative involves six European demonstration sites and collaborates with 15 partners over 40 months.

**Twinning to build an industrial ecosystem around the core principles of Industry4.0 and the Digital Twin:** CORE Innovation Centre, based in Greece, aims to create an Industry 4.0 ecosystem by developing test labs for automation and digital twins. Partnering with EU organizations, CORE will enhance research capabilities in digital twin technologies while reducing production disparities through knowledge transfer and collaborative projects with leading countries.

**Create and Harvest Offerings to support Manufacturing SMEs to become Digital Twin Champions:** Change2Twin seeks to enable full access to digital twin technology for European manufacturing SMEs. The project focuses on providing end-to-end service models, a technology marketplace, and cross-border collaboration. It aims to create a supportive network of DIHs and facilitate widespread digital twin adoption through pilots and open calls.

**European Data as a PRoduct Value Ecosystems for Resilient Factory 4.0 Product and ProDuction ContinuitY and Sustainability:** RE4DY focuses on incorporating data-driven resiliency strategies in manufacturing to enhance European competitiveness. The project emphasizes data-intensive intelligent systems integrating AI and digital twin technologies for supply chain adaptability and continuous digital value networks, promoting quick responses to disruptions.

**Intelligent Motion Control under Industry 4.E:** IMOCO4.E develops edge-to-cloud intelligence for machines requiring high motion control precision. It leverages digital twins and AI to enhance the efficiency, security, and adaptability of manufacturing processes. The project aims to provide a reference platform and components for in-depth motion control applications across various sectors.

### multipurpose robotics for mAniPulation of defoRmable materIaLs in manufacturing processes

CLOSED

**Funding Country:** European Union **Start date:** 01/4/2020 **End date:** 31/3/2024

**Authority:** European Commission **Source:** link

**Programme:** Horizon 2020 **Total cost:** € 7.926.391 **Project funding:** € 7.926.391

Automation | federated robots | flexible manufacturing | manipulation of flexible materials | robot hands

## Twinning to build an industrial ecosystem around the core principles of Industry4.0 and the Digital Twin

ACTIVE

**Funding Country:** European Union **Start date:** 01/1/2023 **End date:** 31/12/2025

**Authority:** European Commission **Source:** link

**Programme:** Horizon Europe **Total cost:** € 1.499.500 **Project funding:** € 1.499.500

digital twin | industry 4.0 | big data | machine learning | smart factory | manufacturing | upskilling | research and innovation | project management | partnership

## Create and Harvest Offerings to support Manufacturing SMEs to become Digital Twin Champions

CLOSED

**Funding Country:** European Union **Start date:** 01/6/2020 **End date:** 30/11/2024

**Authority:** European Commission **Source:** link

**Programme:** Horizon 2020 **Total cost:** € 9.049.705 **Project funding:** € 9.049.705

Digital Twin Manufacturing Framework | Internet of Things | Digital Transformation | Standardization | Connected Factories | Circular Economy | Human Machine Collaboration | Digital Supply Chain

## European Data as a PRoduct Value Ecosystems for Resilient Factory 4.0 Product and ProDuction ContinuitY and Sustainability

CLOSED

**Funding Country:** European Union **Start date:** 01/6/2022 **End date:** 31/5/2025

**Authority:** European Commission **Source:** link

**Programme:** Horizon Europe **Total cost:** € 9.404.152 **Project funding:** € 9.404.152

Smart Manufacturing | Resiliency | Value Networks | Data Pipelines | Artificial Intelligence | Digital Twin | Digital Thread | Sovereignty | Sustainability

## Intelligent Motion Control under Industry 4.E

CLOSED

**Funding Country:** European Union **Start date:** 01/9/2021 **End date:** 31/8/2024

**Authority:** European Commission **Source:** link

**Programme:** Horizon 2020 **Total cost:** € 30.823.019 **Project funding:** € 30.823.019

motion control | mechatronics | digital twins | AI | machine learning | edge-to-cloud computing | computer vision | robotics | human cyber- physical systems | secure communications | predictive maintenance

DID YOU KNOW?

Projects are crucial for turning innovative ideas into real-world applications. Analysing projects in *Artificial Intelligence, Digital Twin* allows you to spot emerging trends and strategic shifts in the industry. These insights reveal key players, funding sources, and collaborative networks driving innovation.

Contact us to explore how these insights can help you navigate the landscape of R&D projects and capitalise on new opportunities for growth and collaboration.

## Top Funding Opportunities

Ready to secure funding for your projects? Here's a roundup of the top funding opportunities tailored for you. Explore these avenues to support your innovative ideas and propel your research forward.

