



# Mapping the European AI, data and robotics ecosystem

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Kickstarting the Adra joint topic group on  
Ecosystem Mapping & Information Repository (EMIR)

Nov 5, 2024



Maurits Butter



Claudio Lazo



Long Pham



Anne Bergen



Kristina Karanikolova



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# Agenda



13:15	Introduction	Anne Bergen
13:20	Sneak preview of the new joint Strategic Research Agenda	Maurits Butter
13:30	Ecosystem mapping and the Adra EMIR joint topic group	Claudio Lazo
13:40	Integration with the AI-on-Demand Platform	Long Pham
13:50	Brainstorm and group discussion	Kristina Karanikolova
14:30	Wrap-up and conclusion	Anne Bergen



# Introduction

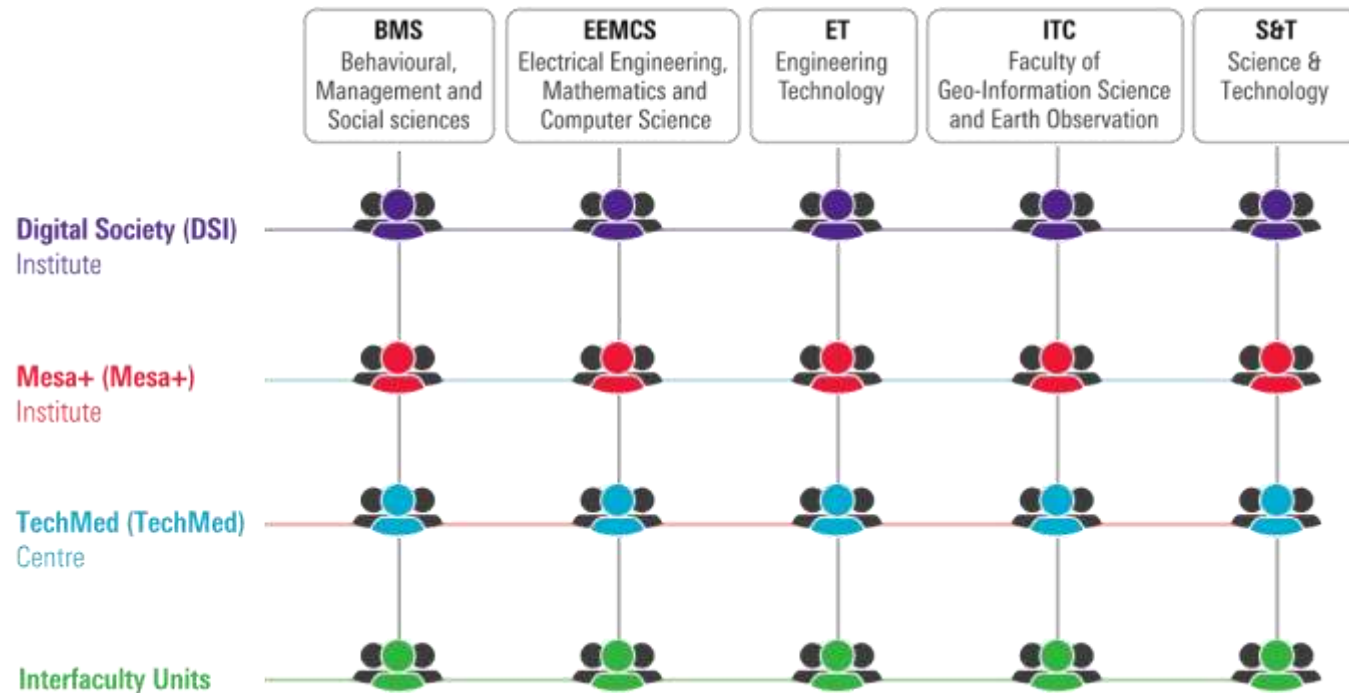
Anne Bergen



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the European Union

# OUR STORY UNIVERSITY OF TWENTE

The University of Twente is the place where **science**, **technology**, and **engineering** meet **social sciences**. Thanks to our **high-tech** with a **human touch**, UT students and researchers make an impact on society every day.



TOTAL # OF STUDENTS  
2022: 12.493

12.209



# OF EMPLOYEES  
FTE

3,729



TOTAL # SPIN-OFF  
SINCE 1984

1.100

# OUR DIGITAL SOCIETY

Our task is to drive digitalization in close cooperation with all our stakeholders. We focus on five themes: Data Science & **AI**, Smart Industry, eHealth, Robotics and Cybersecurity.

## AI @ UNIVERSITY OF TWENTE



# OF STUDENTS WORKING AI

3.000+



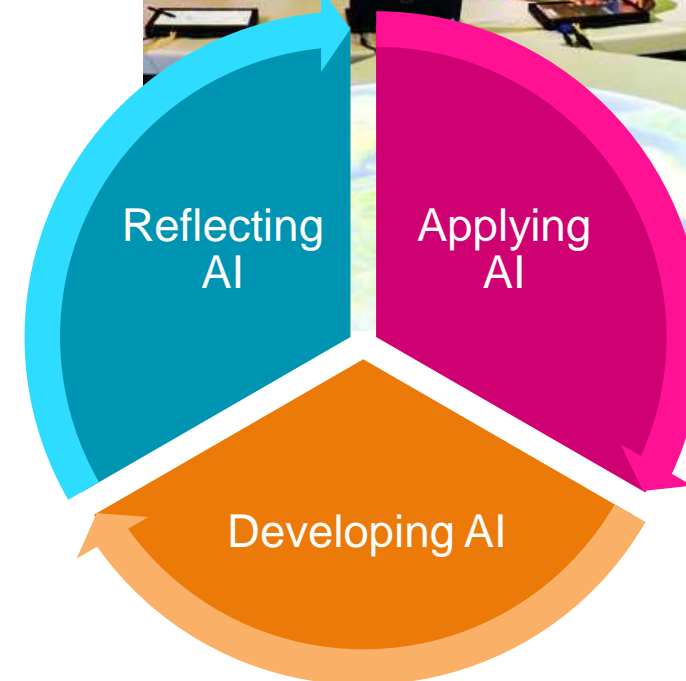
# OF EXPERTS

150+



# GROUPS WORKING AI

30+



# MAPPING OUR EXPERTS

- Divided in 3 main categories
- Updated automatically
- Filter to find your expert

**APPLYING AI**

- Education (29)
- Energy, Sustainability, Environment and Circularity (29)
- Geo Sciences (27)
- Health and Well-being (70)
- Media, Democracy and Legal Decision Making (4)
- Mobility and Transport (35)
- Safe and Security (21)
- Smart and Service Industry (30)

**DEVELOPING (FOR)**

- AI 4 Hardware (3)
- Autonomous Agent S
- Computer Vision (28)
- Data Dependencies, (
- Enrichment (12)
- Data Mining, Process Search (31)
- Deep Learning (33)
- Edge AI and Sensors
- Hardware 4 AI (6)
- Human AI Interactor
- Knowledge Represen
- Reasoning (19)
- Machine Learning: fr
- Methods to Deep Ne
- Natural Language Processing (15)
- Reinforcement Learning (22)
- Traditional Machine Learning (29)

RESEARCHING AI

APPLYING AI

**APPLYING AI (10)**

---

**DR. J.M. WOLTERINK (JELMER)**  
Associate Professor | EEMCS-AM-MIA

+

ity, circularity

ices

and Security

---

**DR. V. GROENHUIS (VINCENT)**  
Assistant Professor | EEMCS-EE-RAM

+

a, Democracy and Legal

ion Making

---

**DR. ING. G. ENGLEBIENNE (GWENN)**  
Assistant Professor | EEMCS-CS-HMI

+

interaction

---

**DR. IR. K. NIU (KENAN)**  
Assistant Professor | EEMCS-EE-RAM

+

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**DR. IR. M. ABAYAZID (MOMEN)**  
Associate Professor | EEMCS-EE-RAM

+

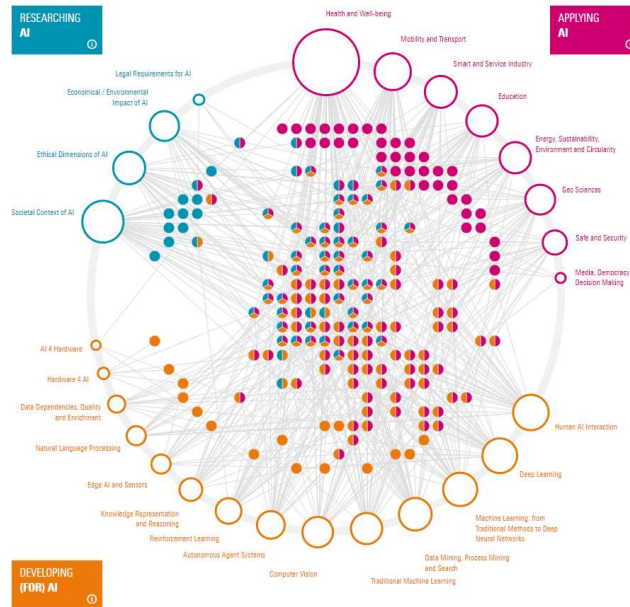
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**DR. IR. M. VIITERS (MARK)**

+

Reset filters

# MAPPING EXPERTS AND MORE



Add

- Multiple organizations
- Various stakeholders
- EU instruments
- ...

Experts mapped for only one organizations and only AI

Not a trivial task!



# Adra joint topic group (JTG) on Ecosystem Mapping & Information Repository (EMIR)

## Mission

Maximize the effectiveness of the AI, Data and Robotics (ADR) community

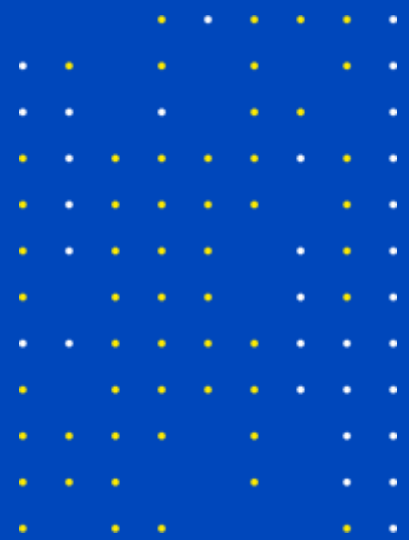
by supporting the development and maintenance of an ecosystem mapping and information services that are of **value to the ADR research & innovation community.**

**TNO** innovation  
for life

 **UCC**  
University College Cork, Ireland  
Coláiste na hOllscoile Corcaigh

**UNIVERSITY  
OF TWENTE.**





# The innovation ecosystem layer

Maurits Butter



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# The world has changed and creative destruction is not enough

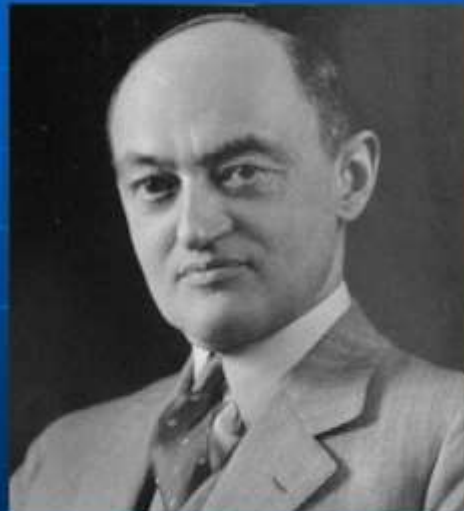


## Joseph Schumpeter's Creative Destruction

Capitalism...is by nature a method of economic change... the new goods, the new methods of production or transportation ... that revolutionize the economic structure from within, incessantly destroying the old one, incessantly creating a new one.

This process of Creative Destruction is the essential fact about capitalism.

From *Capitalism, Socialism and Democracy* (1942)



We need a coordinated effort to ensure Europe is leading!

# There are many actors involved



## The Corporate Innovation Ecosystem: Understanding the Players, Tensions, and Key Strategic Questions

XPLANATIONS™ by XPLANE

Why is corporate innovation so difficult? A broad coalition of players, inside and outside of your organization, must be aligned for real innovation to take hold—and the different constituencies don't always share the same motivations and incentives. Use this map and the discussion questions below to engage the players, start conversations, and build a shared understanding of common goals, so that you can work together to make meaningful progress.

### THE CORE

The core business is the source of profits and power. When it's doing well, there's little hunger for real innovation. When it's struggling, the first impulse is to cut costs rather than invest in new products and services. Without long-term support from executives in the core, innovation efforts fail.

#### 1 CEO and Leadership Team

At some companies, a sole C-level executive is the key innovation cheerleader. Innovation groups benefit from broader support throughout the core business, though it's best to avoid creating a 20-person innovation committee that can find plenty of reasons to kill promising projects.

#### 2 Business Units

Business units tend to want incremental ideas that can deliver revenue in the short-term, rather than disruptive innovations that might undercut the current offering.

#### 3 IT, Finance, HR, and Marketing

Some of these functions can slow the momentum of innovation teams, dwelling on risks or following "standard procedure." Some may feel they should own innovation. It's best to start cultivating allies early rather than late.

#### 7 Corporate Development

"Buying innovation" through acquisitions is something many companies prefer over organic innovation, though the price can be steep and integration can be a challenge.

