



e l l i s
European Laboratory for Learning and Intelligent Systems

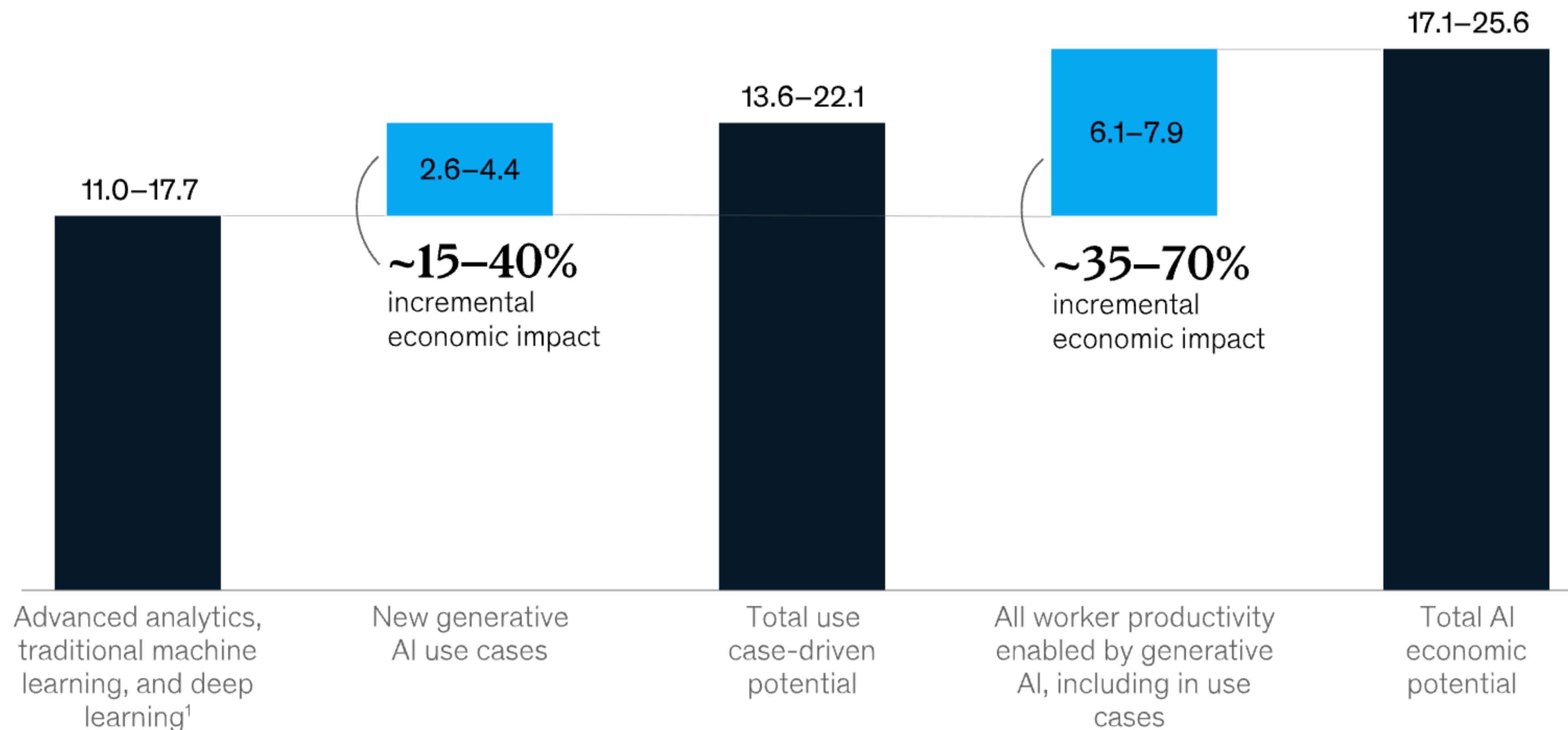
MILAN

Artificial Intelligence: State of the art and trends

Nicola Gatti

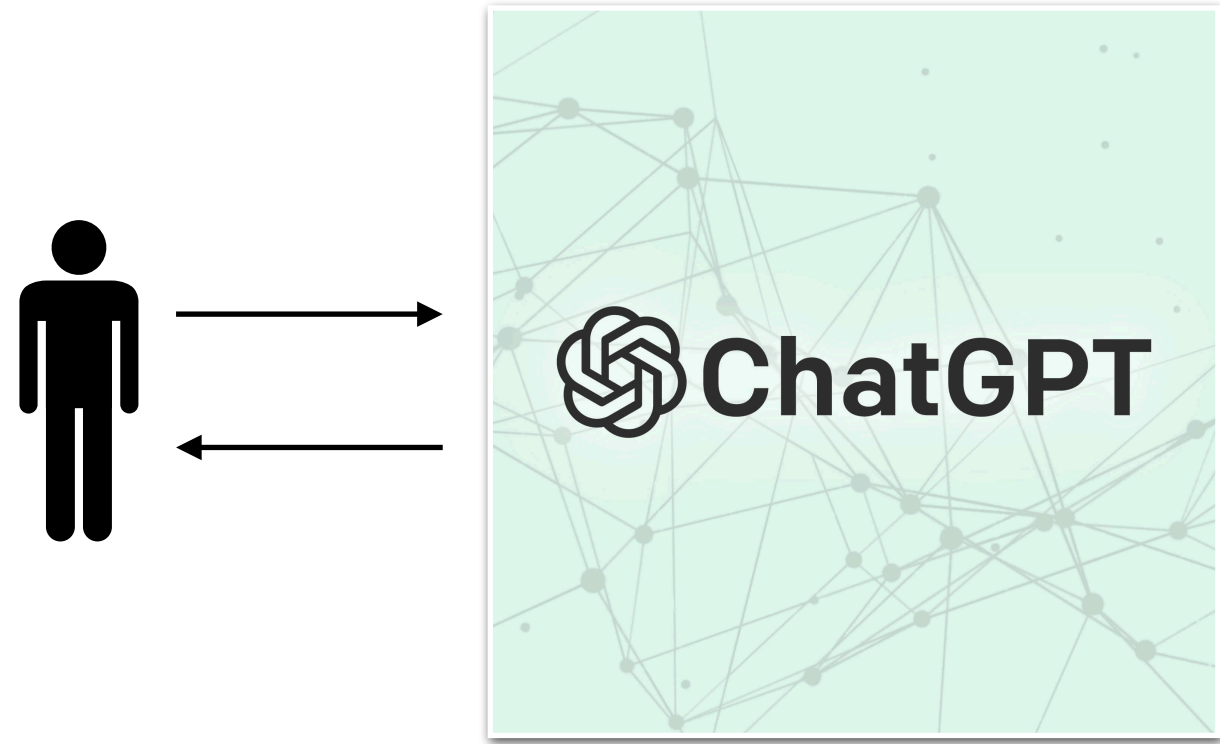
Generative AI could create additional value potential above what could be unlocked by other AI and analytics.