### NEW Open Call: Spark - Incubation Programme 2025

OPEN

**Deadline:** 11/7/2025 **Country:** Europe

**Overall budget:** 57.500 € **Max funding amount:** 10.000 €

**Grantor body:** EIT **Source:** link

**Beneficiaries:** LARGE INDUSTRY, SME, PUBLIC BODY, RESEARCH ORGANIZATION, NGOS, OTHER

**Sectors:** OTHER

**Technology:** ICT, Nanotech, Material, Industrial Processes, Other

Architecture | climate resilience | AR/VR technologies | innovative business models | cultural heritage | sustainable building | digitalization

**Description:**

Building on its commitment to fostering entrepreneurship in the Cultural and Creative Sectors and Industries (CCSI), EIT Culture & Creativity is launching the Spark Programme (Incubation). **This initiative aims to support aspiring entrepreneurs and early-stage start-ups in developing innovative solutions within Architecture and Cultural Heritage, providing structured training, mentorship and strategic guidance to help transform ideas into viable businesses**.

The Spark Programme (Incubation) is a regular open call, offering a structured 8-10-week incubation programme designed to equip participants with the skills, knowledge and connections needed to launch and grow their businesses.

**Key Features of the Spark Programme (Incubation)**:

1. **Structured Training & Mentorship**: An 8-10-week programme featuring a 2-3 day face-to-face kick-off event, personalised coaching and mentoring by industry leaders
2. **Entrepreneurial Mindset Development**: Training focused on resilience, opportunity recognition and problem-solving
3. **Business Model & Market Validation**: Guidance on defining business models, identifying target markets, and developing a strong value proposition
4. **Product Development**: Support in building and testing a Minimum Viable Product (MVP)
5. **Legal & Financial Fundamentals**: Training on intellectual property (IP), contracts and financial management for start-ups
6. **Pitching & Presentation Skills**: Hands-on coaching to prepare for investor and stakeholder pitches
7. **Networking & Industry Connections**: Access to a network of mentors, experts and potential partners to foster strategic collaborations

**In addition to programme participation, the eight highest-ranked ventures from the programme will be awarded financial prizes based on their performance at the Demo Day**. These prizes are intended to provide initial financial support for the most promising start-ups, helping them take their ventures to the next stage:

1. First Prize (Rank 1 & 2): €10.000
2. Second Prize (Ranks 3-5): €7.500
3. Third Prize (Ranks 6-8): €5.000

.Ideas must target:

- Architecture:

1. Sustainable building practices and innovative materials
2. Climate-resilient architecture and urban planning
3. Digital transformation in construction

- Cultural Heritage

1. Immersive experiences using AR/VR for heritage sites
2. Digital transformation projects that enhance accessibility and engagement
3. Innovative business models that promote fair value distribution in the sector

Individuals (students, recent graduates, researchers, professionals) or teams (up to 3 people) based in an EU Member State or a Horizon Europe-associated country can apply. **No company registration is required at application stage, but a legal entity must be established before the Demo Day to be eligible for financial prizes**.

## NEW FRIEND CCI: Call for Expression of Interest for Service Providers

OPEN

**Deadline:** 01/8/2025 **Country:** Europe

**Overall budget:** N/A **Max funding amount:** N/A

**Grantor body:** https://clustercollaboration.eu/vibrant-platform-service-cluster-organisations **Source:** link

**Beneficiaries:** LARGE INDUSTRY, SME, RESEARCH ORGANIZATION, OTHER

**Sectors:** OTHER

**Technology:** Other

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upskilling | reskilling | training centers | internationalization | expression of interest

**Description:**

FRIEND CCI aims to contribute to an improved resilience of the “creative and cultural industries” (CCI) ecosystem in Europe and to its green and digital transformation, through the creation and development of a network supporting small and medium-sized enterprises (SMEs) and other actors of the ecosystem in developing value chain interlinkages to foster innovation.

One of the pillars to accelerate innovation is training and skilling of SMEs from the CCI ecosystem for the green and digital transition and for internationalisation.
This Call for Expression of Interest is directed towards **companies, training centres and advisors, that are interested in providing services such as digitisation services, training and advisory to the "Creative and Cultural Industries".**
While there is no direct funding, reacting to this Call for Expression of Interest by submitting information about services helps the SMEs that receive funding for training and internationalisation services through FRIEND CCI to identify providers.
For a complete list of the services that can be provided, please read the attached official text.

## NEW Teaching Factories Competition 2025: Call for students to form Solver Teams

OPEN

**Deadline:** 01/9/2025 **Country:** Europe

**Overall budget:** 44.000 € **Max funding amount:** 10.000 €

**Grantor body:** EIT Manufacturing **Source:** link

**Beneficiaries:** RESEARCH ORGANIZATION

**Sectors:** MANUFACTURING

**Technology:** ICT, Nanotech, Material, Industrial Processes, Other

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higher education institutions | circular economy | artificial intelligence | vocational school | industrial challenges | additive manufacturing | Internet of Things (IoT) | digital transformation

**Description:**

**The Teaching Factories Competition 2025** offers an exciting opportunity for students to collaborate with industry leaders across Europe.
Companies present real business challenges and students form Solver Teams (4-6 members) to develop innovative solutions.