#### 8 Research and Development

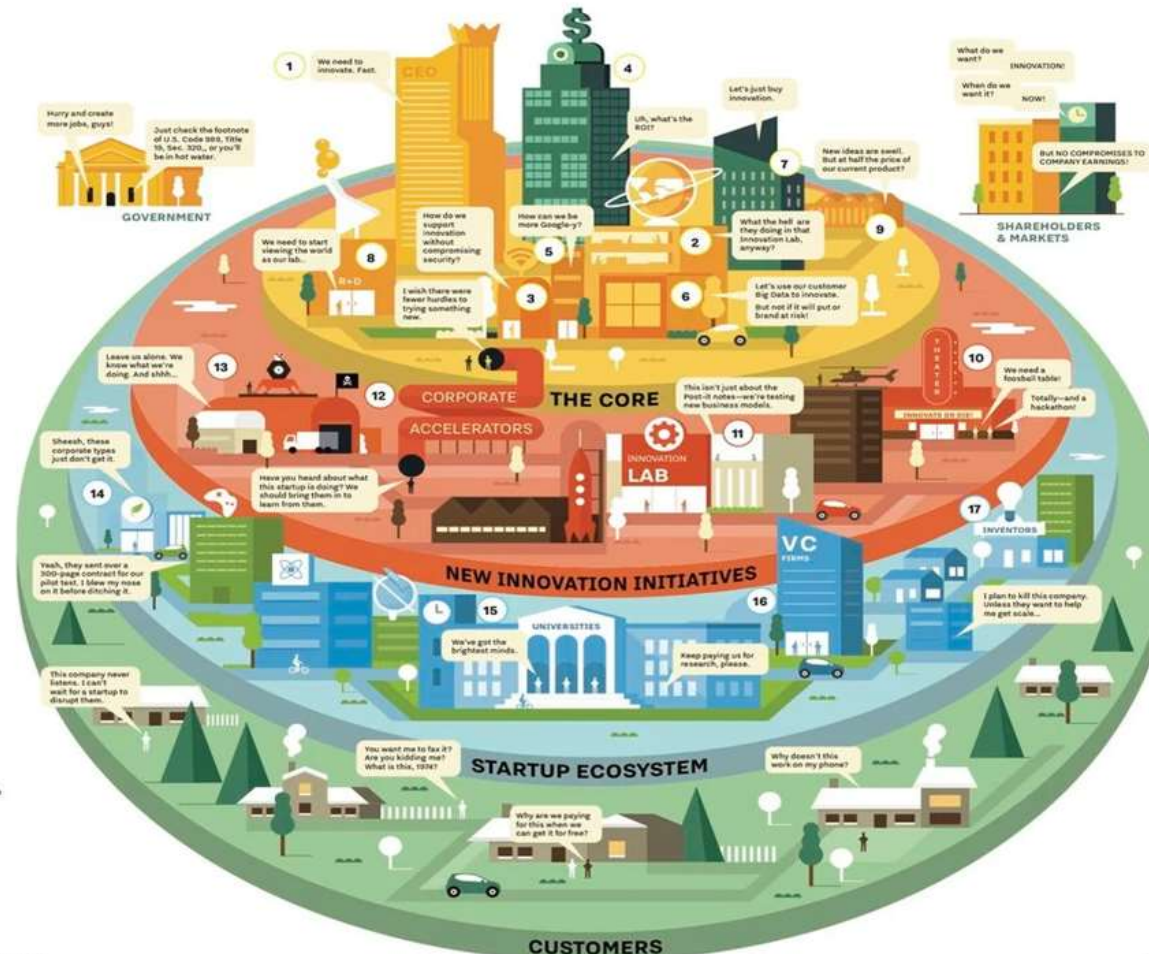
Companies with long-standing R&D groups sometimes feel frustrated. Should all ideas about the future of the business come from R&D? These groups can also be insular and reluctant to source solutions from outside the company. But R&D done right can attract top talent and create competitive advantage.

#### 9 Sales and Support

Sales can be a rich source of insights about customer problems, which innovation groups would be wise to address. The sales and support teams can also gripe about selling something that's tough to support, priced too low, or relies on a different business model.

#### 10 DISCUSSION QUESTION:

What incentives can you put in place for these constituencies to embrace new ideas and help launch them, rather than poking holes and withholding resources?



### NEW INNOVATION INITIATIVES

Innovation initiatives tend to sit at the edge of the business, without the same resources or attention as the core.

#### 10 Innovation Theater

Coming soon...the splashiest spectacle you've ever seen! Watch the CEO pass out trophies. Marvel as a visiting keynote speaker shares the secrets to brilliant ideas in 60 minutes or less. It can be exciting the first time around, but will people return for the sequel?

#### 11 Innovation Labs and Incubators

At their best, innovation labs create a new place for exploring new technologies, building prototypes, and collaborating with customers. At their worst, they're Disney-esque showcases intended to impress visitors and prospective hires.

#### 12 Corporate Accelerators

With the right structure and marketing, accelerators can attract startups working in your industry, and potentially spark investments, pilot tests, and partnerships.

#### 13 Skunk Works

Insulated from near-term demands, this crew can focus on "blue sky" projects with major potential. The risk? Insufficient support from the core business when it's time for launch.

#### 14 DISCUSSION QUESTIONS:

What is the expected outcome from your innovation initiative, over what timeframe? What resources will you need?

### STARTUP ECOSYSTEM

With so many internal meetings, it can be tough for executives to escape the building. Innovation teams seek to change that dynamic by creating new ways to connect with startups, university researchers, venture capitalists, and even solo inventors who may supply winning solutions to a crowdsourcing competition.

#### 15 DISCUSSION QUESTIONS:

How can you reduce the friction of working with outsiders, and position your company as the "collaborator of choice" in your industry?

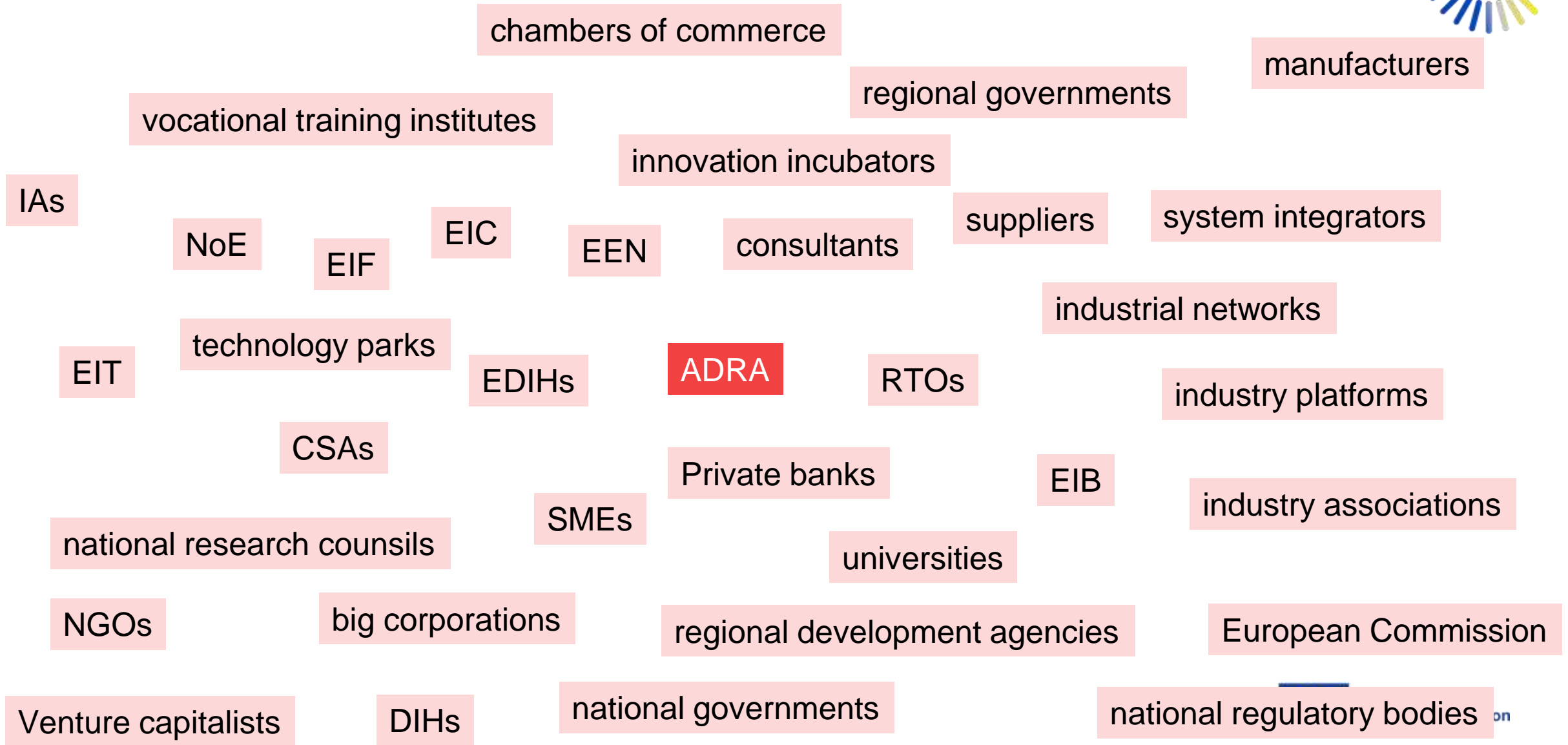
### CUSTOMERS

At most companies, sales and marketing departments feel like they "own" the customer relationship, but a growing number of companies embracing the concepts of "lean startup," "design thinking," or "customer co-creation" are allowing more employees to interact with customers. Even when this doesn't result in new revenue, it can strengthen customer loyalty, which is always a win.

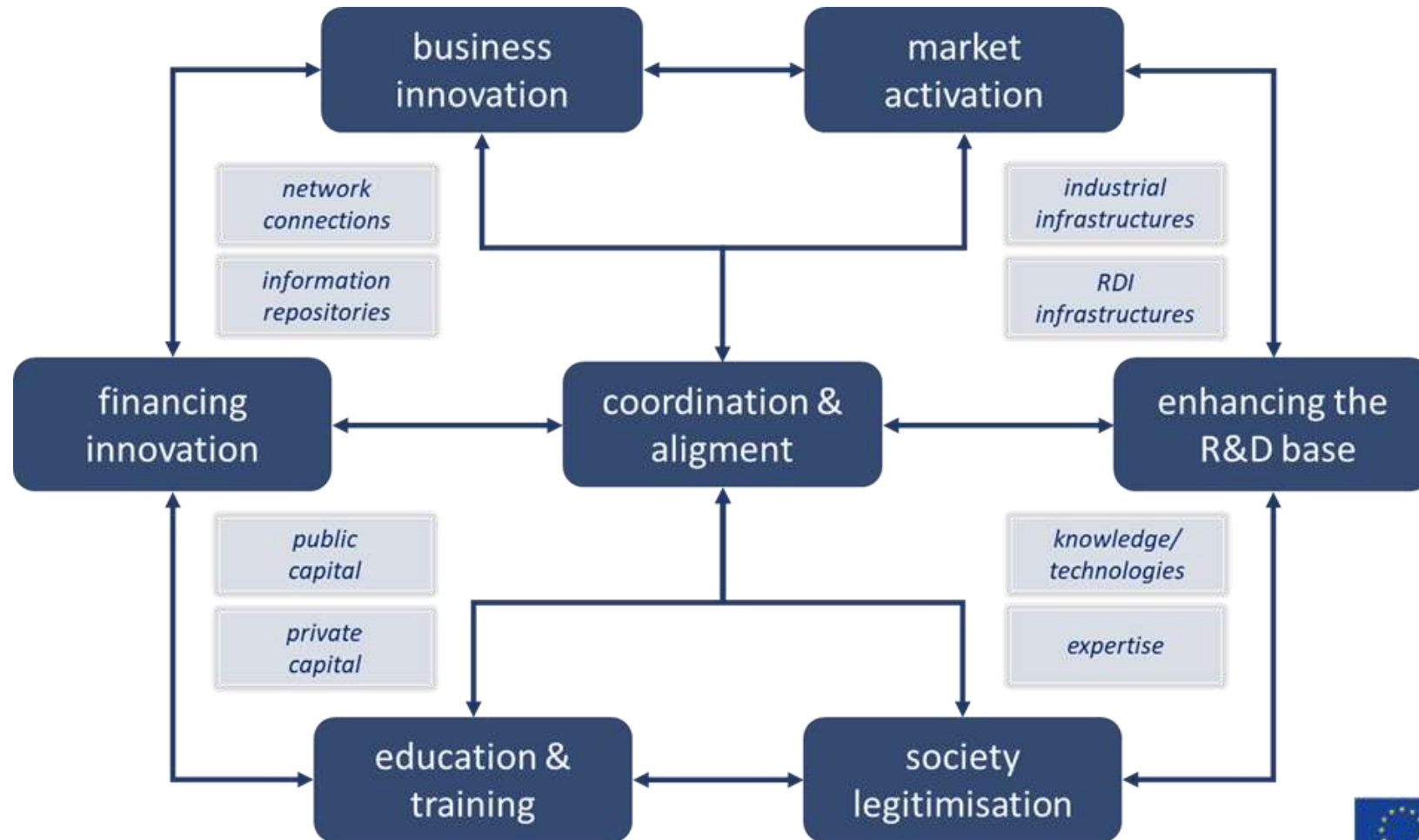
#### 16 DISCUSSION QUESTIONS:

What barriers exist to bringing customers into the innovation process? How can you quickly and cheaply test new concepts with them?