AI's potential impact on the global economy, \$ trillion

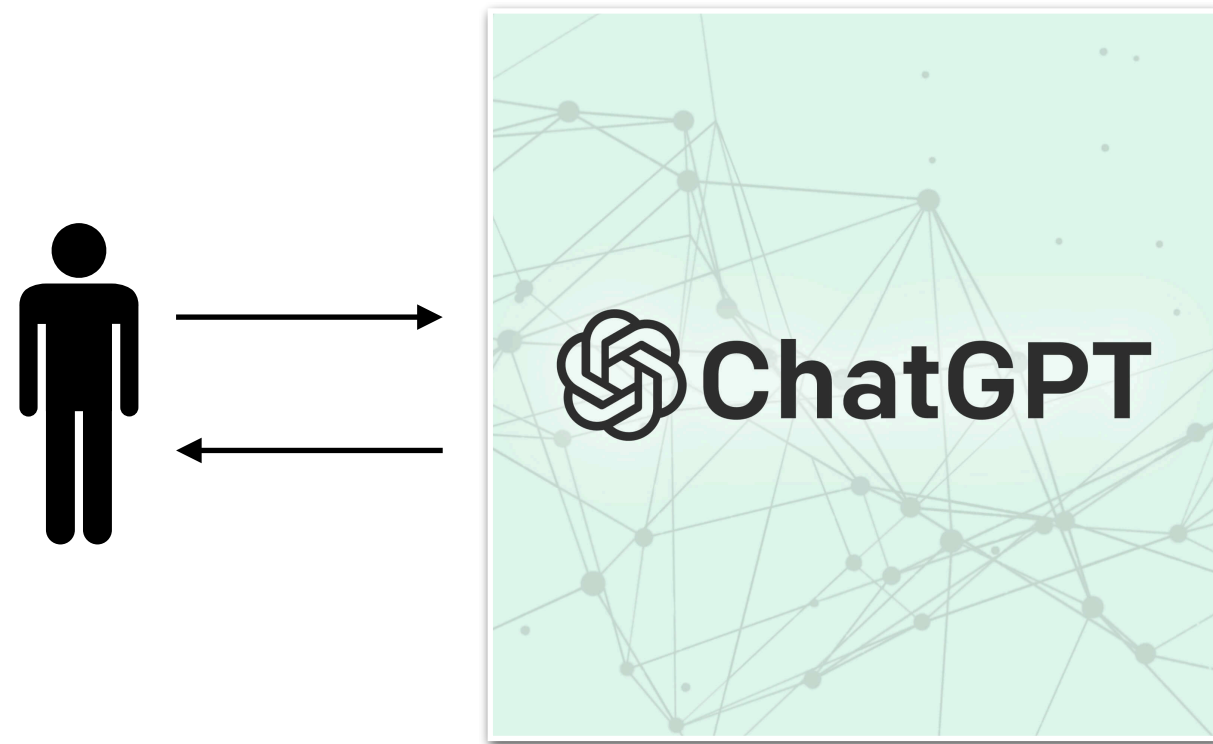


Do we need just to adopt AI systems?

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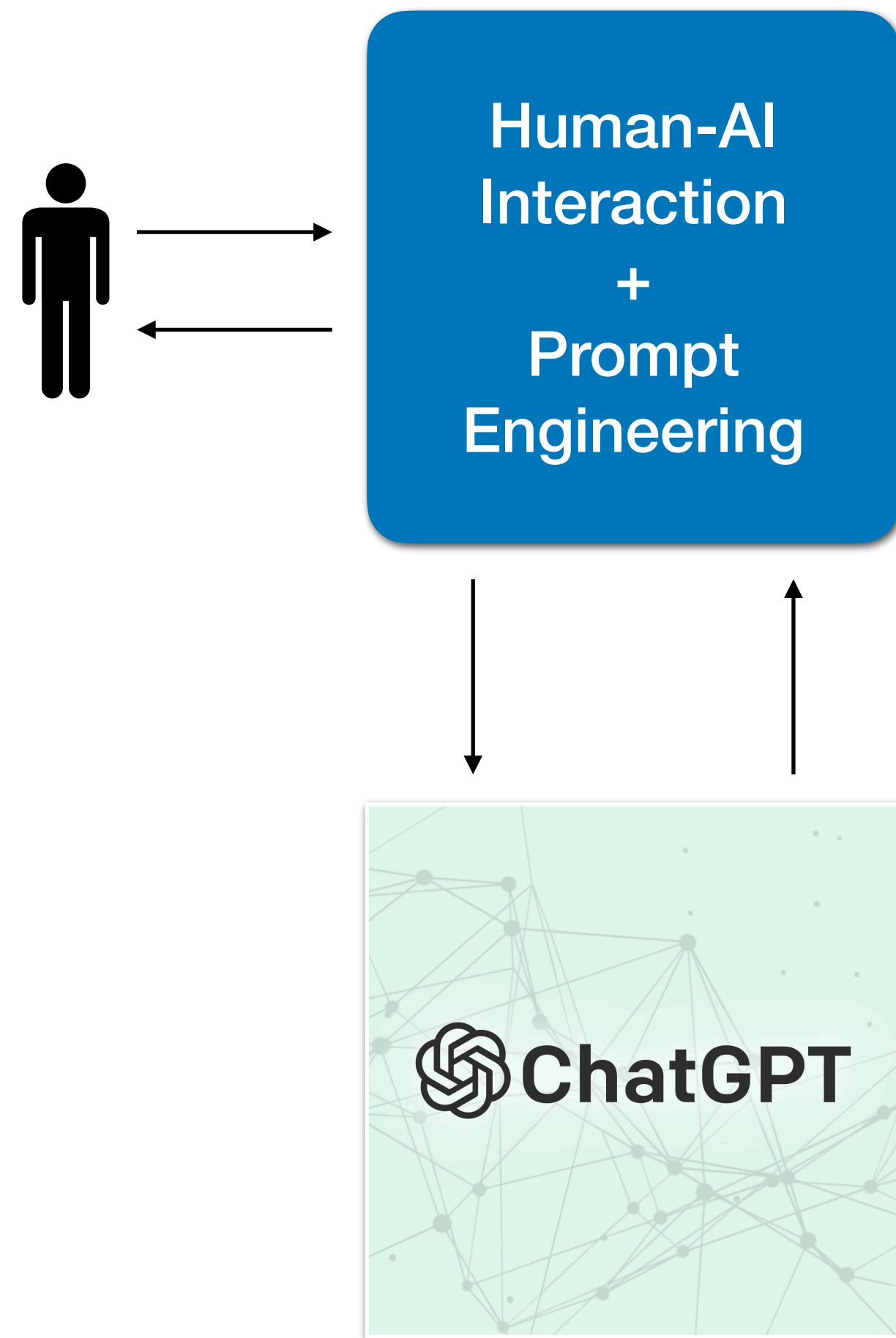


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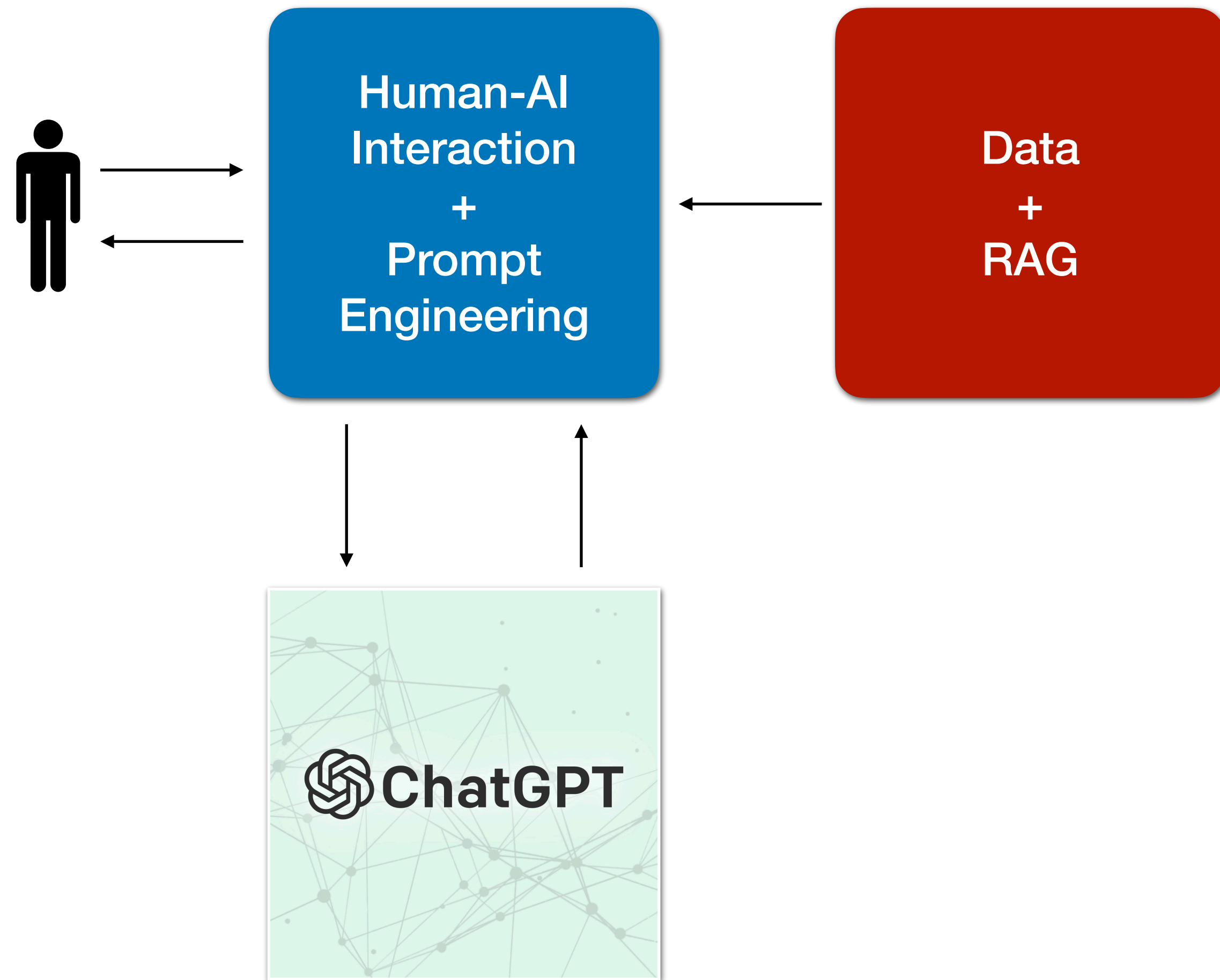
- LLMs have **severe limits**
- The output **cannot** be controlled
- **New paradigms hybridizing**
LLMs with non-generative AI tools

Do we need just to adopt AI systems?