Manufacturing companies will submit their business challenges for Solver Teams on the following topics and subtopics of the Teaching Factories Competition 2025:

- **Advanced Manufacturing:**

1. Additive Manufacturing
2. Advanced Materials and Manufacturing
3. Human-Machine Interface
4. Robotics & Automation.

- **Green and Sustainable Manufacturing:**

1. Circular Economy
2. Sustainable Supply Chain Management
3. Zero Defect Manufacturing.

- **Digital Transformation in Manufacturing:**

1. Artificial Intelligence (AI)
2. Smart & Intelligent Manufacturing
3. Advanced Simulation & Digital Twin Technology
4. Internet of Things (IoT)
5. Blockchain Technology
6. Big Data Analytics
7. Web 3.0 & Metaverse.

To be eligible for the call, the **Solver Teams** should meet the following criteria.

**Higher education students:**

- Must consist of 4 to 6 members, with women and underrepresented groups actively participating in the implementation.
- Must be students officially enrolled in a Bachelor's or Master's programme at the end of the application phase in a Higher Education Institution in one of the Member States or Associated Countries to Horizon Europe.

- Must be students in at least their second year of a Bachelor's degree or enrolled in a Master's studies.
- Should include members from at least two different disciplines, such as informatics, engineering, business or natural and technological sciences.
- Participants who graduate and/or unenroll during the competition phase are expected to stay in the competition until the end of it.

VET students:

To be eligible for the call, the Solver Teams should meet the following criteria:

- Must consist of 4 to 6 members, with women and underrepresented groups actively participating in the implementation.
- Must be students officially enrolled in a Vocational Education and Training (VET) programme at the end of the application phase in a VET institution in one of the Member States, including overseas countries and territories or Associated Countries to Horizon Europe.
- Must be students in at least their second year of a VET programme.
- Should include members from at least two different disciplines, such as technical, engineering, business or other relevant fields.
- Participants who graduate and/or unenroll during the competition phase are expected to stay in the competition until the end of it.

Challenges will be subdivided into two cohorts:

1. Solutions related to the first cohort must be submitted from the 7th of March 2025 to the 15th of April 2025 (details available here)
2. Solutions related to the second cohort must be submitted from the 18th of April 2025 to the 1st of September 2025) (details available at the link at the bottom of this page)

## NEW DIGITAL-2025-AI-08-AGRIFOOD: Multi-Country project in Agri-Food

OPEN

**Deadline:** 02/9/2025 **Country:** Europe

**Overall budget:** 15.000.000 € **Max funding amount:** 15.000.000 €

**Grantor body:** European Commission **Source:** link

**Beneficiaries:** LARGE INDUSTRY, SME, PUBLIC BODY, RESEARCH ORGANIZATION, OTHER

**Sectors:** BIOECONOMY CHEMISTRY AGRIFOOD, ICT, NANOTECH MATERIAL

**Technology:** ICT, Nanotech, Other

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use cases | digital infrastructure | smart agriculture | policy reccomendations | capacity building

Description:

**The objective of this action is to support a Multi-Country Project (MCP) in the agri-food sector. The MCP in Agri-Food aims to leverage digital infrastructure, particularly data infrastructure, to enhance the efficiency, sustainability and competitiveness of the agrifood sector across Europe**.
This action will foster the access, sharing and reuse of data to support decision-making, reduce administrative burdens, and enable innovative solutions within the sector. In line with the European Data Strategy, the action should contribute to creating a fair, competitive and innovative data economy.
In line with Political Guidelines, **it should support the digital transformation of the agri-food sector, making it smarter, more sustainable and better adapted to the needs of its users, in line with the objectives to build a competitive and resilient agriculture and food system, aiming to support the sector's sustainability and productivity**.
The action is also expected to support the reduction of administrative burden in both, business-to-business (B2B) and businessto-to government (B2G) data sharing, in particular in cross-border settings and explore the potential for simplification.
The awarded proposal will take into account existing data-sharing initiatives at European, national and local levels. Especially, it will complement and accelerate the development and implementation of the Common European Agricultural Data Space (CEADS).