# There are many actors in the ADR ecosystem



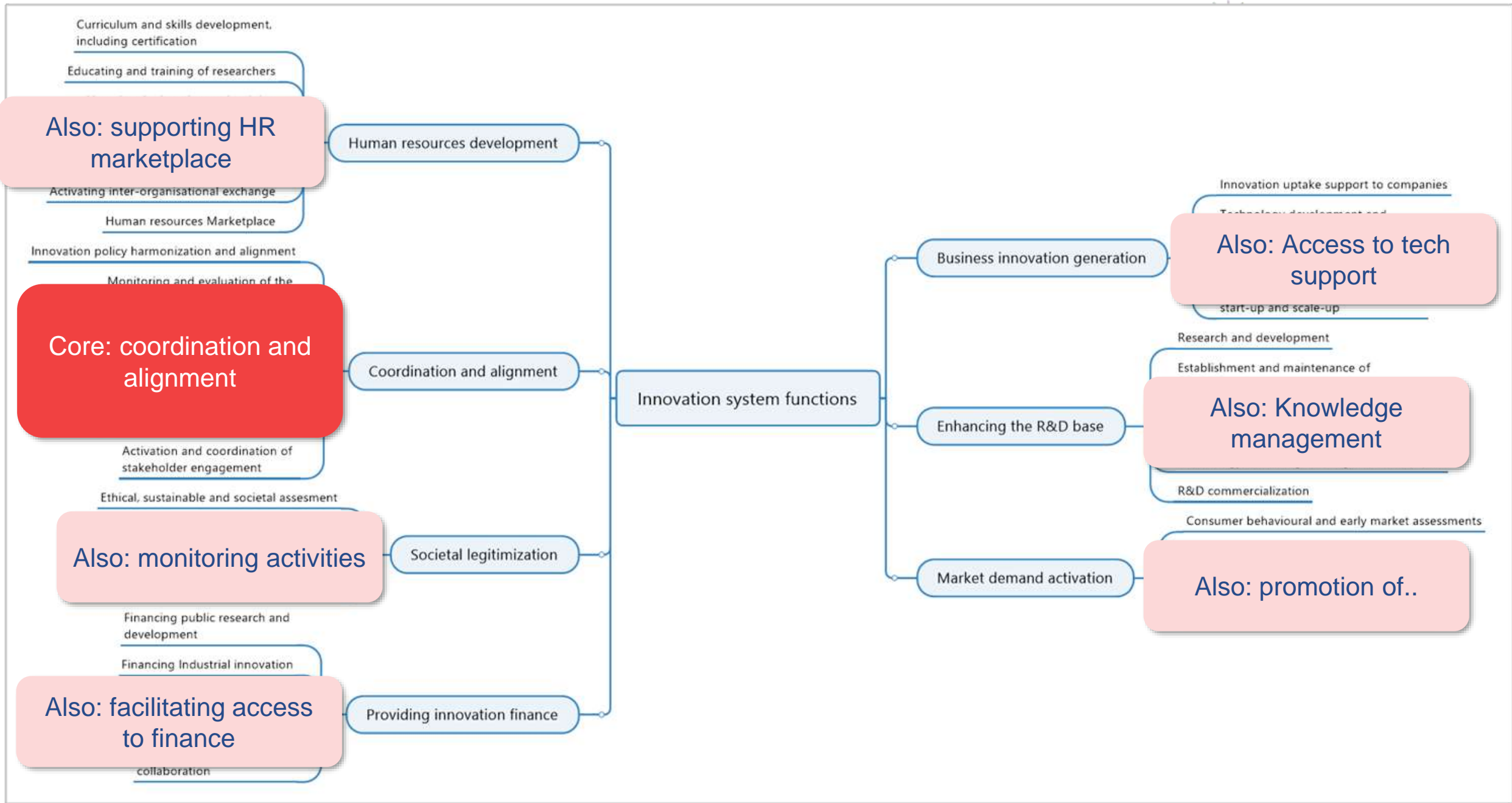
# A collaborative set of functions supporting the innovation ecosystem is needed!



# Mapping will enable...

- Identify the gaps and overlaps in the innovation ecosystem
  - Increasing efficiency and effectiveness of the ecosystem and policy interventions
- Identify...
  - Ident... , competitiveness
- Provide information where specific innovation activities are addressed
  - The starting point for collaboration, alignment of investments, access to capacities/capabilities, benchmarking, community building
- A collective repository of information
  - Access to knowledge, information, showcases, technologies

**A well functioning innovation ecosystem!**



Curriculum and skills development, including certification

Educating and training of researchers

Also: supporting HR marketplace

Activating inter-organisational exchange

Human resources Marketplace

Innovation policy harmonization and alignment

Monitoring and evaluation of the

Core: coordination and alignment

Activation and coordination of stakeholder engagement

Ethical, sustainable and societal assesment

Also: monitoring activities

Financing public research and development

Financing Industrial innovation

Also: facilitating access to finance

collaboration

Human resources development

Coordination and alignment

Societal legitimization

Providing innovation finance

Innovation system functions

Business innovation generation

Enhancing the R&D base

Market demand activation

Innovation uptake support to companies

Technology development and

Also: Access to tech support

start-up and scale-up

Research and development

Establishment and maintenance of

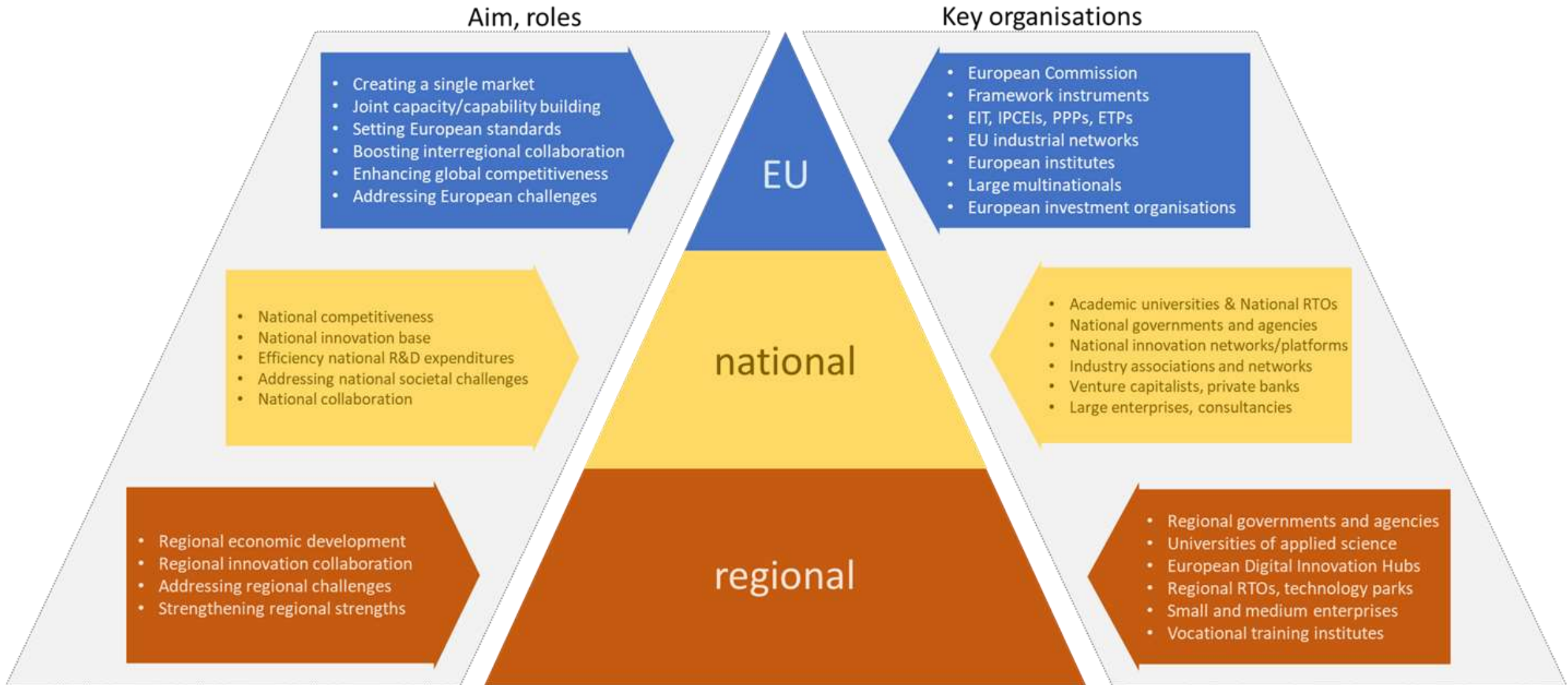
Also: Knowledge management

R&D commercialization

Consumer behavioural and early market assessments

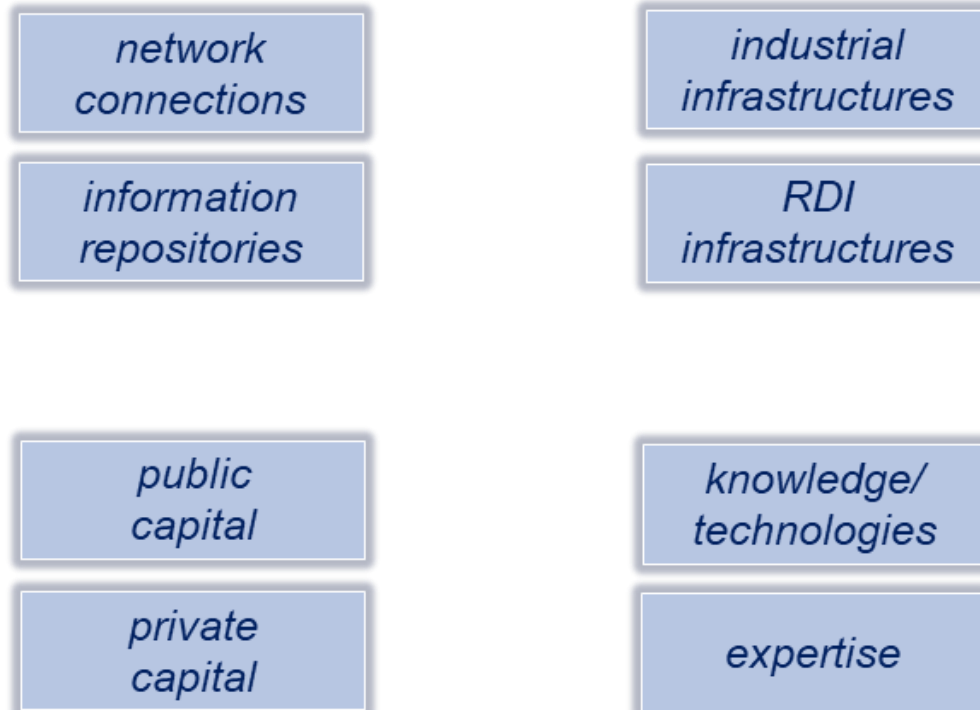
Also: promotion of..

# But lets make it more complicated.....

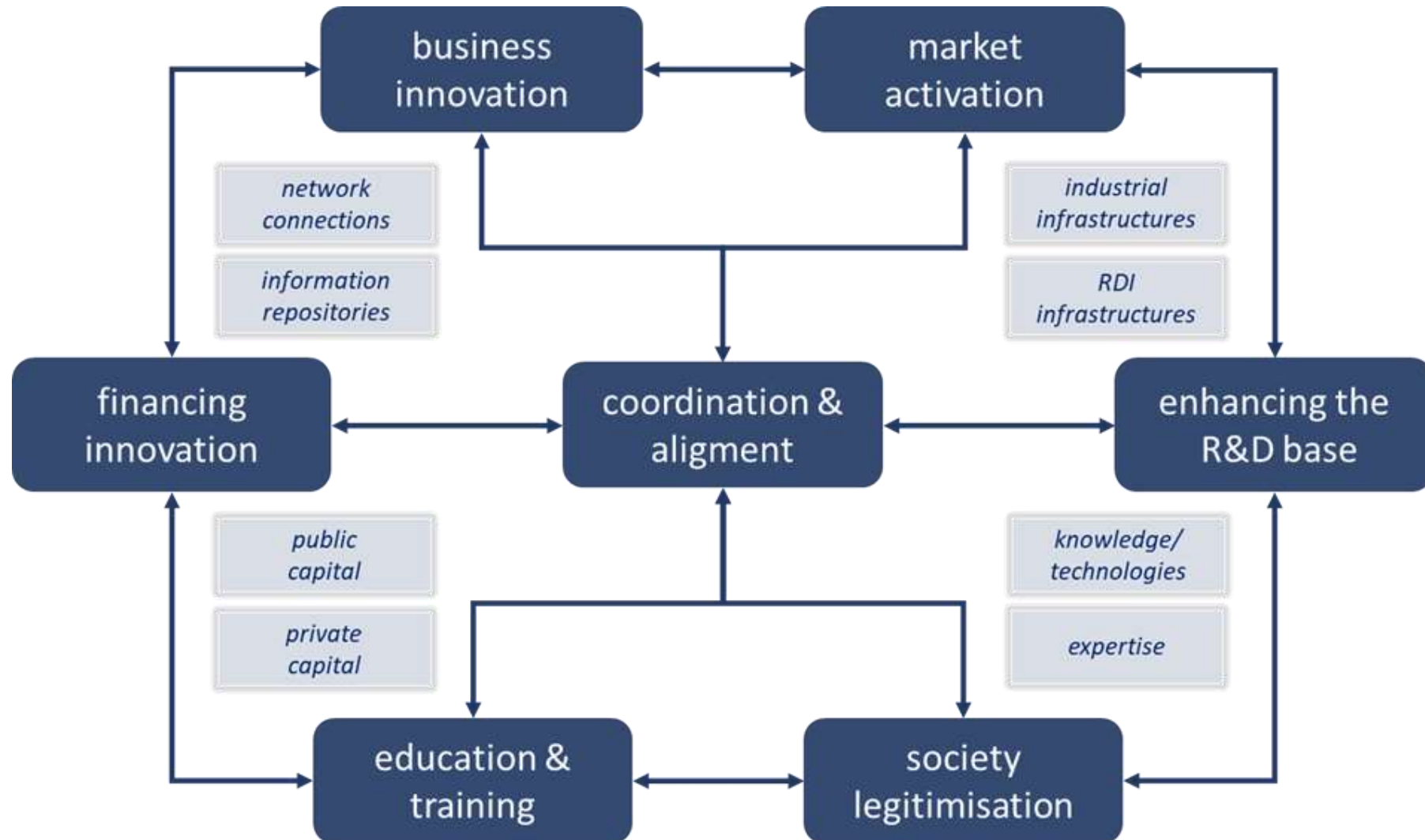




# Mapping: collecting information on resources and activities



# And connecting this to the innovation ecosystem functions



# Some preliminary outcomes of an assessment



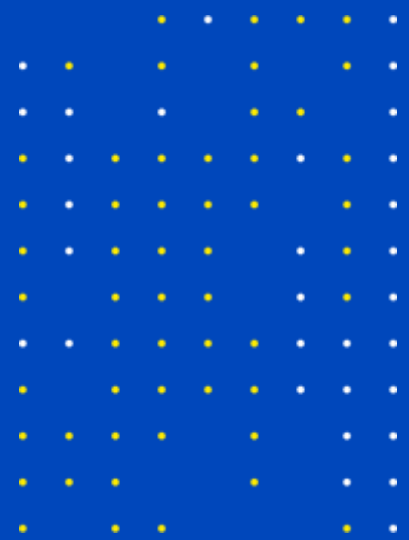
- Limited systematic coordination
  - Both gaps and overlaps to be seen, and a lack of innovations orchestrators
- Ensuring the connection between innovation chain shackles needs support
  - The innovation relay game is not well played and therefore inefficient and ineffective
- Structural support of “enhancing the base” is needed
  - Investments in industrial and research infrastructures, but also ensuring collaboration
- Human resources needs attention
  - Both the education/training, as well as talent attraction and business retention



# Conclusions



- Better understanding of what is going on should be further addressed
- Alignment among the many initiatives needed but that requires understanding of the actors and connections – mapping!
- Mapping can serve various functions and that requires joined, structured approach
- Expansion of the mapping towards more function oriented information would help to identify policy and support EU collaboration



# Ecosystem mapping and the Adra EMIR joint topic group

Claudio Lazo



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# Talking points



- Ecosystem mapping prototype
- White paper
- The EMIR joint topic group
- EMIR Roadmap

Search organizations on keyword, research topic, and/or application area.