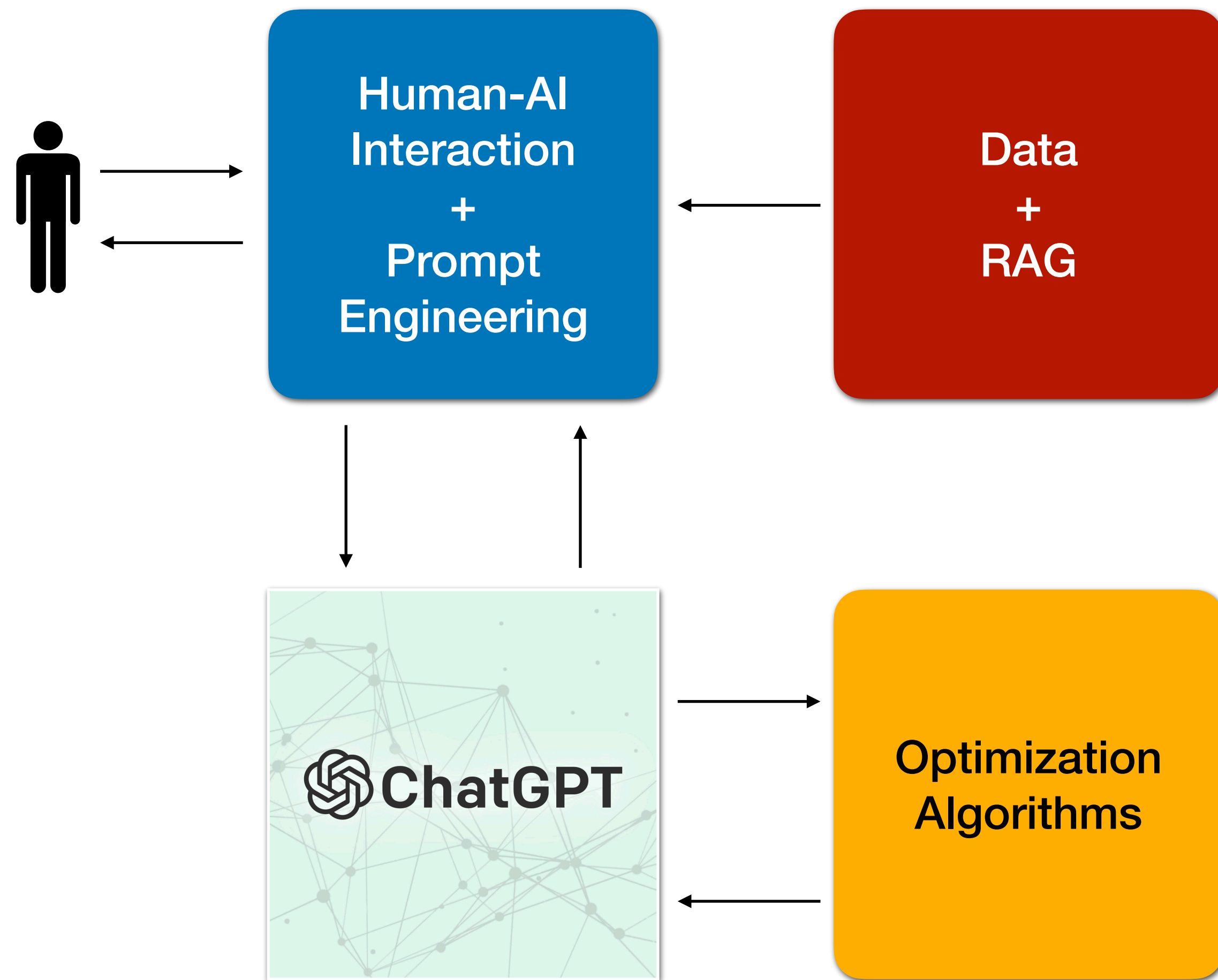
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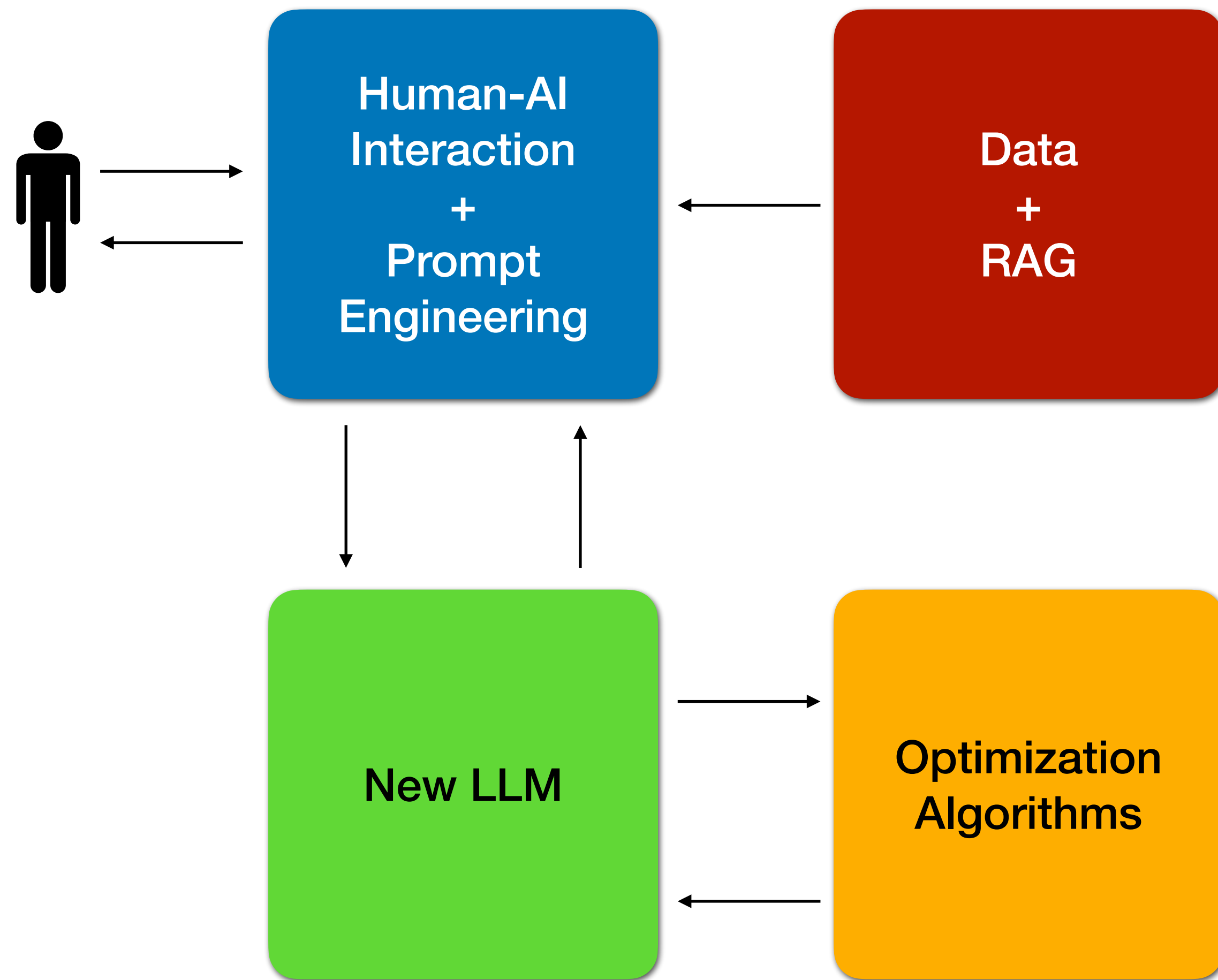
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Do we need just to adopt AI systems?