**The awarded proposal should address the following activities**:

1. Develop and set-up digital infrastructure in view of enabling agri-food data exchange, access, and analysis at the European level; this activity should form a main part of project.
2. Support the implementation and deployment of a large-scale data-infrastructure with a multi-country or EU-level dimension to roll out data services in agri-food relevant for the public and private domains.
3. Provide assistance, including financial support to third parties, for the development of cross-border use cases focusing on real-life applications based on agri-food data sharing and promote the sharing and reuse of best practices. These use cases should be implemented across several Member States and foster advanced technologies, including AI, and should follow a coherent approach, that ensures interoperability; indicative areas for use cases include the preparation of scaling of the multi-country project and/ or subsequent actions that support the objectives of the MCP.
4. Analyse gaps in existing agri-food data infrastructures and services, and propose measures to support the deployment, operation, and maintenance of data and service infrastructures.
5. Provide operational support to create a sustainable collaboration framework among Member States and other stakeholders aimed at facilitating large-scale investments in digital and data infrastructure for agri-food projects with a multicountry focus.
6. Support the exchange of information and take stock of available infrastructures, solutions, tools, agreements, and standards related to the scope of the action among participants, and coordinate across initiatives and projects in different countries and domains.

**All activities under this project will require close collaboration and alignment with existing and evolving EU initiatives related to agri-food data**, in particular:

1. Common European Agricultural Data Space (CEADS)
2. Testing and Experimentation Facilities (TEF) for AI in agri-food
3. Horizon Europe Partnership Agriculture of Data
4. European Digital Innovation Hubs (EDIHs) and EDICs
5. eWallet/eID

The following outcomes and deliverables shall be produced:

1. **Capacity building**: Proactive collaboration with stakeholders.
2. **Information exchange platform**: A platform for sharing, primarily among participants, insights and data about infrastructure, tools, standards, and agreements related to the scope of this action, complementing related initiatives.
3. **Coordination roadmap**: A comprehensive plan for preparing the implementation of the actions under this project and their contribution to the multi-country project, detailing the alignment of various initiatives, of actors participating in the action across different sectors and member states.
4. **Recommendations for the development, operation, and maintenance**: Key foundational elements to roll-out the project towards countries not yet involved in the MCP and towards further segments of the agri-food sector.
5. **Assessment of ongoing initiatives**: Stocktaking of ongoing initiatives at national and EU level relevant to the project and documentation of lessons learnt to tailor the approach towards the deployment action.
6. **Concept, technical specification, and set-up of digital infrastructure for the agri-food ecosystem**.
7. **Use cases portfolio**: A collection of cross-border use cases implemented by third parties that demonstrate cooperation and interoperability, including guidelines and standards for implementing such use cases more generally, in alignment with existing European initiatives and in compliance with applicable legislation. This deliverable should be prepared by the consortium with support from third-party beneficiaries. Those use cases might be implemented as preparation for deployment actions, the envisaged digital infrastructure project, or as subsequent actions to capitalise the deployment action.
8. **Use case evaluation reports**: Detailed assessments for each use case, including performance results, lessons learned, and recommendations for future projects. This deliverable should be prepared by third parties under the consortium's guidance.
9. **Deployment action**: Implementation of the envisaged project in agri-food at multi-country/ EU level with sustainable structures for its maintenance and further development
10. **Policy recommendations** on the creation of favourable framing conditions for achieving MCP objectives and furthering the digital transformation of the sector, reducing administrative burden, and simplification

**A European Digital Infrastructure Consortium or another MCP implementation mechanism listed in the DDPP Decision including a consortium which includes at least three independent entities from three different Member States can apply**.
These entities should be appointed by the government as representing entity of the Member State, with the purpose of implementing the given Multi-Country Project. Besides these, the consortium can include other relevant private and public organisations contributing to the implementation of Multi-Country Projects.

More details can be found in the attached official document.

## NEW DIGITAL-2025-EDIH-AC-08-COMPLETION-STEP: Completion of the initial Network of European Digital Innovation Hubs (EDIHs)

OPEN

**Deadline:** 02/9/2025 **Country:** Europe

**Overall budget:** 2.000.000 € **Max funding amount:** 1.000.000 €

**Grantor body:** European Commission **Source:** link

**Beneficiaries:** RESEARCH ORGANIZATION, NGOS, OTHER

**Sectors:** ICT

**Technology:** ICT

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AI technologies | digitalization | counselling | training | digital transitions

Description:

**The focus of this call is to complete the network of European Digital Innovation Hubs (EDIHs) from Bosnia-Hertzegovina and Moldova, enhancing its performance and capacity to meet local, regional, national and European digitalisation needs**.
With increased experience and capacities, the EDIHs will continue providing the complete set of services of an EDIH, including the necessary infrastructure, focusing primarily on specific geographical areas and covering the digital transformation needs of local SMEs, mid-caps and/or public sector organisations. Considering the transformation potential of AI technologies, these will be a reinforced focus of EDIHs' operations under this call.
**The enlargement of the EDIHs network will be pivotal in supporting the wide deployment and uptake of European AI technologies, solutions and tools and in promoting the adoption of other crucial digital technologies, while upholding Union values and human-centric perspective**. Furthermore, the network will harness the potential of green digital technologies, advancing Europe's collective climate and environmental goals.
This approach not only enhances the resilience of Europe's industry but also boosts its strategic autonomy. With its enhanced presence in countries associated to Digital Europe, the EDIH network will help bridge technology gaps, and support competitiveness and economic convergence.
Each EDIH will provide services based on a specific focus and expertise, which will support the local private and public sector with their digital transformation with particular focus on support to development, training deployment and uptake of European AI. This specialisation can be strengthened over time and should make use of existing local competencies in this area.
The EDIH network is dedicated to promoting and facilitating the digital transformation of SMEs and public services through four types of services:

1. Test before invest: providing access to technical expertise and experimentation facilities, in particular to AI-related services.
2. Training and skill development: offering training sessions to SMEs and public services for upskilling and reskilling of the workforce.
3. Support to identify and facilitate access to potential financing sources to support digital transformation.
4. Foster an innovation ecosystem and networking opportunities Each EDIH is expected to provide all four types of services. They can however have different weights in the overall services portfolio.

The services will be provided on an open, transparent and non-discriminatory basis and will be targeted mainly to

1. SMEs and mid-caps
2. public sector organisations conducting non-economic activities

The typical entities contributing to an EDIH will be tech and business developers with experience in digitalisation and digital innovations, research & technology organisation (RTO) or university labs offering technology services (beyond academic R&I), which could work in collaboration with partners whose expertise lies in business financing, public sector innovation or training such as for example chambers of commerce, industrial clusters, industry associations, the Enterprise Europe Network (EEN), accelerators, vocational training centres or others.

Anyway, **proposals must be submitted only by preselected candidates for the European Digital Innovation Hubs from Bosnia-Herzegovina and Moldova, as designated by their respective associated country**.

DID YOU KNOW?

R&D projects offer a glimpse into the future, showing technological progress over the next 5 to 10 years as readiness improves and risks decrease. Exploring key players in these projects can reveal valuable collaborations and connections. Our team's expertise in the EU arena, funding, and innovation simplifies these analyses, ensuring you find the right support for your project.

Have questions? Let's discuss how to turn your ideas into tangible results and identify the partners you need.

## Top Collaboration Opportunities

Are you looking to collaborate? Here's a curated list of collaboration opportunities in the field of *Artificial Intelligence, Digital Twin*. Explore potential partnerships, collaborative projects, and networking avenues to drive innovation and advancement in this field.

### Project partners sought to develop an integrated digital platform for energy efficiency management in social housing

**Deadline:** 31/1/2026 **Country:** Europe

**Sectors:** Energy, ICT

**Abstract:**

**An Italian SME specialized in software solutions for public residential building management is seeking partners for a cooperation project aimed at creating an advanced platform for optimizing energy performance in social housing**.

The project will employ IoT, AI, and Digital Twin technologies to promote sustainable consumption, predictive maintenance, and dynamic energy certification.

**Partners sought:**

**Design of the complete platform**: this includes the selection and specification of sensors, as well as the components needed for data collection, processing and management.

Advanced algorithms must be defined to process **real-time data from the sensors**, delivering meaningful results to support the management and improvement of energy efficiency.

In the final phase, the partnership aims to complete experimental development through practical and accurate validation of the technological platform. **Field testing will confirm the system's effectiveness in real-world conditions, ensuring it meets the needs of both end users and stakeholders**. Successful validation will lay the groundwork for wider deployment and commercialization of the system, maximizing its impact across the ecosystem.

### A leading global engineering and technology enterprise, with a strong operational base in Türkiye, seeks collaborative partners for international programs, including EUREKA, and Horizon Europe

**Deadline:** 21/3/2026 **Country:** Europe

**Sectors:** ICT, NanotechMaterial

**Abstract:**

**A Turkish large company offers advanced technology solutions for collaborative projects in areas such as industrial automation, digital transformation, cloud and edge computing, industrial AI** (including generative/agentic AI, large language models, MLOps, and visual inspection suites)**, as well as IoT, 5G/6G, and related fields**.

The large company is actively seeking partnership opportunities to contribute its technology expertise within the scope of international R&D and innovation programs.

**Partners sought:** *No specific requirements*

## German software specialist developed a user-friendly technology for the creation of photorealistic digital twins for buildings, plants and technical installations

**Deadline:** 18/9/2025 **Country:** Europe

**Sectors:** ICT, HealthPharmaLifeScience, Manufacturing, BioeconomyChemistryAgrifood

**Abstract:**

The German software company provides **dimensionally accurate, photorealistic digital twins from simple photos taken with standard digital cameras**.

This allows quick, easy and cheap data capture, making digital twins feasible for many applications.

The company offers its Digital Twins as a Service (DTaaS) model to partners from digital transformation initiatives, industrial IoT, Industry 4.0, industrial services, asset management under a commercial cooperation with technical assistance.