- Search results:
- IMG** - Imagga Technologies
  - CIIRC CTU** - Czech Technical University  
Czech Institute of Informatics, Robotics, and Cybernetics
  - Bosch** - Robert Bosch GmbH  
Bosch Center for AI
  - FBK** - Bruno Kessler Foundation  
Marketing Strategy & Business Development
  - DTI** - Danish Technological Institute
  - Fraunhofer IPA** - Fraunhofer Gesellschaft  
Institute for Manufacturing Engineering and Automation (IPA) - Robot Technologies and Services
  - TNO** - Netherlands Organisation of Applied Scientific Research  
ICT, Strategy & Policy (ISP), ApplAI program
  - TU/e** - Eindhoven University of Technology
  - BUT** - Brno University of Technology
  - CVC** - Computer Vision Center (Autonomous University of Barcelona)
  - BSC** - Barcelona Supercomputing Center  
High-Performance Artificial Intelligence
  - TU Graz** - Graz University of Technology
  - NKUA** - National and Kapodistrian University of Athens  
Department of Informatics and Telecommunications
  - Insight** - Insight SFI Research Centre for Data Analytics
  - UCPH** - University of Copenhagen  
Department of Computer Science
  - TÜBİTAK** - Scientific and Technological Research Council of Türkiye  
BİLGEM
  - LIU** - Linköping University
  - ELTE** - Eötvös Loránd University  
Department of Artificial Intelligence
  - UNIFI** - University of Florence  
Media Integration and Communication Center
  - BSC** - Barcelona Supercomputing Center  
High-Performance Artificial Intelligence
  - UnNa** - University of Naples Federico II  
CREATE Consortium - PRISMA Lab
  - HES-SO** - University of Applied Sciences and Arts of Western Switzerland  
Institute of Informatics
  - IMES-TEC** - Institute for Systems and Computer Engineering, Technology and

European AI Networks of Excellence (click on a logo to filter by network)

[ai-ecosystem.aiod.eu](http://ai-ecosystem.aiod.eu)

# Introduction



What is needed for an innovative, competitive and sovereign AI-Data-Robotics ecosystem?

- Cohesion
- Collaboration
- Effectiveness



Download here



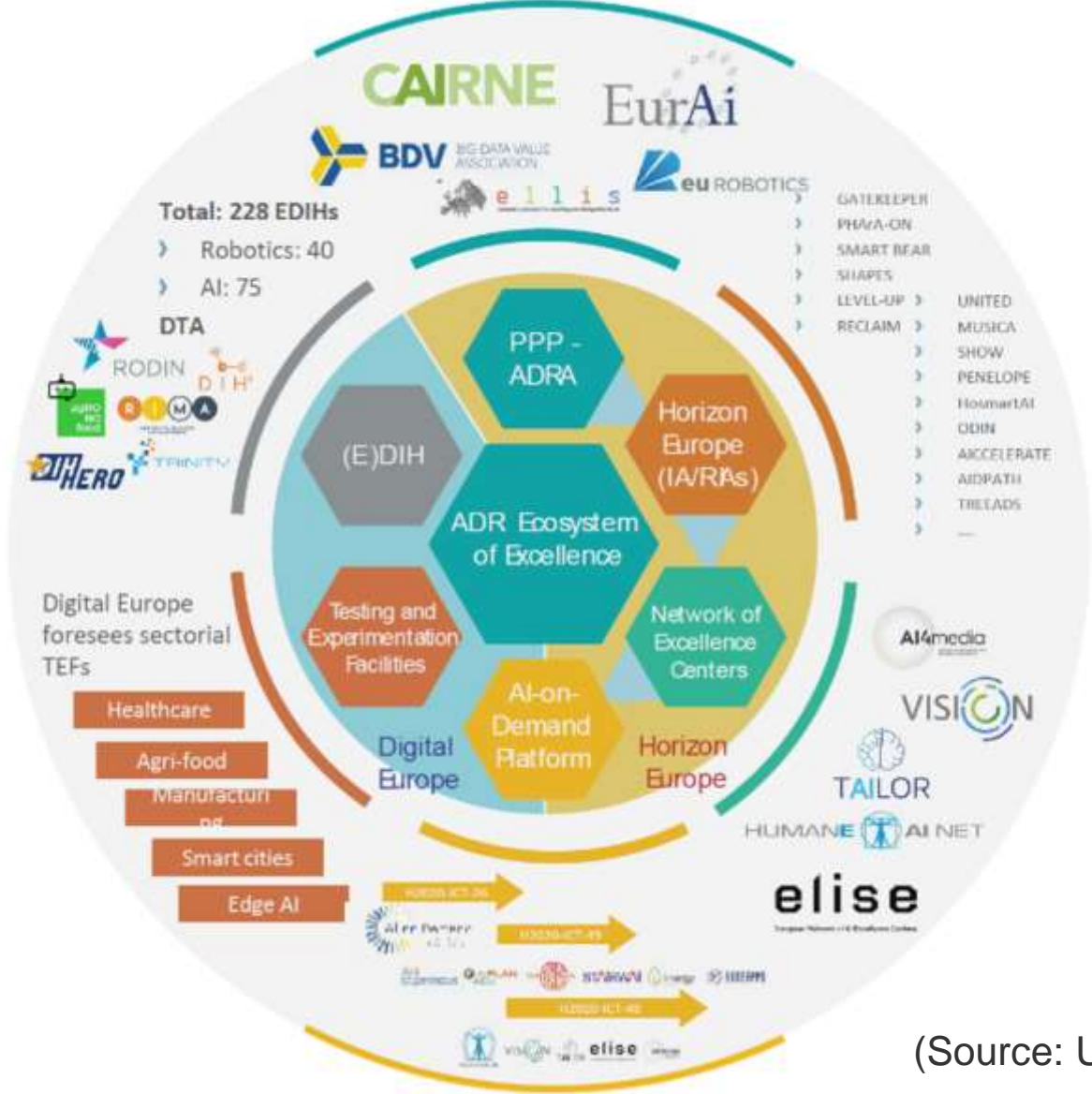
[edu.nl/kjfmw](https://edu.nl/kjfmw)



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the European Union



# Overcoming fragmentation



(Source: University of Twente)

# Overcoming fragmentation



## A 'map' of the ecosystem

- Different perspectives
- User-centered
- Embedding in other services
- Joint effort



(Source: University of Twente)

# Vision



To help overcome fragmentation of the European ADR ecosystem...

*for the European ADR  
community*

*by the European ADR  
community*

*of the European ADR  
community*



# Adra joint topic group (JTG) on Ecosystem Mapping & Information Repository (EMIR)

## Mission

Maximize the effectiveness of the AI, Data and Robotics (ADR) community

by supporting the development and maintenance of an ecosystem mapping and information services that are of **value to the ADR research & innovation community.**

**TNO** innovation  
for life

 **UCC**  
University College Cork, Ireland  
Coláiste na hOllscoile Corcaigh

**UNIVERSITY  
OF TWENTE.**



# Strategic impact of the JTG

Maximize the effectiveness of the AI, Data and Robotics (ADR) community

# 1

## Coordinated ADR R&I info mapping

A rigorous organization around the information provisioning of the ADR research and innovation ecosystem

- Responsible body
- Open, democratic decision-making

# 2

## Valuable services to ADR community

Development of a set of valuable services to support the the effectiveness of the ADR community

- Mapping
- Benchmarking
- Finding funding
- Matchmaking
- Showcasing
- Emergence radar

# 3

## Focused channel with EC

A focused channel for discussion with the EC on information provisioning for ADR research and innovation

- Excellence
- Visibility
- Representation

# 4

## A shared language

A categorization of ADR research topics and application areas that reflect European values.

- Research topics
- Application areas
- By the ADR community
- For the ADR community

# Ecosystem mapping approach



- Categorization of topics and metrics
- Data collection and provision
- Data analysis and visualization
- User centricity
- Deployment and usage
- Funding and sustainability
- Governance and coordination



Download here



[edu.nl/kjfmw](https://edu.nl/kjfmw)