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"It's hard to think of a single technology that will shape our world more in the next 50 years than Artificial Intelligence"

Barack Obama

The Global AI Index

The first index to benchmark nations on their level of investment, innovation and implementation of artificial intelligence.

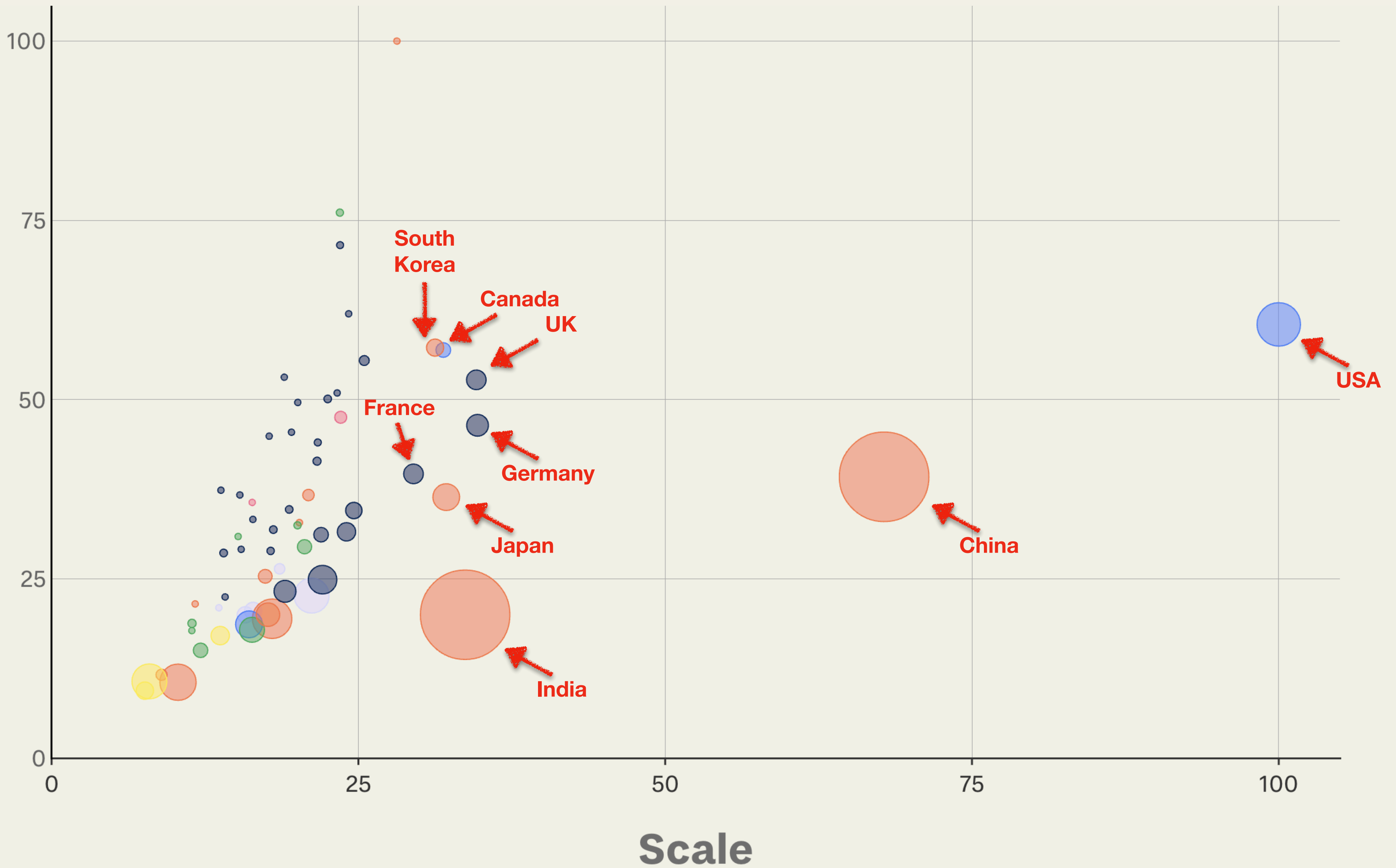


		Overall	Talent	Infrastructure	Operating Environment	Research	Development	Government Strategy	Commercial	Scale	Intensity
	United States	1	1	1	28	1	1	8	1	1	5
	China	2	20	2	3	2	2	3	2	2	21
	Singapore	3	4	3	22	3	5	16	4	10	1
	United Kingdom	4	5	24	40	5	8	10	5	4	10
	Canada	5	6	23	8	7	11	5	7	7	7
	South Korea	6	12	7	11	12	3	6	18	8	6
	Israel	7	7	28	23	11	7	47	3	17	2
	Germany	8	3	12	13	8	9	2	11	3	15
	Switzerland	9	9	13	30	4	4	56	9	16	3
	Finland	10	13	8	4	9	14	15	12	13	4
	Netherlands	11	8	16	15	10	13	28	20	11	8
	Japan	12	11	5	10	20	6	18	23	6	25
	France	13	10	11	25	15	18	13	10	9	20
	India	14	2	59	12	30	21	38	13	5	51
	Australia	15	14	44	62	6	16	14	22	15	14
	Denmark	16	19	15	1	18	19	21	17	18	11
	Sweden	17	15	21	2	13	17	44	16	19	12
	Luxembourg	18	31	6	14	19	22	31	14	33	9
	Ireland	19	17	26	19	27	10	29	15	28	13
	Austria	20	25	34	5	16	23	33	27	22	18
	Spain	21	18	18	16	24	26	4	32	12	28
	Belgium	22	26	43	24	14	25	36	25	23	19
	Italy	23	22	35	6	21	28	9	35	14	33
	Norway	24	24	22	29	22	20	39	21	30	16