**Partners sought:** *No specific requirements*

## UK safety technology company seeking industry partner for field testing of ai-driven hand signal communication system

**Deadline:** 04/4/2026 **Country:** Europe

**Sectors:** RailMaritimeTransport, ICT, Other, Environment

**Abstract:**

**The UK SME offers an AI-driven wearable communication system that digitises and verifies hand signals in real-time to improve safety and productivity during heavy lifting operations**.

They are seeking technical collaborations for field testing, validation, and operational feedback to refine the product for market readiness, under a commercial agreement with tech assistance.

**Partners sought:** *No specific requirements*

DID YOU KNOW?

"Open Innovation" is now a reality in the industry, but implementing it can be challenging due to the need for connections and the ability to scout global R&D competencies. At PNO, we excel in scouting technology providers, setting up open innovation challenges, building international partnerships, and maximising opportunities for network growth and project advancement. div class="box-contact" >

Our linking service simplifies finding collaborators and forming strategic partnerships. Contact us to start building partnerships that will shape the future of *Artificial Intelligence, Digital Twin*.

## Discover your competitors

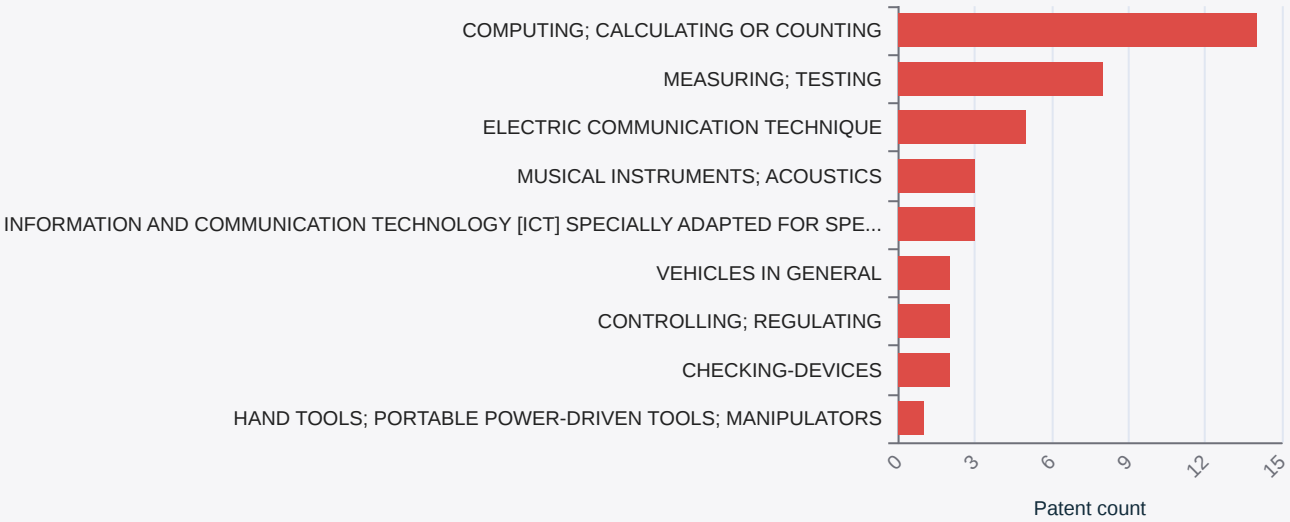
Analysing leading competitors' performance across various metrics such as research output, involvement in EU-funded projects, and patent ownership sheds light on the landscape of competitive strengths and collaborative opportunities within *Artificial Intelligence, Digital Twin*. Here's a glimpse into what we've uncovered about your competitors:

### SAMPLE ORGANISATION

**16** Patents **13** Papers **39** Projects

#### Patents trend

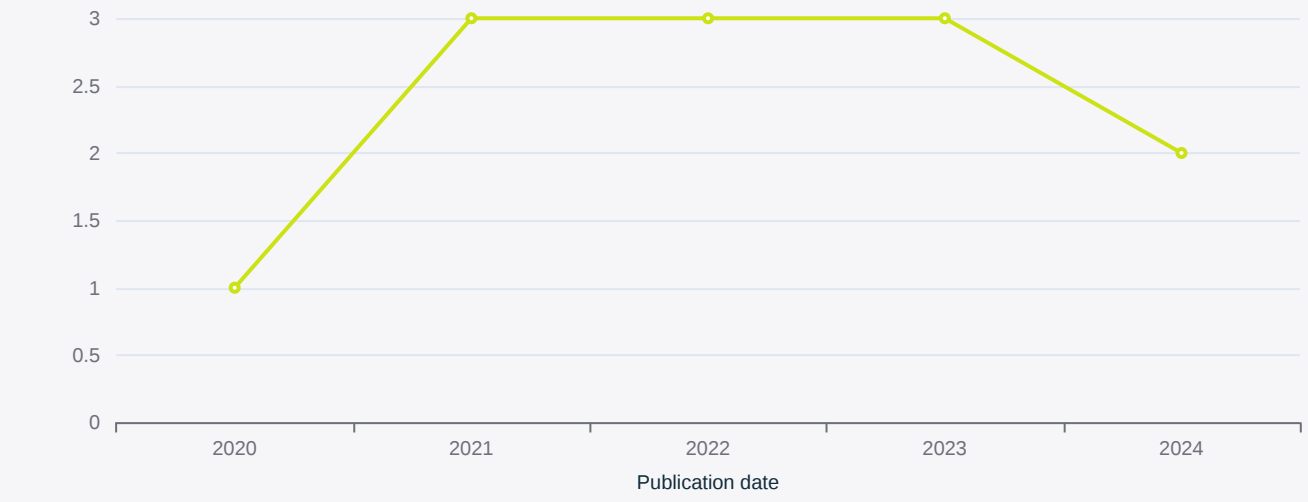

#### Top CPC categories



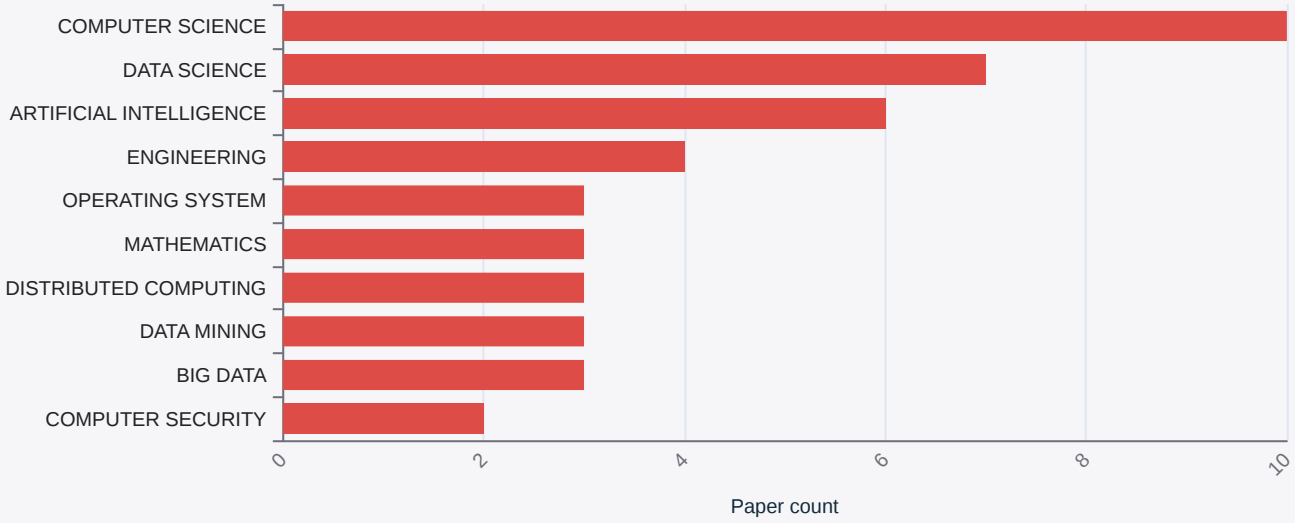
## SAMPLE ORGANISATION

16 Patents | 13 Papers | 39 Projects

### Papers trend



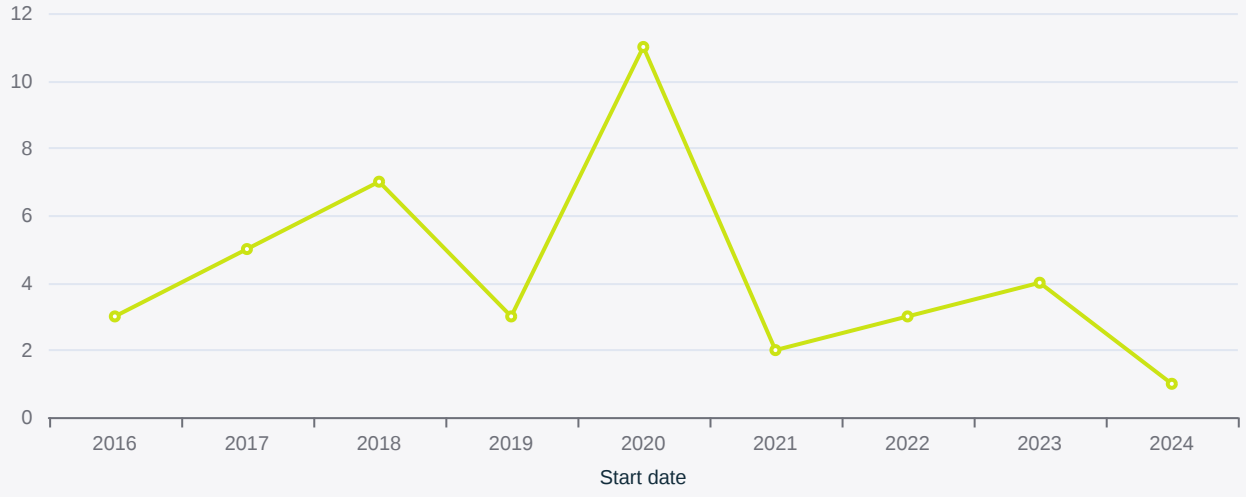

### Top scientific topics



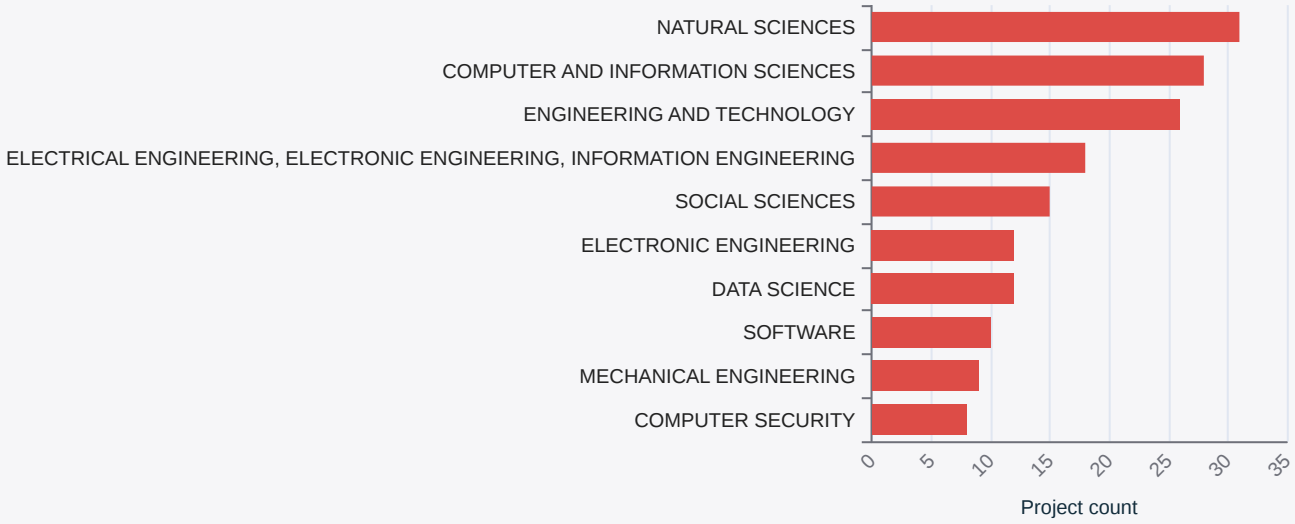
## SAMPLE ORGANISATION

16 Patents  13 Papers  39 Projects

### Projects trend




### Top fields of science



DID YOU KNOW?

By examining all innovation signals, you can uncover unknown competitors. With a competitive intelligence service, you can compare, analyse, and strategise effectively, using the latest insights for informed decisions.

Our expertise spans multiple technologies, enabling you to leverage data-driven decision-making. Connect with us today to empower your business for success.

We would be glad to hear about your experience with the Innovation Pulse in this short survey.

# PNO: Leading Innovation and Excellence Since 1985

For over three decades, PNO has been a pioneer in innovation and funding across Europe, with a strategic footprint in nine countries. As the continent's premier independent public funding and innovation consultancy, PNO excels in harnessing research, development, and innovation (RD&I) from publicly funded projects, securing over 1 billion euros annually for our clients' R&D and market strategies. Our robust global network and team of over 400 professionals create synergies with key industry players, fostering connections and financing for transformative ideas.

**40+**
years active

**600+**
passionate professionals

**60+**
partners in projects

**5 Mln € +**
annual realized grant value

## PNO's R&D Advisory Services & Support

PNO's R&D Advisory services are built on a foundation of extensive experience, aiming to enhance R&D returns and support sustainable development through smarter innovation processes. Our team of analysts and consultants, equipped with proprietary methodologies and advanced IT solutions, delivers insights and hands-on support to drive impactful innovations. We assist our clients in navigating market trends and identifying emerging technologies, while also offering:

- Structured analysis of internal processes for innovation enhancement
- Knowledge-based decisions informed by market and technology trend analyses
- Facilitation of access to new partners and technologies
- Development of innovative international ecosystems
- Structuring and implementation of new innovation projects, including project management and access to subsidized finance

Choosing PNO means partnering with a trusted ally dedicated to unlocking the potential of your projects and driving significant change. We offer customised innovation services, supporting our clients throughout the innovation journey.
If you're intrigued, we invite you to explore our services and contact us. Together, let's turn your innovative visions into reality.

CONTACT US

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