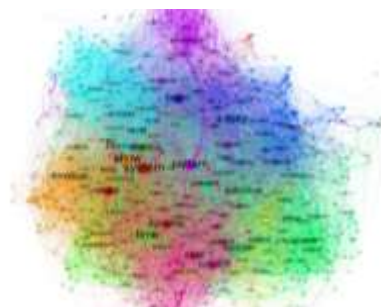
# Types of data sources



## Socio-economic data

World Bank, UNESCO, OECD, JRC, Eurostat, CBS, SER

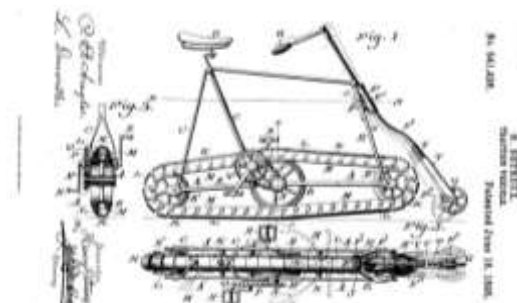
Data about society and/or economy



## Academic data

Scopus, ResearchGate, arXiv, IEEE Xplore, JSTOR, ConnectedPapers

Data and metadata about research



## R&D data

Horizon dashboards, Innovatiespotter, Zenodo, Patent databases

Data describing specific R&D activities, projects, and services



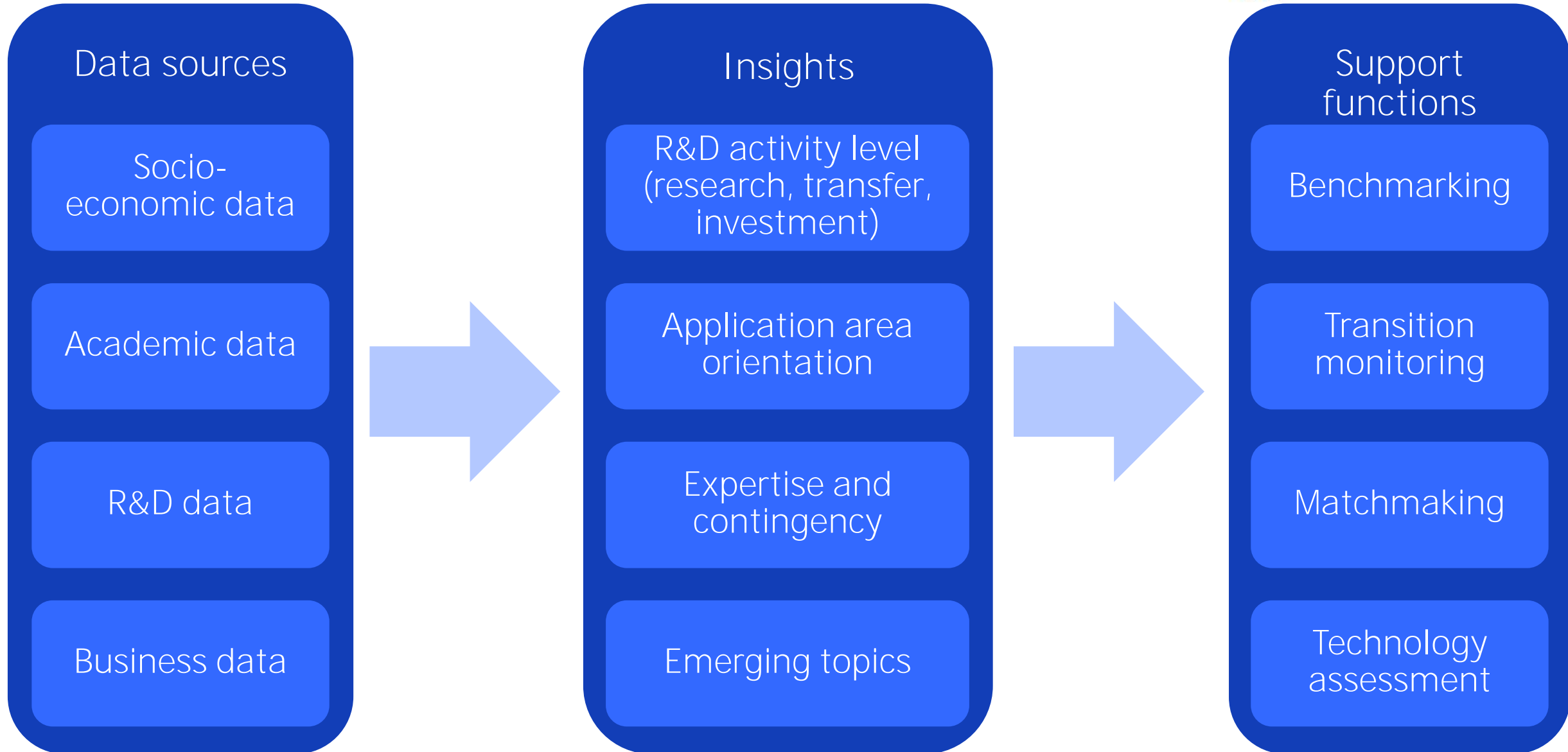
## Business data

Chamber of Commerce, Dealroom, PitchBook

Data describing organisations, often for due diligence or investment decisions

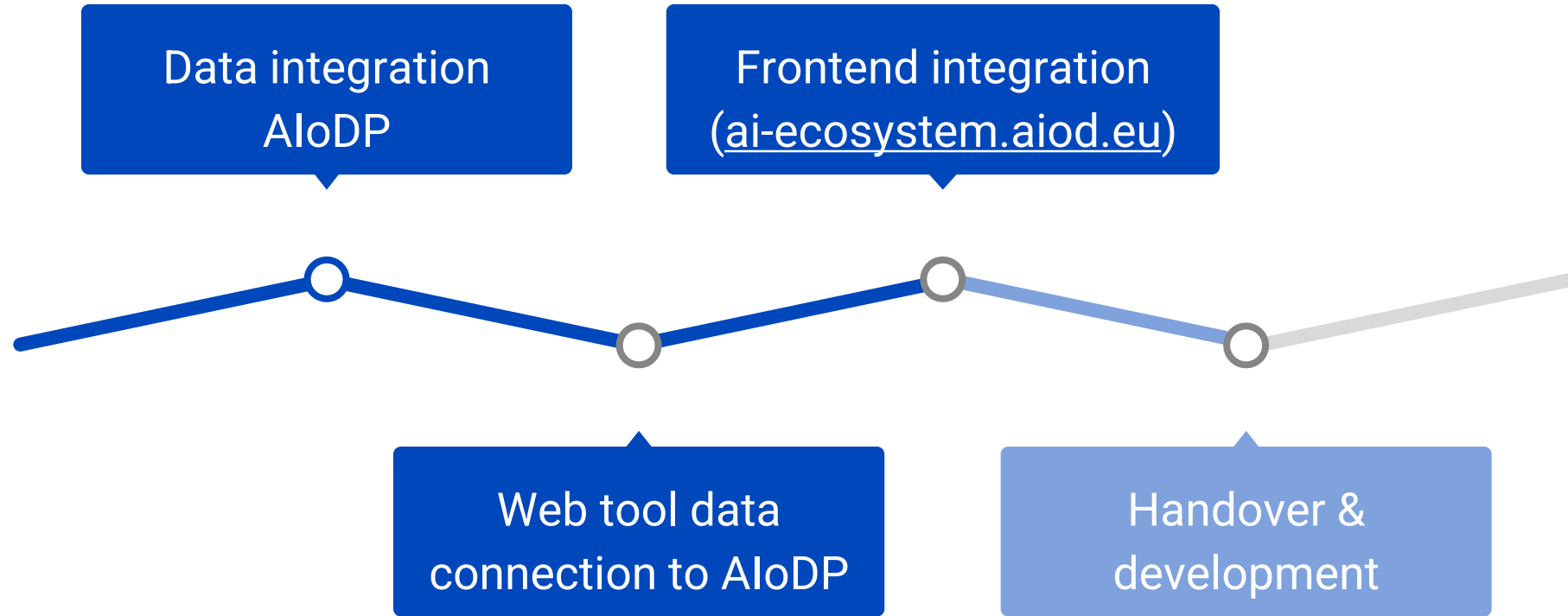


# Data analysis






# Roadmap for sustainability





# Roadmap for sustainability



← ↻ 🏠 🔒 https://aiod.eu/services/virtual-lab 🔍 ☆



AI on Demand  
Knowledge and services  
for the AI community


About oD Services Integrate Community  

## 01 EU AI Ecosystem Mapping

The ecosystem mapping currently shows the AI expertise of 240+ organizations. The first version was developed by TNO and is now managed by the Adra joint topic group Ecosystem Mapping and Information Repository (EMIR), initiated by TNO, UCC and University of Twente.

- Get an overview of the AI research and innovation ecosystem of Europe
- Search and find AI expertise across Europe, by topic and application area
- Increase your organization's visibility through this map

[Explore tool +](#)

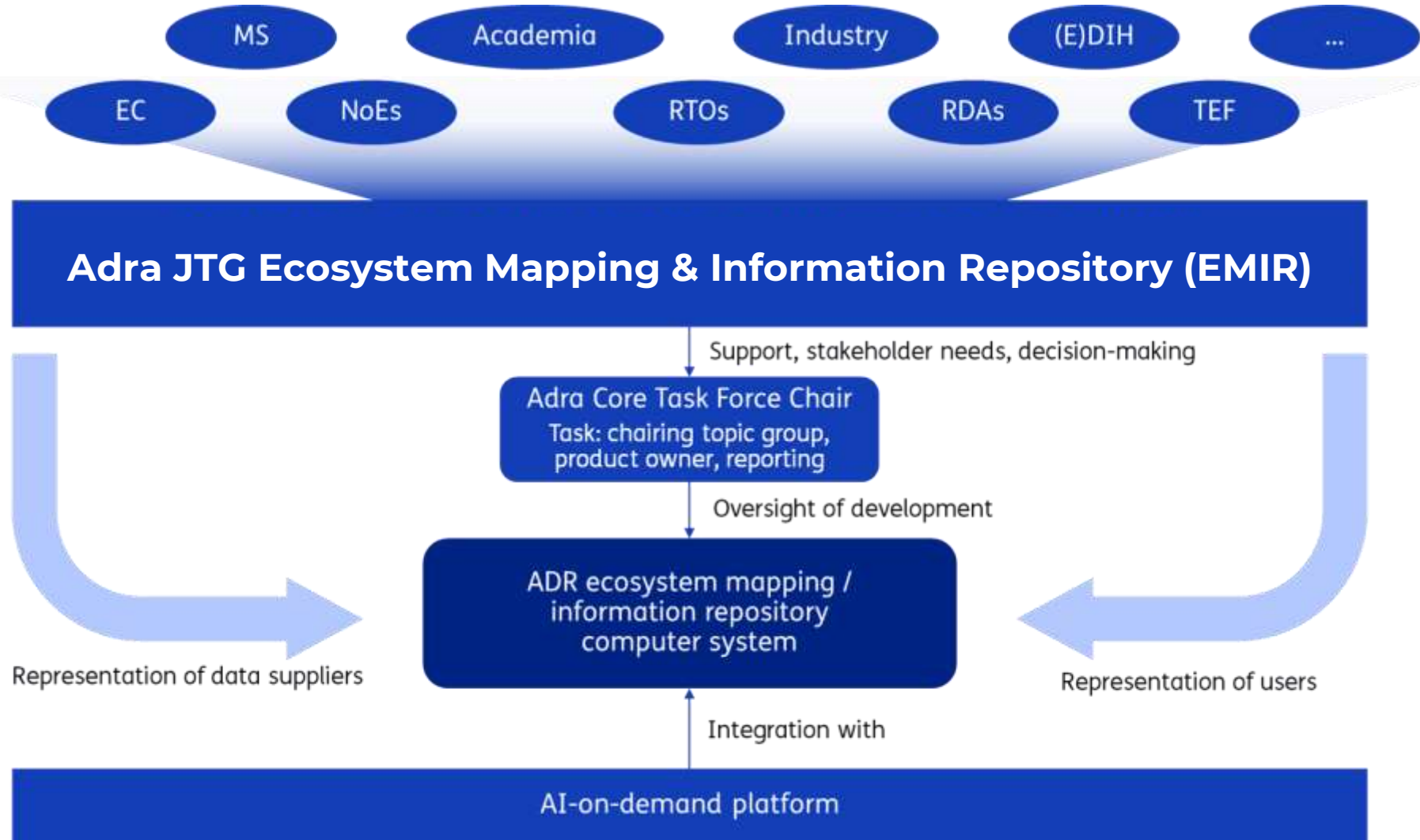


[Give us your feedback](#)

# JTG functions



1. Democratic, diverse, and open forum
2. Growing coalition of stakeholders
3. Representation
4. Oversight

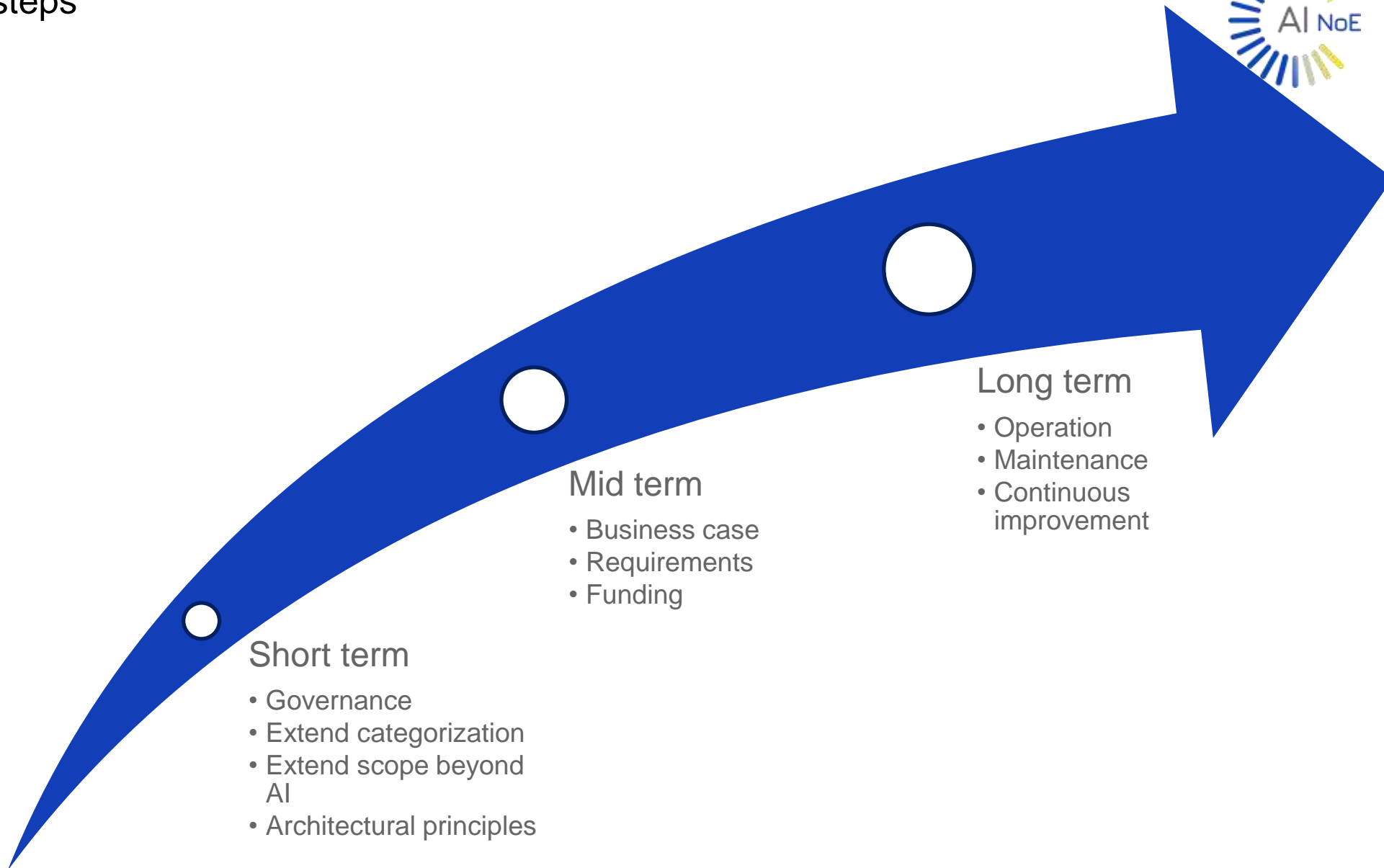




# First year of the JTG

01	<b>Governance</b>	<ul style="list-style-type: none"><li>• Establish an organizational governance</li><li>• Invite more stakeholders to join</li></ul>
02	<b>Extend categorization &amp; indicators</b>	<ul style="list-style-type: none"><li>• Extend the categorization of research topics and application areas to the wider scope of the ADR community</li><li>• Define useful ecosystem indicators and identify data sources</li></ul>
03	<b>Extend scope</b>	<ul style="list-style-type: none"><li>• Extend the scope of the mapping to organizations in the AI, Data &amp; Robotics community, but that were not included in the initial NoE-based mapping</li></ul>
04	<b>Architecture</b>	<ul style="list-style-type: none"><li>• Establish architectural principles (e.g. open source, machine-readability, transparency) for the minimum viable product (MVP)</li><li>• Establish requirements for the MVP</li></ul>
05	<b>Business case</b>	<ul style="list-style-type: none"><li>• Establish a business case for the mapping</li><li>• Value proposition and earning model</li><li>• Funding requirements</li></ul>
06	<b>Funding &amp; development</b>	<ul style="list-style-type: none"><li>• Organise funding</li><li>• Commission and oversee the development and maintenance of the MVP</li></ul>

## Next steps



# Community engagement



## Mechanisms:

- EMIR mailing list (Adra)
- Adra newsletter
- Conference workshops (ADRF, ERF, EBDVF, ...)
- ...



**Join the EMIR mailing list!**

<https://adr-association.eu/>

# Value



## Research organizations

- Finding bilateral funding
- Market scan
- Matchmaking



## Intermediaries

- Identify expertise
- Intelligence on areas of growth
- Supporting matchmaking



## Businesses

- Success stories
- Trends for business transformation
- Positioning in AI value chain, filling a gap
- Advertising
- Finding potential business partners



## Public authorities

- Judging quality of results obtained
- Quantify and visualise the EU research
- Aggregate information of NoEs



# Integration with the AloD Platform

Long Pham, University College Cork  
Mapping the EU AI ecosystem – state of play and next steps  
ADRF24  
Eindhoven, Netherlands  
5 Nov 2024





# AI on-Demand platform

## Why?

- Bring together Europe's existing and new AI data, software, services, platforms, computational resources, and expertise
- Support the needs of Europe's AI researchers, developers, educators and students

## How?

- Easy-to-use interfaces to find AI resources
- Integrate (don't duplicate) AI services and platforms and build new ones on top of the AIoD platform