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Intensity

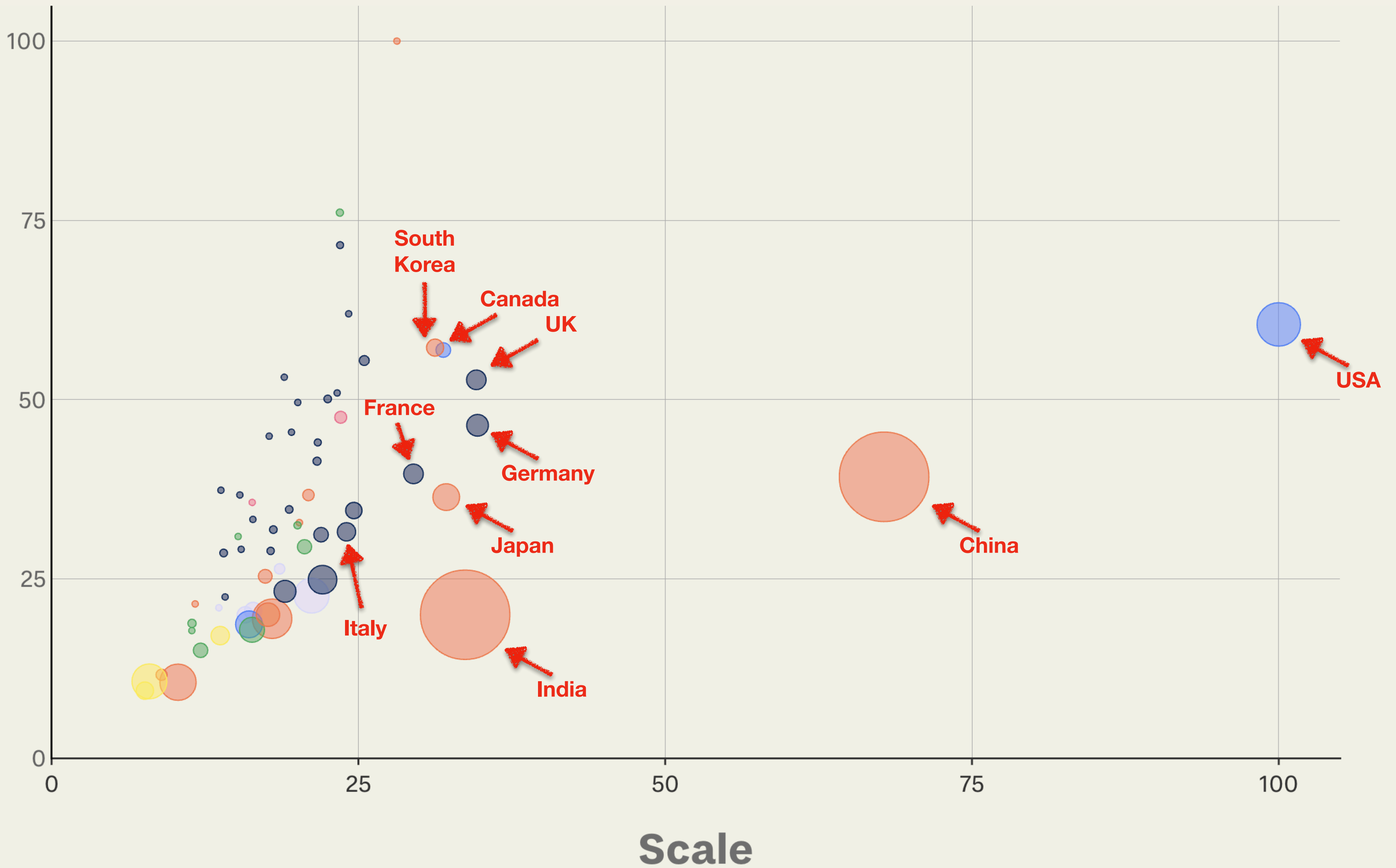


● Asia ● North America ● South America ● Africa ● Europe ● Middle East ● Oceania

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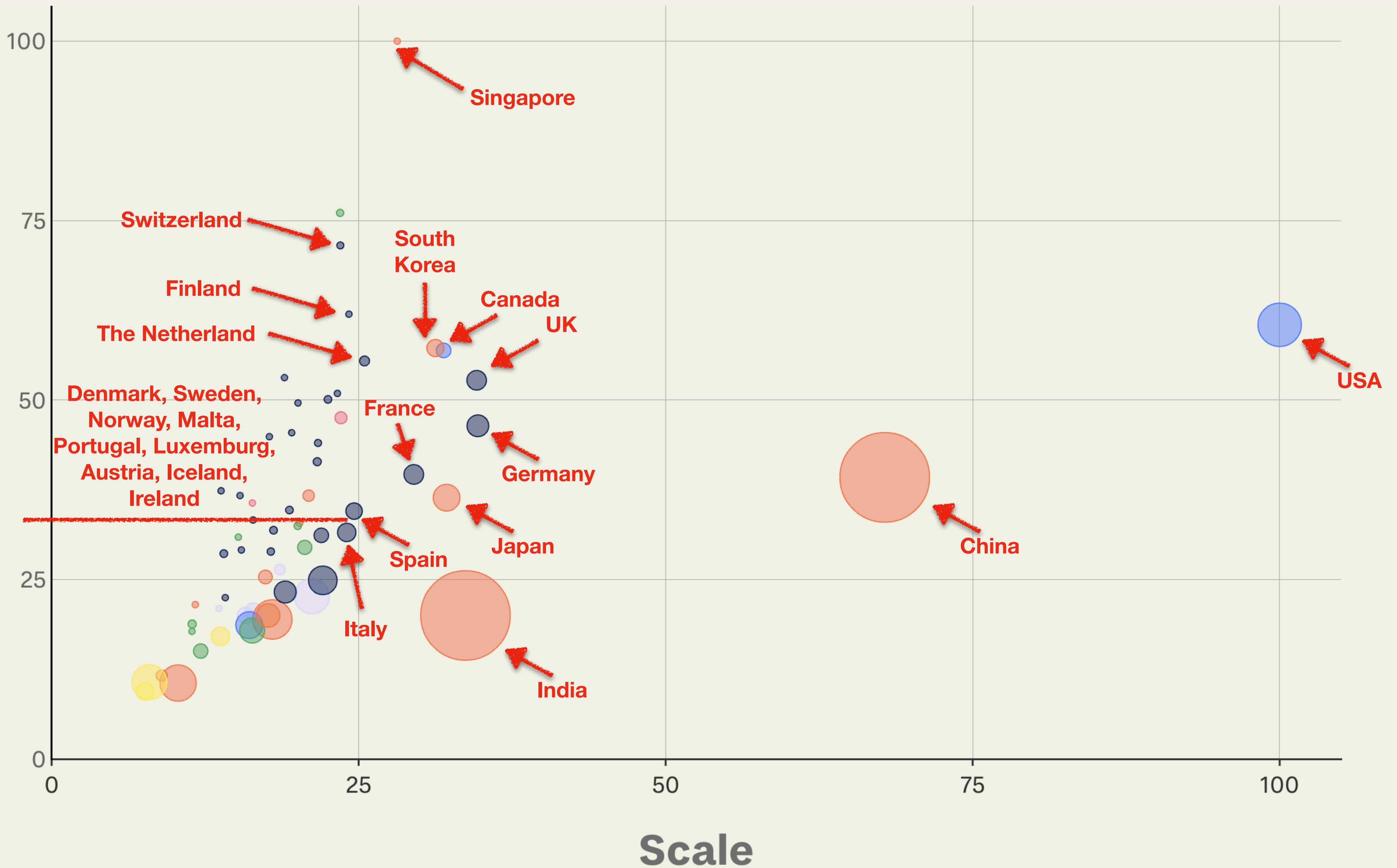


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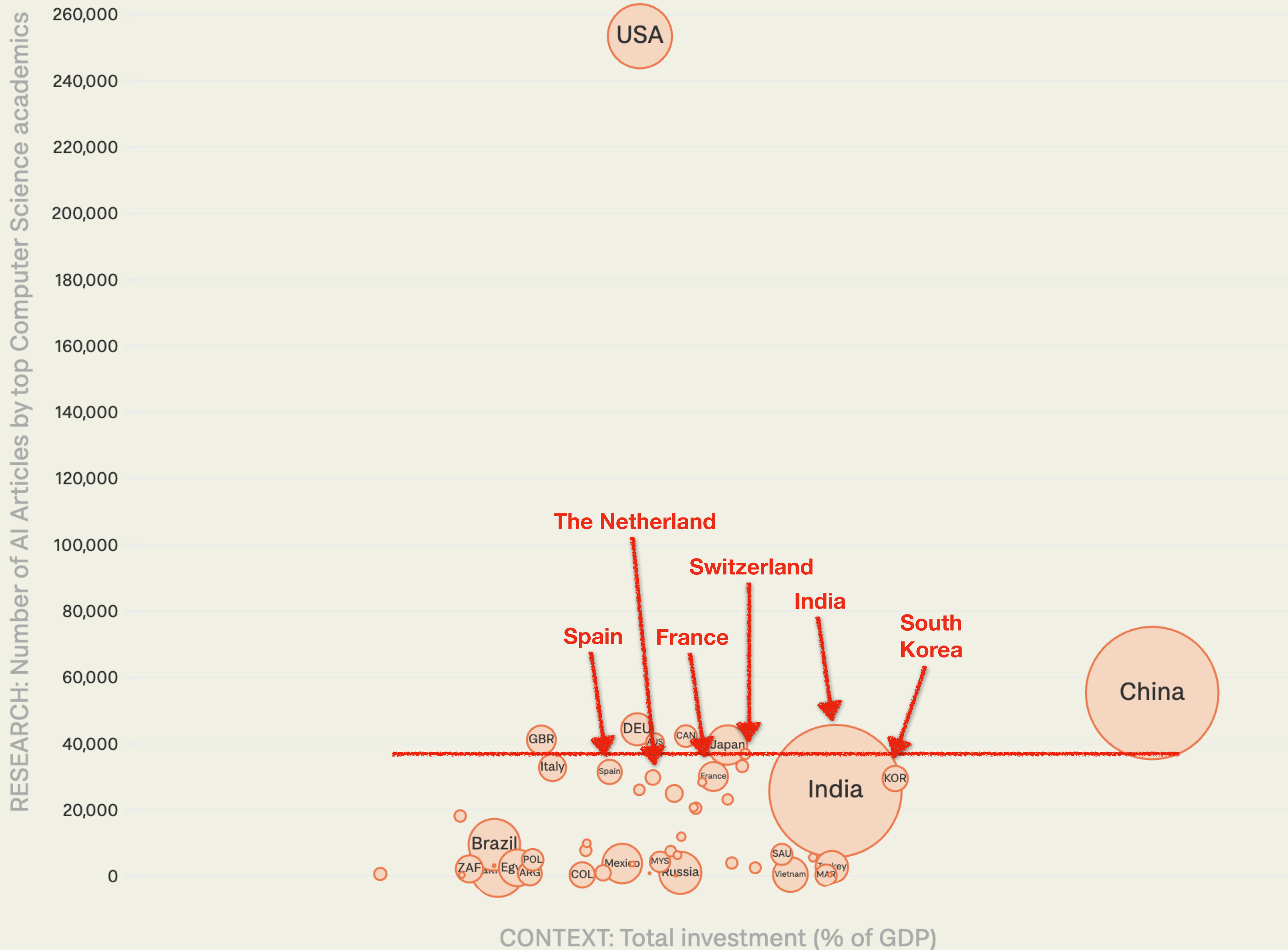
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Scientific Research Mission (1)