## What?

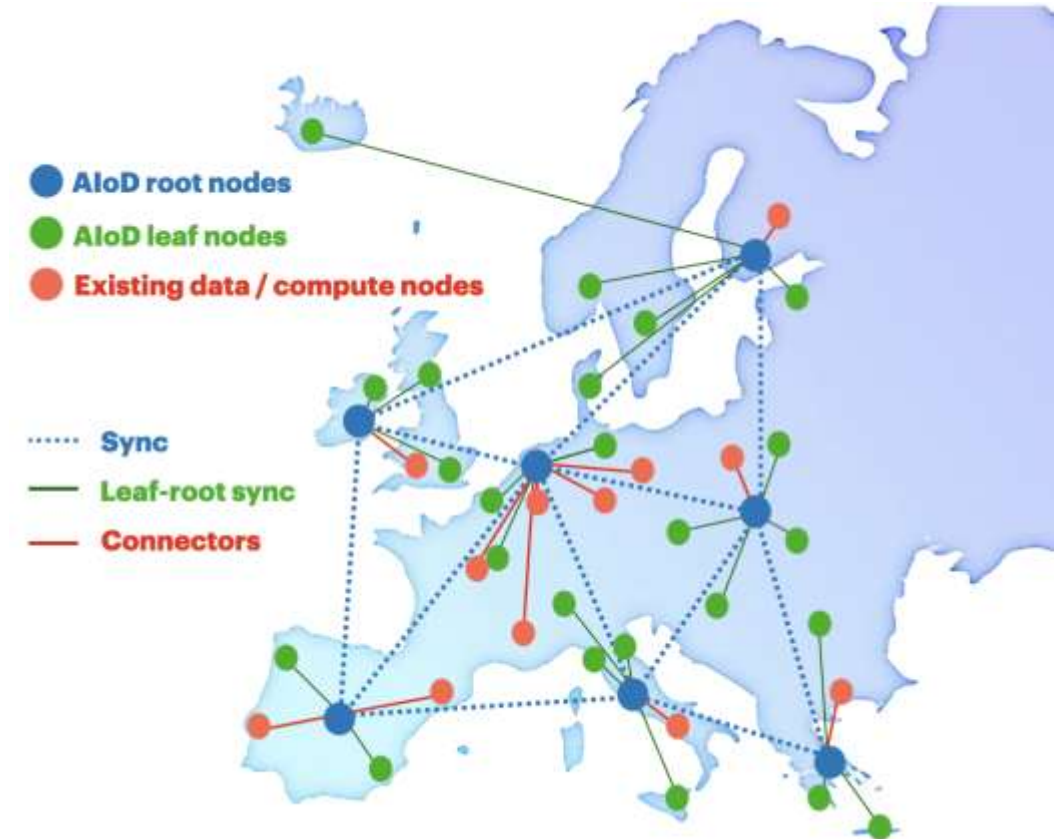
- AIoD resource catalogue (distributed)
- Search engines and chatbots (in progress)
- API to exchange resources, integrate and build
- Services to perform AI tasks (e.g. experiments)



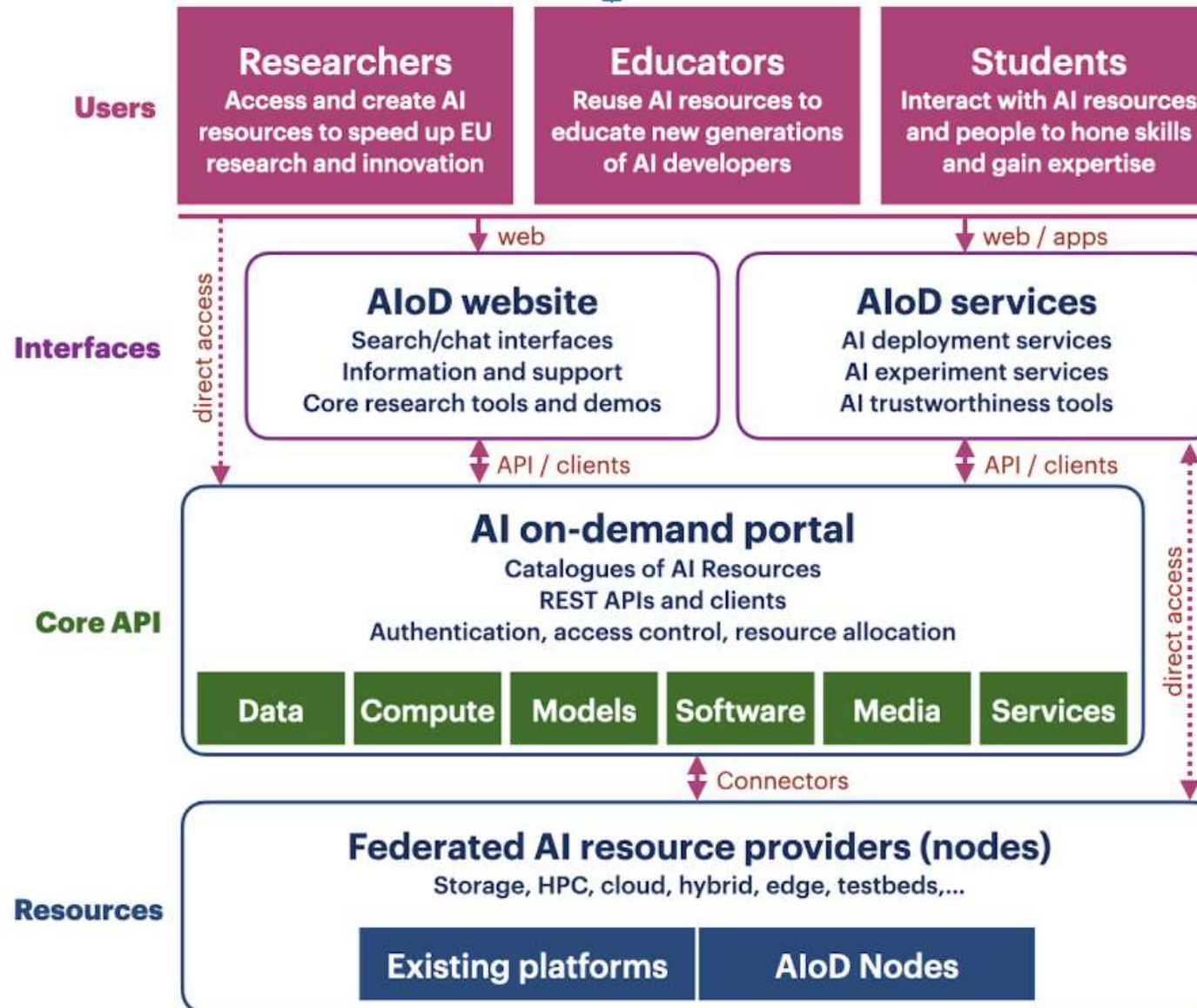
# A decentralised AloD platform

Distributed architecture:

- **(Root) nodes**
  - run core AloD services (e.g. AI resource catalogue)
  - run connectors to existing data and compute infrastructure
- **Leaf nodes**
  - run thematic services built on top of the core ones (e.g., experimentation environments)
  - facilitates integration of (existing) local services and resources.
- **External resources**
  - provide external resources (e.g. data and compute)



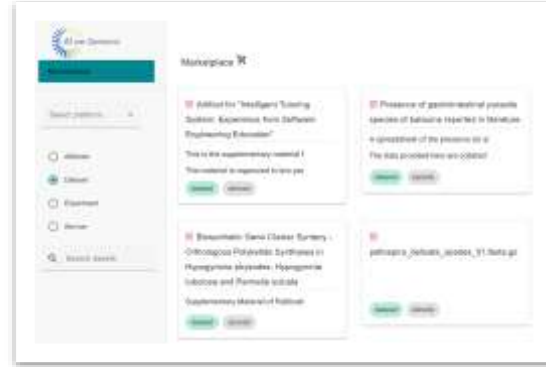
# The AIoD Software Architecture (nodes)



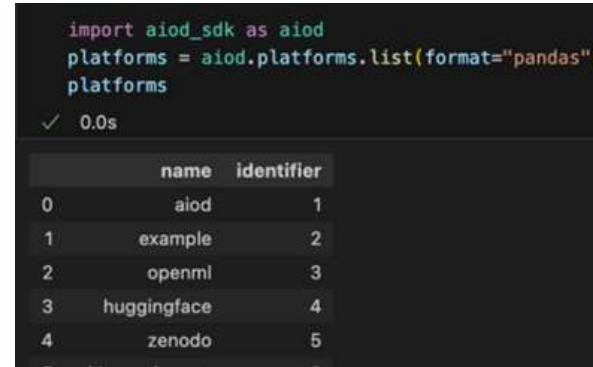
# Current Interfaces



**Web portal**  
general information



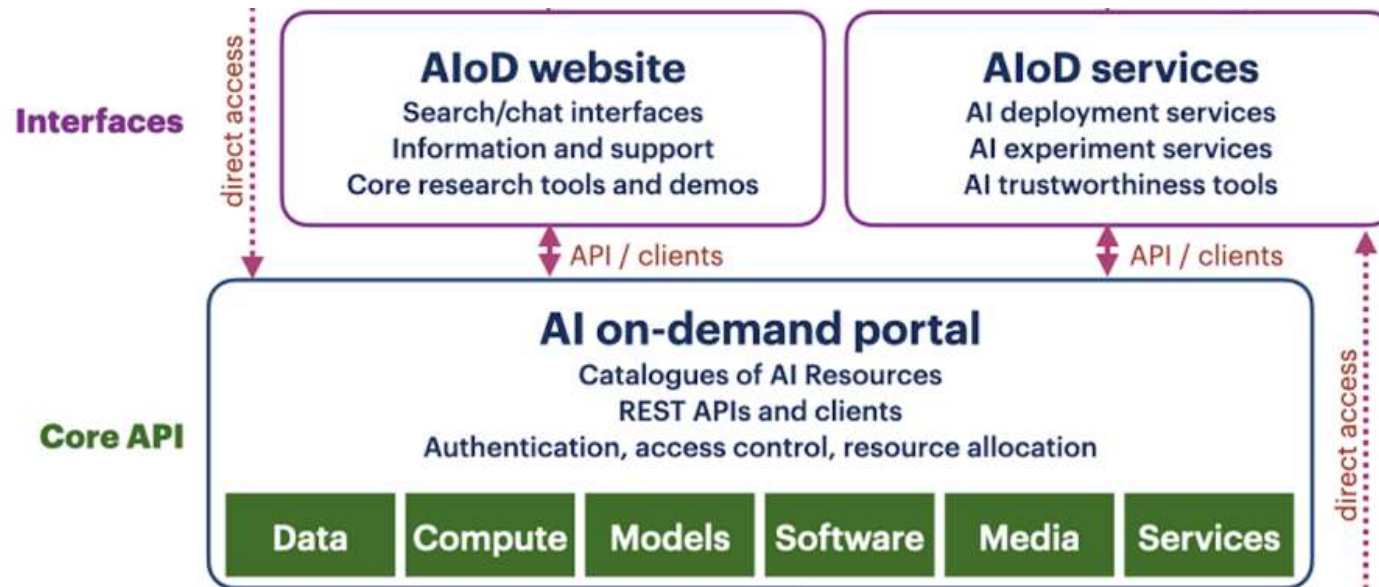
**MyLibrary**  
search for AI resources



**API**  
programmatic access



**Services**  
advanced interfaces



# Next Release Interfaces (2025)



AI Demand

Overview Resources Services Community

Search ? Login

Community

- Press Corner
- AI NoE
  - Map
  - Statistics
  - Topic & Applications
  - Information
- Success Stories
- Forum

Community > European AI research and innovation ecosystem > Map

Enter keyword

Join our community, grow your knowledge and learn from others!

Sign In

Don't have an AIoD account? [Sign up](#)

European AI Networks of Excellence (click on a logo to filter by network)

an Union

Logos: EU, VISION, AI4media, AIEDGE, ELIAS, elise, elsa, ENFIELD, euROBIN, HUMANE AI NET, TAILOR



# The AI-on-Demand Platform

A community-driven platform empowering  
AI Research & Innovation



Funded by  
the European Union



# Thank you!



[www.aiod.eu](http://www.aiod.eu)

[info@aiod.eu](mailto:info@aiod.eu)

 @AlonDemand



Funded by  
the European Union



# Brainstorming about the next steps

Kristina Karanikolova



Funded by  
the European Union



# Discussion



1. Split into 4 groups (1 per corner)
2. **Group discussion**
  - 20 minutes to brainstorm and discuss with the group
  - One facilitator per group to lead and report back (Maurits, Long, Kristina, Claudio)
3. Menti to collect any thoughts you did not share or thought of later
  - move between the discussion questions on your own pace
4. Plenary sum-up and discussion from each of the facilitators
5. Interested to be further involved/informed? Add your email to Menti or join ADRA mailing list!

Join menti.com with code  
**3535 1513**



# Questions



1. Looking at the innovation functions that are needed to ensure a collaborative European ecosystem, how can we get you to participate in providing data? – Maurits
2. How would you like to use the ecosystem tool? What services would you use? – Long
3. Which Data and Robotics topics beyond AI to integrate in the ontology? – Claudio
4. What indicators can we use: for excellence, sovereignty, competitiveness? – Kristina



# Wrap-up

Anne Bergen

# Wrap-up



**Join the EMIR mailing list!**

<https://adr-association.eu/>



Thank you!

Anne Bergen  
Long Pham  
Claudio Lazo  
Géraud Guilloud  
Maurits Butter  
Kristina Karanikolova  
Freek Bomhof  
Joachim de Greeff



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the European Union



# Appendix

Extra slides



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the European Union

# Introduction



## Intended value

- Navigating the European R&I ecosystem
- Identifying and visualizing research excellence and impact
- Showing affiliation and more in-depth information

# Data collected



1. Organisation details (name, url, contact, type of org, type of activity, FTE, NoE membership)
1. Research topics activity levels per high-level topic
2. Research subtopics
1. Application area activity levels
2. Application area subtopics



# Research topics process



1. Subtopics synthesis (AAAI-23 and community-driven topics) into final structure
2. Start with the 12 research areas and 12 application areas of CLAIRE and combine with the AAAI-23 conference topics.
3. Changes at the top level were made only if it is justified (e.g. a more representative title). At the subtopics level, the NoEs were able to add as many topics as they want.
4. Maintain a maximum of 12 high level categories to keep it comprehensive
5. The high-level topics are alphabetically sorted, not implying any primacy.
6. Check with Working Committee



# Research topics & application areas

The ecosystem map requires a structured list of topics. The NoEs agreed to combine our initial structure the AAAI-23 keywords and topics provided by the NoEs, performing several reviews. Each topic has several subtopics (the amount of subtopics is shown after each topic). The topics are alphabetically sorted.

Research topics	
AI Hardware & High-Performance Computing	4
Computer Vision & Audition	36
Ethical, Legal, Social Aspects	34
Human- Machine Interaction & Cognition	32
Knowledge Representation & Management	17
Machine Learning	60
Multi-Agent Systems & Agent-Based Modelling	10
Planning, Routing & Scheduling	15
Reasoning	31
Robotics	19
Search & Optimisation	26
Speech & Natural Language Processing	27



Application areas	
Agriculture & fisheries	9
Economy & financial markets/services	9
Environment, energy & sustainability	18
Health & wellbeing	12
ICT infrastructure	4
Industry	11
Learning & education	10
Media, communication, web & entertainment	16
Mobility & transportation	18
Public sector & citizen services	6
Safety & Security	8
Scientific research, design & engineering	6

# Data collected



NoE	# responses	# organisations
AI4Media	32	32
dAIEDGE	20	35
ELIAS	14	32
ELISE	32	33
ELSA	17	27
ENFIELD	33	35
euROBIN	30	31
HumanE-AI-Net	45	54
TAILOR	46	55
<b>Total</b>	<b>269</b>	<b>334</b>
<b>Total (no dupl.)</b>	<b>228</b>	

## Survey open since oct 2023

### Mapping of the EU AI Landscape around the Networks of Excellence

This survey is part of a **joint effort** of the AI research & innovation community and the European Commission.

Its aim is to provide an **initial mapping of the EU AI research landscape** around the European Networks of AI Excellence centres (NoEs):

- **AI4Media** - A European Excellence Centre for Media, Society and Democracy (<https://www.ai4media.eu>);
- **TAILOR** - Foundations of Trustworthy AI - Integrating Reasoning, Learning and Optimization (<https://tailor-network.eu>);
- **Humane-AI-Net** - HumanE AI Network (<https://www.humane-ai.eu/>);
- **ELISE** - European Learning and Intelligent Systems Excellence (<https://www.elise-ai.eu/>);
- **euROBIN** - European ROBotics and AI Network (<https://eurobin-project.eu/>);
- **ELSA** - European Lighthouse on Secure and Safe AI (<https://elsa-ai.eu>)

Three new Networks of Excellence emerged during the data collection phase, and organisations in these networks can fill in this survey as well:

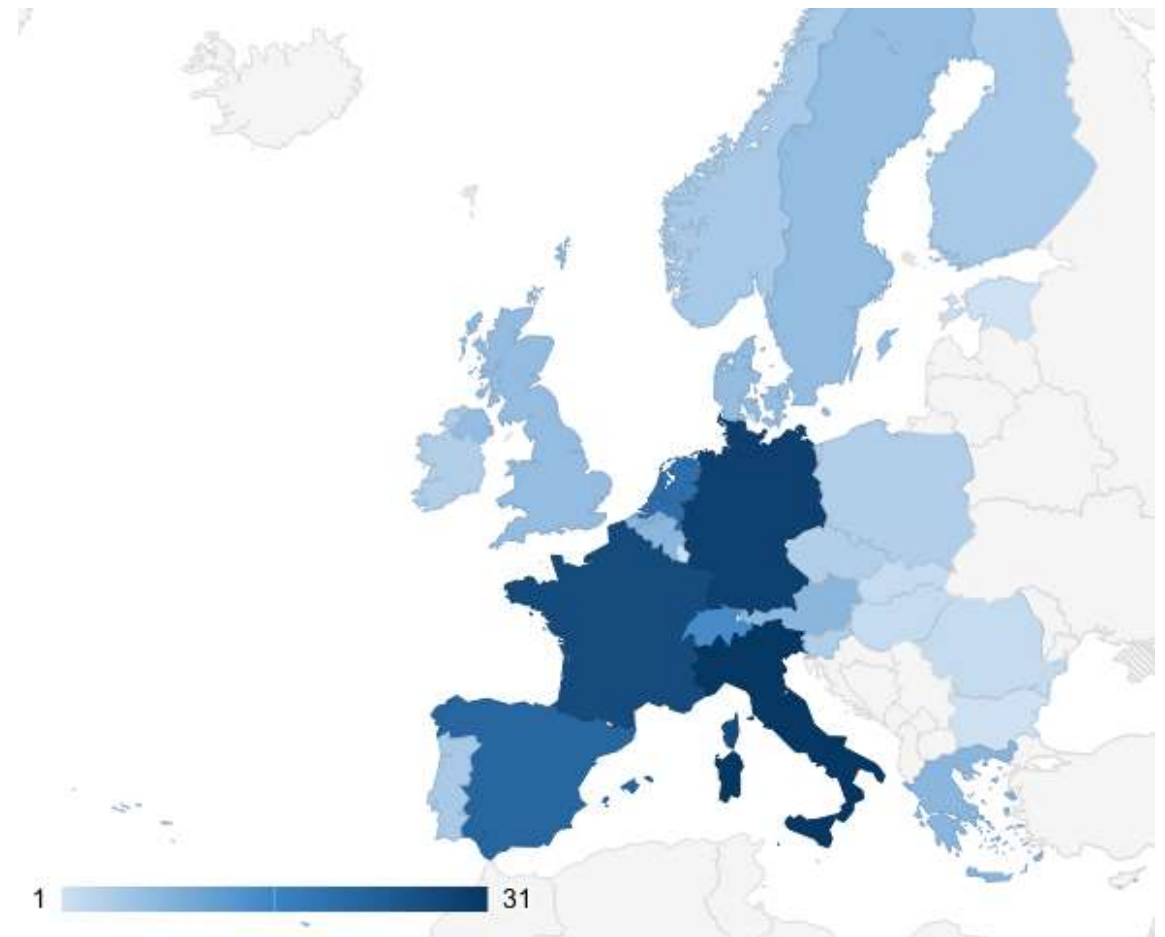
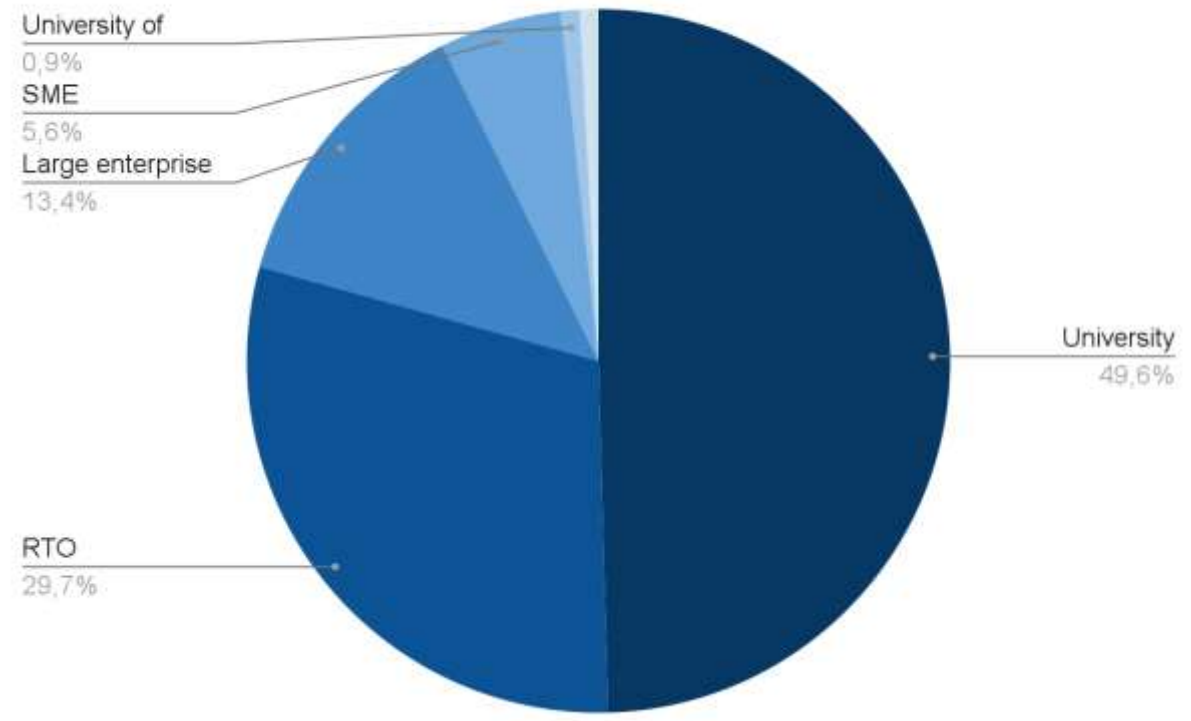
- **dAIEDGE** - A network of excellence for distributed, trustworthy, efficient and scalable AI at the Edge (<https://daiedge.eu/>)
- **ELIAS** - European Lighthouse of AI for Sustainability (<https://elias-ai.eu/>)
- **ENFIELD** - European Lighthouse to Manifest Trustworthy and Green AI (<https://www.enfield-project.eu>)

The survey has been created in close consultation with a representative from each NoE together with input from the EC, and is facilitated by the **VISION** CSA (Value and Impact through Synergy, Interaction and coOperation of Networks of AI Excellence Centres).

# Data collected



## Organisation types



# Lessons



## Data collection

- Hard to ask for objective data
- Dashboard & working committee made data collection efficient, but after several weeks stagnation occurs
- Much data cleaning necessary for clarity and consistency, at a risk of loss of autonomy
- Duplicate, overlapping and contradictory submissions
- **Organisation structures** vary
- **Submitting** on behalf of organisation is hard, due to limited overview and knowledge.
- **Geographical scope** broader: Incl. Türkiye, Israel
- Many orgs have **multiple locations** (e.g. HQ and research lab)

## Quantity

- 9 NoEs = maybe 10% of the entire AI, Data, Robotics R&I community
- Diverse set of research topics
- Many 'other' topics

# Features



## Shared language

- List of AI research topics & application areas
- Find suitable categories
- Search organizations by topic

## Detailed reporting on organizations

- Positioning their expertise
- Branding

## High-level overview

- Map of European AI R&D excellence
- Visualizing NoEs
- Lab to market
- Research topics x application areas
- Reporting on AI research (sub)topic

Link:

<https://ai-ecosystem.aiod.eu/>

# Shared language



AI NoE EUROPEAN AI RESEARCH AND INNOVATION ECOSYSTEM [Map](#) [Statistics](#) [Topics and applications](#)

Click topic or area to see sub-topics and sub-areas. Click on sub-topic or sub-area to filter organizations.

### RESEARCH TOPICS

Search

- AI Hardware & High-Performance Computing
- Computer Vision and Audition
- Ethical, Legal, Social Aspects
- Human-Machine Interaction and Cognition
- Knowledge Representation and Management
- Machine Learning
- Multi-Agent Systems and Agent-Based Modeling
- Planning, Routing and Scheduling
- Reasoning
  - Action, Change, and Causality
  - Argumentation
  - Association analysis**
  - Associative programming
  - Automated Reasoning and Theorem Proving
  - Bayesian Networks
  - Belief Change
  - Case-Based Reasoning
  - Causality and causal inference
  - Common-sense Reasoning
  - Computational Complexity of Reasoning
  - Correlation analysis
  - Decision/Utility Theory
  - Diagnosis and Abductive Reasoning
  - Fuzzy logic
  - Fuzzy rule-based systems
  - Geometric, Spatial, and Temporal Reasoning
  - Graphical Models
  - Natural Intelligence
  - Nonmonotonic Reasoning
  - Preferences
  - Probabilistic Programming
  - Qualitative Reasoning
  - Reasoning with Beliefs
  - Relational Probabilistic Models
  - Semantic networks
  - Sequential Decision Making
  - Similarity-based learning
  - Stochastic Models & Probabilistic Inference
  - Stochastic Optimization
  - Visual reasoning

### APPLICATION AREAS

Search

- Agriculture & fisheries
- Economy & financial markets/services
- Environment, energy & sustainability
- Health & wellbeing
- ICT infrastructure
- Industry
- Learning and education
- Media, communication, web and entertainment
- Mobility & transportation
- Public sector & citizen services
- Safety & Security
- Scientific research, design & engineering

### Results for Association analysis

Select map view to see results on map

- ISL Bristol - University of Bristol  
Intelligent Systems Laboratory - Faculty of Engineering
- UNIFI - University of Pisa  
KDD Lab - Knowledge Discovery and Data Mining Laboratory (<https://kdd.isi.unipi.it/>)
- KNOW - Know-Center

# Search by topic



Search organizations on keyword, research topic, and/or application area.

Deep Neural Architectures

Deep Neural Architectures x

→ RESEARCH TOPICS

↓ APPLICATION AREAS

- Scientific research, design & engineering
- Health & wellbeing
- Industry
- Environment, energy & sustainability
- Mobility & transportation
- Safety & security
- Learning & education
- Media, communication, web & entertainment
- ICT infrastructure
- Public Sector & Citizen Services
- Economy & financial markets/services
- Agriculture & fisheries

→ TYPE OF ACTIVITY



- Search results:
- CERTH** - Centre for Research & Technology Hellas  
Visual Analytics Lab (VALab)
  - LDO** - Leonardo  
Leonardo LABS
  - CEA** - French Alternative Energies and Atomic Energy Commission  
Laboratoire d'Intégration de Systèmes et des technologies (LIST) institute
  - Bosch** - Robert Bosch GmbH  
Bosch Center for AI
  - Insight** - Insight SFI Research Centre for Data Analytics
  - JKU** - Johannes Kepler University Linz  
Institute for Machine Learning
  - BSC** - Barcelona Supercomputing Center  
High-Performance Artificial Intelligence
  - JSI** - Jožef Stefan Institute  
Department of Automatics, Biocybernetics, and Robotics
  - Fraunhofer IDMT** - Fraunhofer Gesellschaft  
Fraunhofer Institute for Digital Media Technology (IDMT) - Media Distribution & Security, Audiovisual Systems and Semantic Music Technology Groups
  - DLR** - German Aerospace Center  
Institute of Robotics and Mechatronics
  - INESC TEC** - Institute for Systems and Computer Engineering, Technology and Science
  - TU/e** - Eindhoven University of Technology  
Information Systems group
  - VW** - Volkswagen AG  
Machine Learning Research Lab
  - TU/e** - Eindhoven University of Technology
  - UNIFI** - University of Pisa  
Department of Computer Science
  - JRS** - Joanneum Research  
"Intelligent Vision Applications" research group, DIGITAL institute
  - TU Darmstadt** - Technical University of Darmstadt  
Artificial Intelligence and Machine Learning lab
  - CUNI** - Charles University  
Institute of Formal and Applied Linguistics
  - BUT** - Brno University of Technology
  - CVC** - Computer Vision Center (Autonomous University of Barcelona)
  - EPFL** - Swiss Federal Institute of Technology in Lausanne

• No match • Low relevance • High relevance



# Detailed reporting on AI R&D orgs



EUROPEAN AI RESEARCH AND INNOVATION ECOSYSTEM [Map](#) [Statistics](#) [Topics and applications](#)

**Search results:**

**UNIFI - University of Florence**  
Media Integration and Communication Center

**Website** <https://www.unifi.it>

**Country** Italy

**City/town** Firenze

**Organization type** Research university

**Main contact** Marco Bertini

**Position** Director

**E-mail** marco.bertini@unifi.it

**Networks** AI4Media (Beneficiary)

**Research topics**

- Computer Vision  
3D Computer Vision, Adversarial Attacks & Robustness, Image and video enhancement and restoration, Language and Vision
- Machine Learning  
Generative models, Geometric deep learning, Imitation Learning & Inverse Reinforcement Learning, Unsupervised & Self-Supervised Learning, Incremental learning
- Robotics  
Robot and Path Planning

**Application areas**

- Industry  
Quality assurance

**FTEs per type of activity**

Fundamental research	6 FTE
Applied research	6 FTE
Educational activities	6 FTE

• No match • Low relevance • High relevance

# Detailed reporting on AI R&D orgs



and applications



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Position Director

E-mail [marco.bertini@unifi.it](mailto:marco.bertini@unifi.it)

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### Research topics

#### Computer Vision

3D Computer Vision, Adversarial Attacks & Robustness, Image and video enhancement and restoration, Language and Vision

#### Machine Learning

Generative models, Geometric deep learning, Imitation Learning & Inverse Reinforcement Learning, Unsupervised & Self-Supervised Learning, Incremental learning

#### Robotics

Motion and Path Planning

### Application areas

#### Industry

Quality assurance

### FTE's per type of activity

Fundamental research 6 FTE

Applied research 6 FTE

Educational activities 6 FTE



# Overview of AI R&D excellence



Search organizations on keyword, research topic, and/or application area.