- **Supporting the adoption of AI applications with the current technologies (from now to next 5 years)**
 - **AI projects**
 - Use-cases design
 - Technology customization
 - Research and development
 - **Competence**
 - Technical education
 - Non-technical education

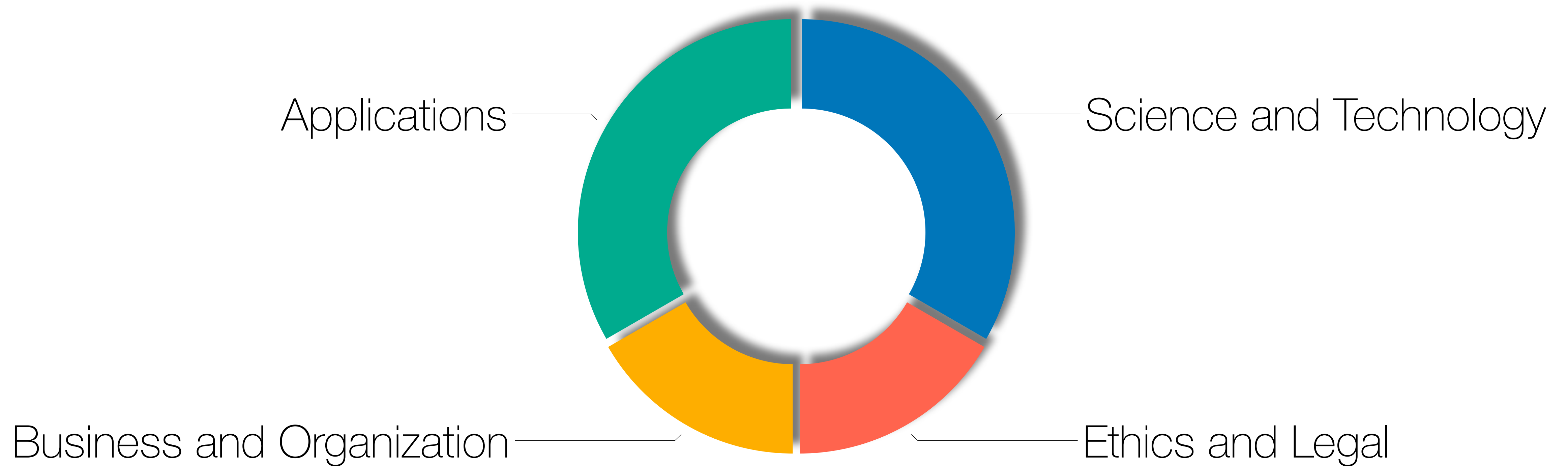
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 - **Competence**
 - Technical education
 - Non-technical education
- **Supporting the development of the technologies of tomorrow (from next 5 years to next 10 years)**
 - **Foundational research**
 - **Societal impact challenges**

Scientific Research Mission (2)

- **Communication to citizens**
 - **Explaining what is AI**
 - **Explaining advantages, drawbacks, and perils**

Multidisciplinary Expertise





Inspiring the development of AI for the benefit of all

Located in the heart of Quebec's AI ecosystem, Mila is a community of more than 1,200 researchers specializing in machine learning and dedicated to scientific excellence and innovation.

[LEARN MORE](#) →



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A major university research centre

Mila is the result of a unique collaboration between Université de Montréal and McGill University, in close collaboration with Polytechnique Montréal and HEC Montréal. The institute also hosts professors from Université Laval in Quebec City, Université Sherbrooke and the École de technologie supérieure in Montreal, bringing together over 1,000 individuals advancing AI for the benefit of all. Since 2017, Mila and its sister institutes, Amii (Alberta) and Vector (Ontario), play a central role in the Pan-Canadian Artificial Intelligence Strategy—the first national AI strategy in the world—led by CIFAR.

Annual contribution

- over 150 applied and fundamental research projects
- 700 students, interns and research assistants trained
- close to 300 scientific publications



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Mila - Quebec Artificial Intelligence Institute, is recognized worldwide for its major contributions to AI.

Today, the Mila community boasts the **largest concentration of deep learning academic researchers globally**. The institute is recognized for its expertise and significant contributions in areas such as modeling language, machine translation, object recognition and generative models.

Since its inception, Mila focuses its mission on core research areas such as **health, environment and climate change, and AI ethics**. Mila extends its expertise and leadership in AI to deliver advances that will benefit all of society.

Research carried out at Mila is conducted using an Open Science approach to promote collaboration and foster knowledge transfer.

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An innovation hub for industry

Mila is a vector for development for industry partners here and abroad thanks to applied research and its large talent pool. The technology transfer teams at Mila develop AI solutions tailored to the specific needs of organizations that have the potential to accelerate their innovations.

Annual contribution

- nearly 90 industry partners
- nearly 40 startups
- 90 scientific publications co-authored with industry members
- ten applied research collaborations
- a dozen targeted interventions with SMEs

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Four strategic pillars

Mila is governed by four strategic pillars that guide its decision-making and commitment.

- 1. AI Talent**
 Attract, train and retain in Quebec a diversified talent pool recognized globally for their high-level expertise.
- 2. AI Adoption**
 Contribute to partnerships, projects and initiatives to accelerate the deployment and adoption of AI.
- 3. Cutting-edge research**
 Achieve the highest levels of scientific leadership in the development of AI.
- 4. Social Influence**
 Develop perspectives on the potential of AI and the issues related to its use.

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We are the UK's national institute for data science and artificial intelligence.

Our strategy

Impact

News

AI could help automate around 84% of repetitive service transactions across government

Artificial intelligence (AI) could help automate around 84% of repetitive transactions across 200 government...

Wednesday 20 Mar 2024



News

Three in four women not comfortable expressing political opinions online

Three quarters (77%) of women are not comfortable expressing political opinions online because of...

Wednesday 20 Mar 2024



French National Artificial Intelligence Research Program

Interdisciplinary Institutes of Artificial Intelligence (3IA): the four selected projects



LE GRAND PLAN D'INVESTISSEMENT

4

4 Interdisciplinary Institutes for Artificial Intelligence (3IA)

190

Chairs to develop talent within the AI ecosystem, including 43 outside the 3IA

1

Supercomputer Jean Zay

100

million of euros of projects financed by the ANR



Tübingen AI Center

A thriving hub for European AI with purpose

FCAI

Finnish Center for Artificial Intelligence

Search



SUSTAINABLE AI SOLUTIONS WEBINAR ON APRIL 16



AI DAY: CALL FOR PRESENTATIONS FROM RESEARCHERS AND INDUSTRY



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e l l i s

European Laboratory for Learning and Intelligent Systems

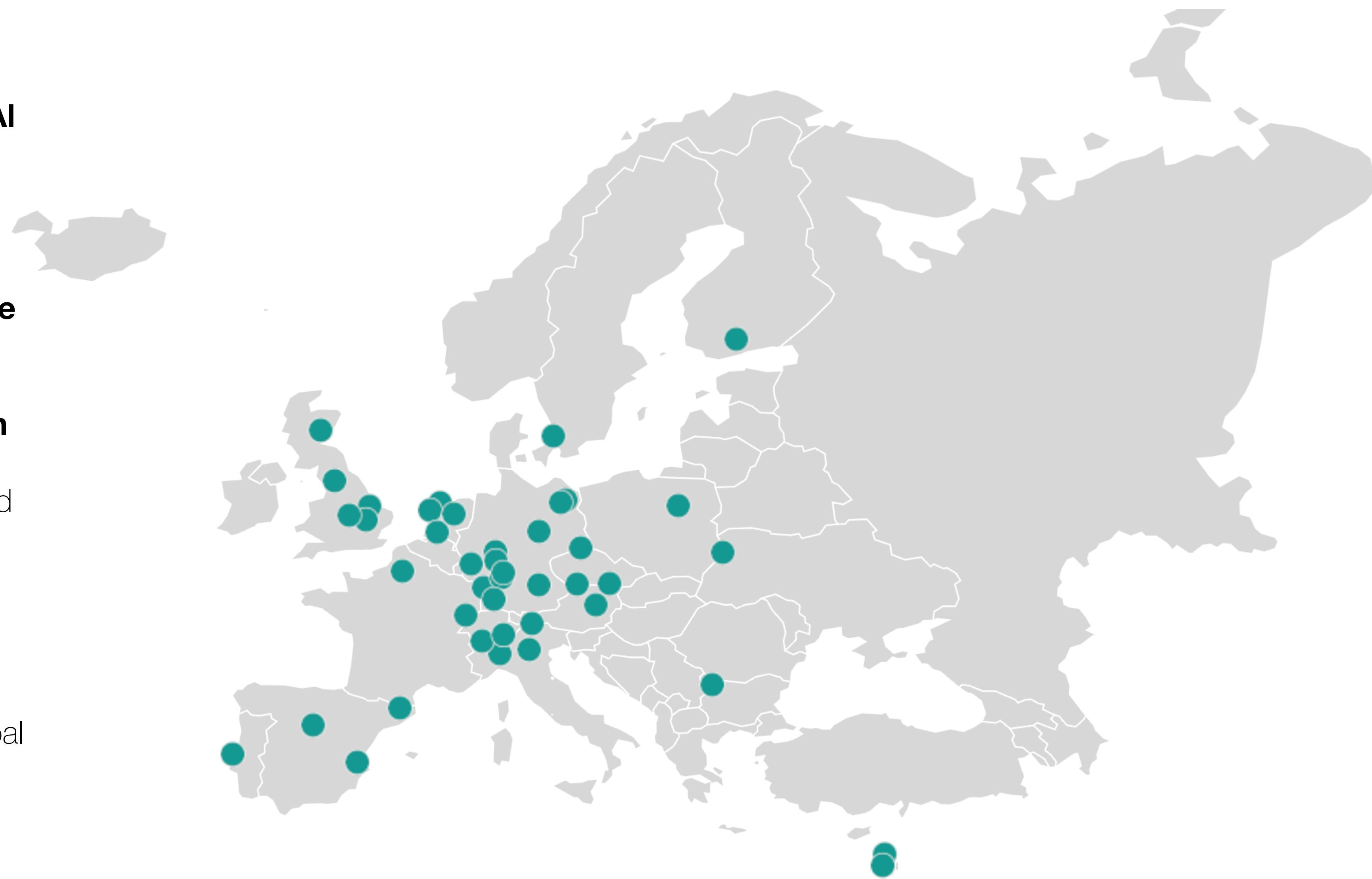
ELLIS - the European Laboratory for Learning and Intelligent Systems - is a pan-European AI network of excellence which focuses on fundamental science, technical innovation and societal impact. Founded in 2018, ELLIS builds upon machine learning as the driver for modern AI and aims to secure Europe's sovereignty in this competitive field by creating a multi-centric AI research laboratory. ELLIS wants to ensure that the highest level of AI research is performed in the open societies of Europe and follows a three-pillar strategy to achieve that.

ELLIS is a **pan-European research network** connecting scientists and labs in the field of machine learning — **inspired by MILA Lab**

It is committed to **ethical and trustworthy AI** and aims to **attract top talent** for basic research, technical innovation and positive societal impact

The mission of ELLIS is to benefit Europe in two ways:

1. By ensuring that the **best basic research in AI** is performed in Europe, to enable Europe to shape how machine learning and modern AI change the world
2. By contributing to **positive economic impact** and job creation in Europe. We believe that outstanding and **free basic research** is a key factor to achieve this goal





Università
Bocconi
MILANO



UNIVERSITÀ
DEGLI STUDI
DI MILANO



POLITECNICO
MILANO 1863

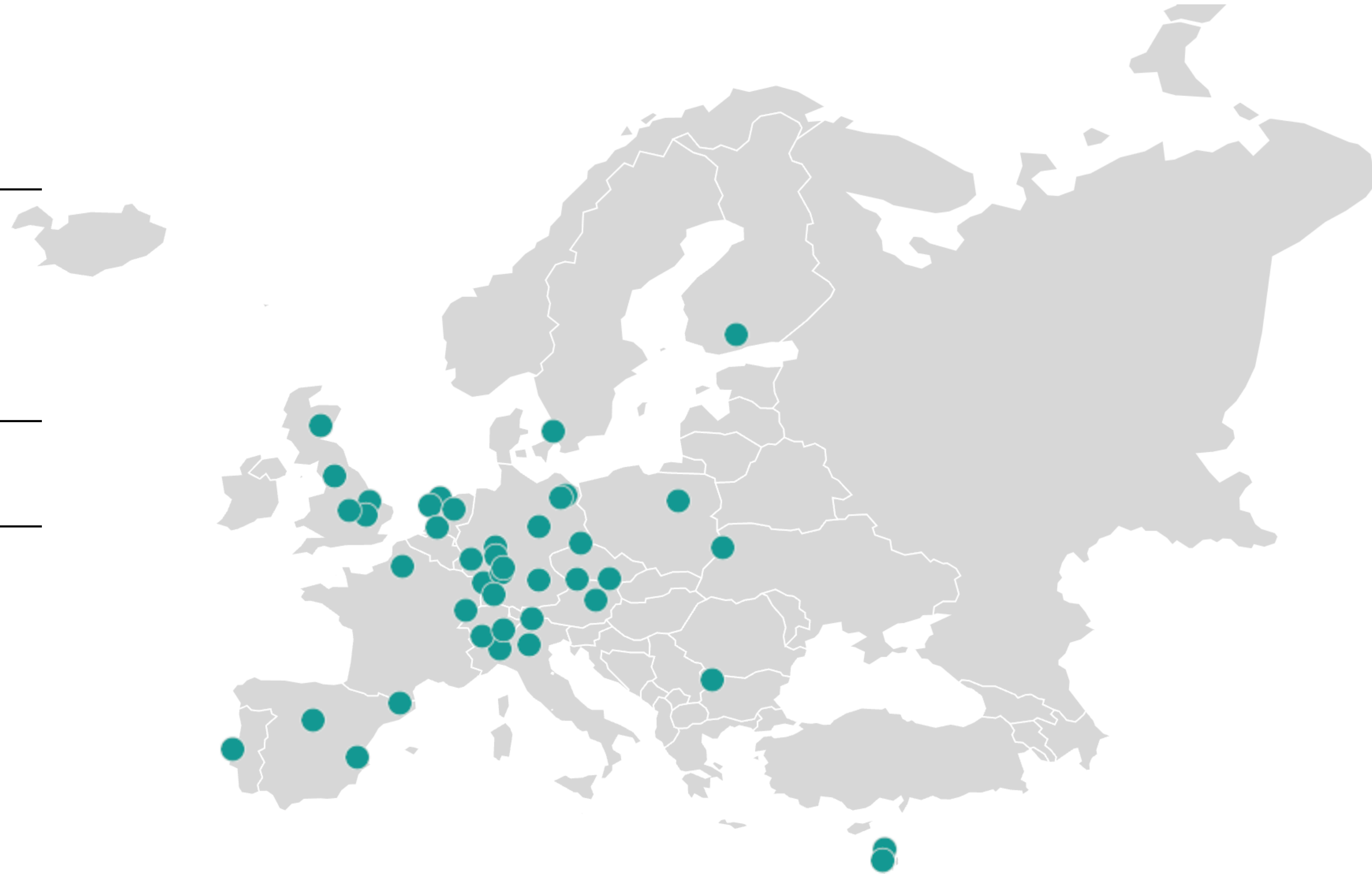
27 ellis members

5 fellows

1 scholar

Major Italian ellis unit

Open to members from **other**
Universities located in Lombardy



16 November 2021



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European Laboratory for Learning and Intelligent Systems