→ RESEARCH TOPICS

- Computer Vision

→ APPLICATION AREAS

- Industry

→ TYPE OF ACTIVITY

- Applied research
- Educational activities



• No match • Low relevance • High relevance

Search results:

- IMG** - Imagga Technologies
- CIIRC CTU** - Czech Technical University  
Czech Institute of Informatics, Robotics, and Cybernetics
- Bosch** - Robert Bosch GmbH  
Bosch Center for AI
- FBK** - Bruno Kessler Foundation  
Marketing Strategy & Business Development
- DTI** - Danish Technological Institute
- Fraunhofer IPA** - Fraunhofer Gesellschaft  
Institute for Manufacturing Engineering and Automation (IPA) - Robot Technologies and Services
- TNO** - Netherlands Organisation of Applied Scientific Research  
ICT, Strategy & Policy (ISP), ApplAI program
- TU/e** - Eindhoven University of Technology
- BUT** - Brno University of Technology
- CVC** - Computer Vision Center (Autonomous University of Barcelona)
- BSC** - Barcelona Supercomputing Center  
High-Performance Artificial Intelligence
- TU Graz** - Graz University of Technology
- NKUA** - National and Kapodistrian University of Athens  
Department of Informatics and Telecommunications
- Insight** - Insight SFI Research Centre for Data Analytics
- UCPH** - University of Copenhagen  
Department of Computer Science
- TÜBİTAK** - Scientific and Technological Research Council of Türkiye  
BİLGEM
- LIU** - Linköping University
- ELTE** - Eötvös Loránd University  
Department of Artificial Intelligence
- UNIFI** - University of Florence  
Media Integration and Communication Center
- BSC** - Barcelona Supercomputing Center  
High-Performance Artificial Intelligence
- UniNa** - University of Naples Federico II  
CREATE Consortium - PRISMA Lab
- HES-SO** - University of Applied Sciences and Arts of Western Switzerland  
Institute of Informatics
- INESC TEC** - Institute for Systems and Computer Engineering, Technology and

# Overview of NoE focus



EUROPEAN AI RESEARCH AND INNOVATION ECOSYSTEM [Map](#) [Statistics](#) [Topics and applications](#)



Search organizations on keyword, research topic, and/or application area.

Enter keyword

## RESEARCH TOPICS

- Machine Learning
- Computer Vision
- Human-Machine Interaction
- Ethical, Legal, Social Aspects
- Speech & Natural Language Processing
- Robotics
- Multi-Agent Systems & Agent-based Modeling
- Search & Optimisation
- Knowledge Representation
- Planning, Routing & Scheduling
- Reasoning
- Cognition Modeling & Cognitive Systems
- Knowledge Management
- AI Hardware & High-Performance Computing
- Computer Audition

## APPLICATION AREAS

## TYPE OF ACTIVITY



Search results:

- ECOE - ERATOSTHENES Centre of Excellence**  
Department of Big Earth Data Analytics
- TU/e - Eindhoven University of Technology**  
Information Systems Group
- DTI - Danish Technological Institute**  
Robot Technology Center
- TalTech - Tallinn University of Technology**  
Department of Computer Systems - Centre for Intelligent Systems
- UCM - Universidad Complutense de Madrid**  
Instituto Complutense de Análisis Económico
- NTNU - Norwegian University of Science and Technology**  
Dept. of Information Security and Communication Technology - Critical Infrastructure Security and Resilience (CISAeR) Research Group
- NTNU - Norwegian University of Science and Technology**  
Department of Information Security and Communication Technology
- CHALMERS - Chalmers University of Technology**  
Geoscience and Remote Sensing
- IMT-BS - Institut Mines-Télécom Business School**  
Department of Economics and Finance (DEFI)
- NEW - EDP Centre New Energy Technologies**  
Digital Energy area
- INESC TEC - Institute for Systems and Computer Engineering, Technology and Science**
- SINTEF - SINTEF - Foundation for Scientific and Industrial Research**  
Trustworthy Green IoT Software Group
- Iskraemeco**  
Innovation Department
- MAG - Maggioli Group**  
Greek branch
- UPB - Politehnica University of Bucharest**
- TUC - Chemnitz University of Technology**  
Faculty of Computer Science
- BAS - Boeing Aerospace Spain**  
Airspace and Operational Efficiency
- ICCS - Institute of Communication and Computer Systems**  
Computer Networks Laboratory (CNL)
- IMT - Institut Mines-Télécom**
- BME - Budapest University of Technology and Economics**  
Department of Telecommunications and Media Informatics

• No match • Low relevance • High relevance

European AI Networks of Excellence (click on a logo to filter by network)

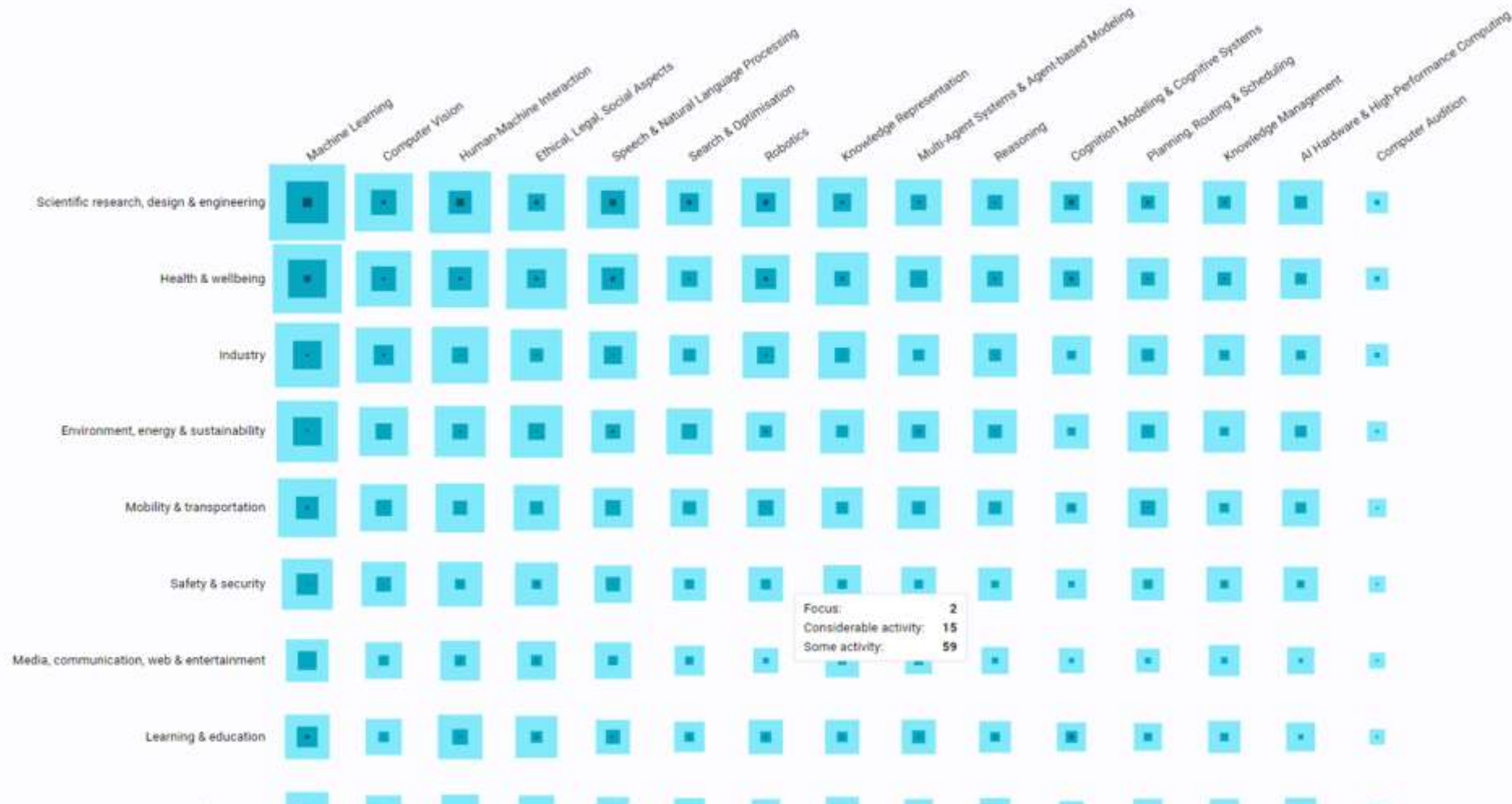


# Overview of research by area

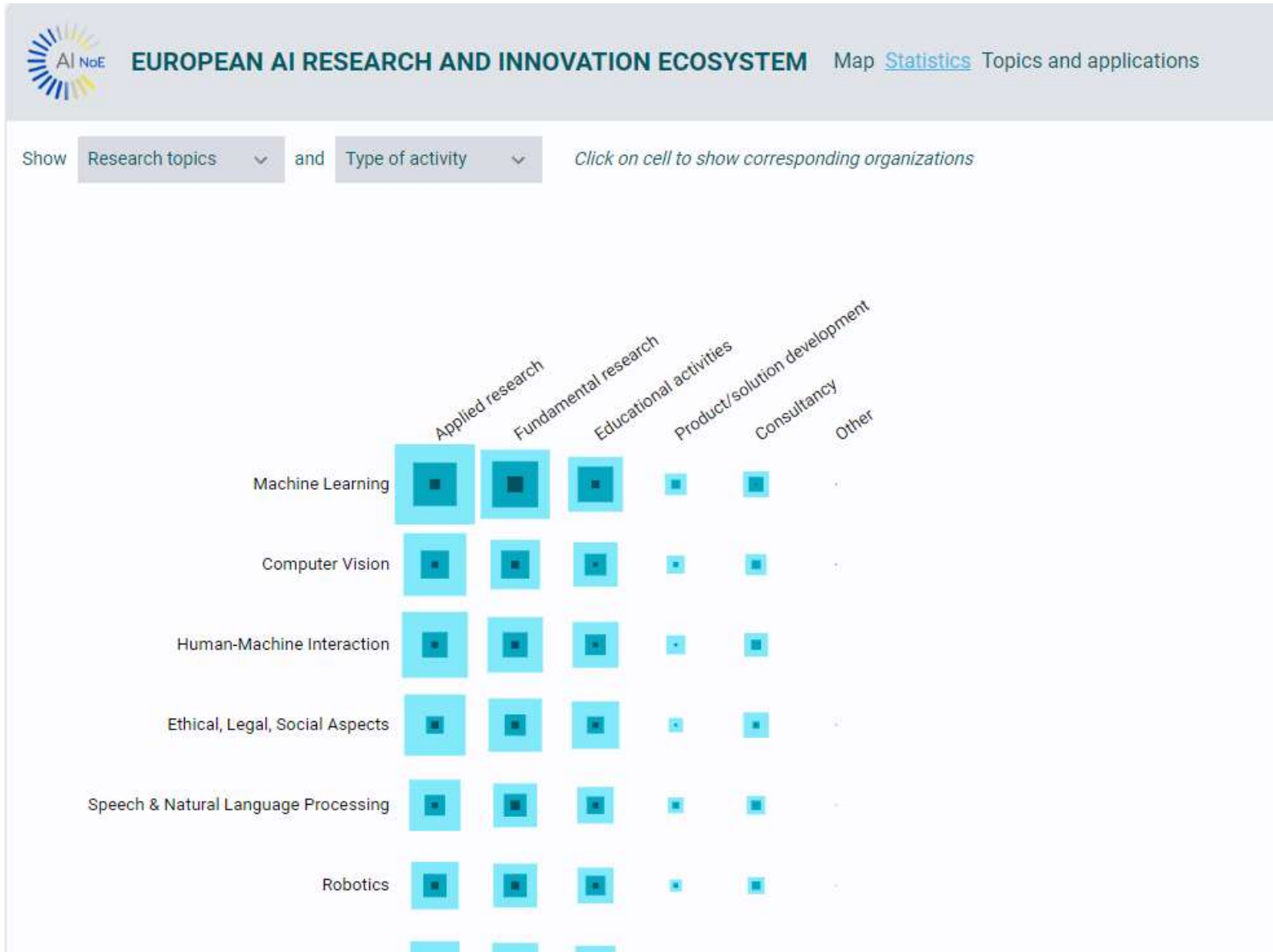


EUROPEAN AI RESEARCH AND INNOVATION ECOSYSTEM [Map](#) [Statistics](#) [Topics and applications](#)

Click on cell to search for organizations



# Overview of lab-to-market per topic



# Related initiatives

- Adra-e cartography (UTwente)
- RODIN information repositories (TNO, euRobotics)
- BOWI DIH heatmap (TNO)
- DIHs catalogue (TNO)
- ELLIS lab catalogue (ELISE)
- TAILOR mapping of AI topics for SRIR v2 (TNO)
- Datamite [AI Navigator](#) (UCC)