MILAN



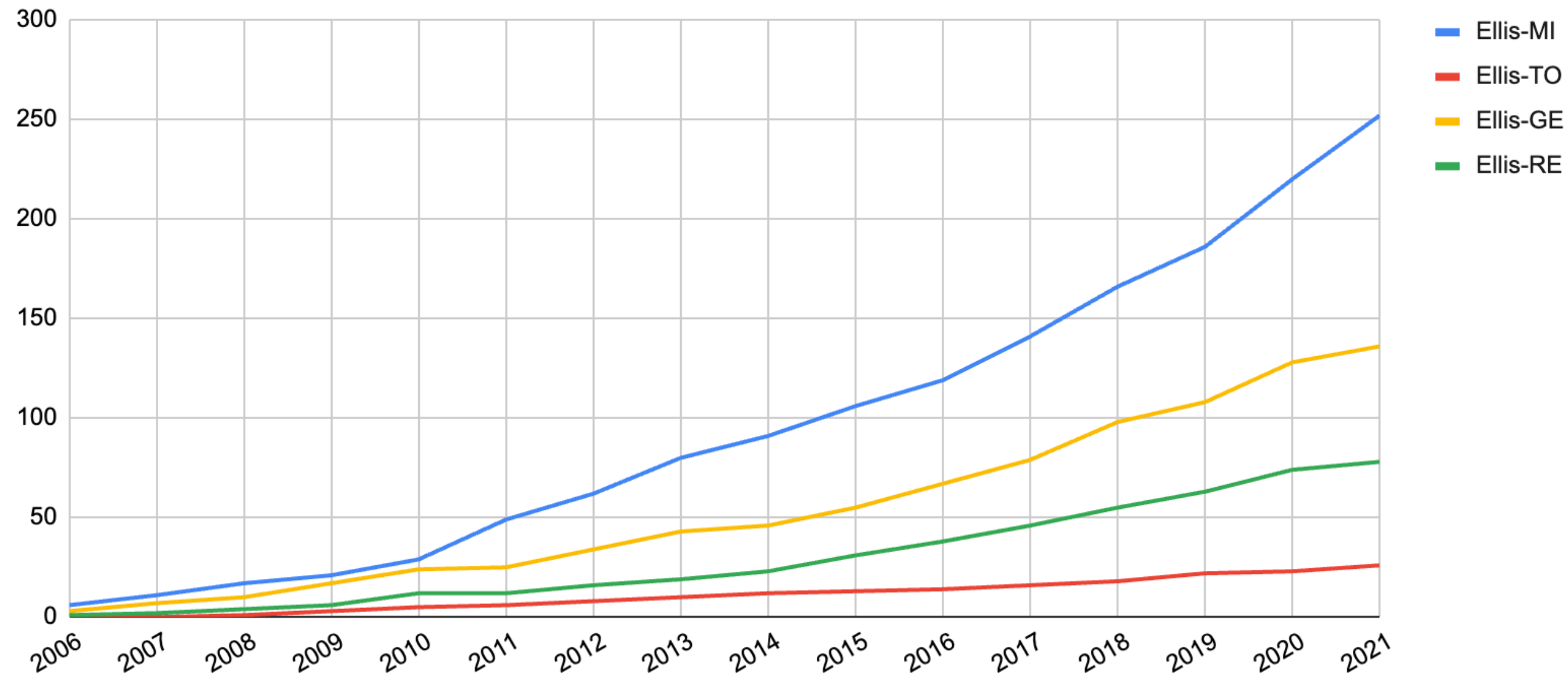
Nicolò
Cesa-Bianchi

Gabriella
Pasi

Nicola
Gatti

Riccardo
Zecchina

Cumulative number of papers since 2006 per ELLIS Unit (venues listed by ELLIS)



Artificial Intelligence Research and Innovation Center

L'Artificial Intelligence Research and Innovation Center del Politecnico di Milano porta AI e innovazione dai laboratori di ricerca del Politecnico di Milano alla tua azienda.



Master of Science in Artificial Intelligence

osservatori.net digital innovation

Smart Home: dove c'è IoT, c'è casa

Presentazione dei risultati della Ricerca 2019-20 Osservatori Internet of Things

18 Febbraio 2020

Politecnico Milano 1863

Matteo Acerbis
Amministratore Delegato
DICE

"Qualche anno fa il mondo in cui gli ambienti e i dispositivi che li circondano si adattano alle nostre esigenze, rendendo più semplice la vita di tutti, sembrava un sogno e mettendo a disposizione informazioni che prima non si conoscevano."

ARTIFICIAL INTELLIGENCE AND SOCIETY



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DI MILANO



G7 ITALIA
2024



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MILANO 1863

Nicolò Cesa-Bianchi

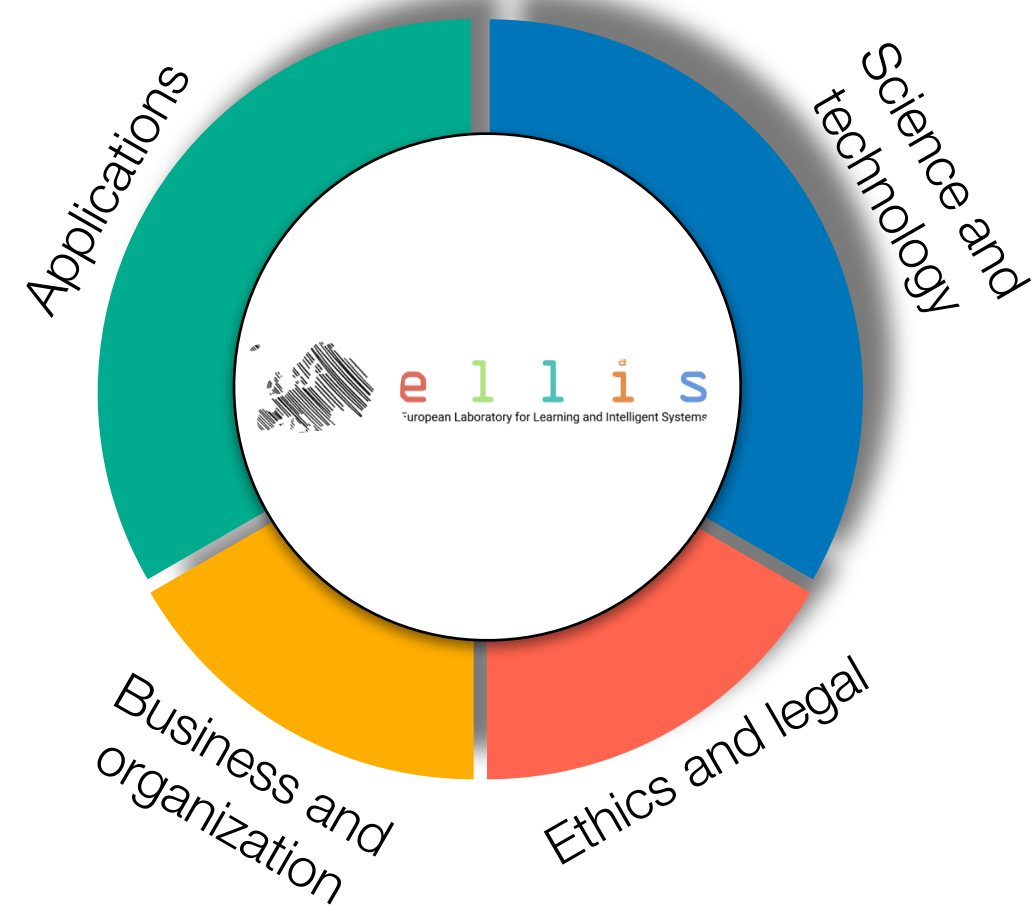


ACCADEMIA NAZIONALE DEI LINCEI

What we recommend



Research excellence in Lombardy

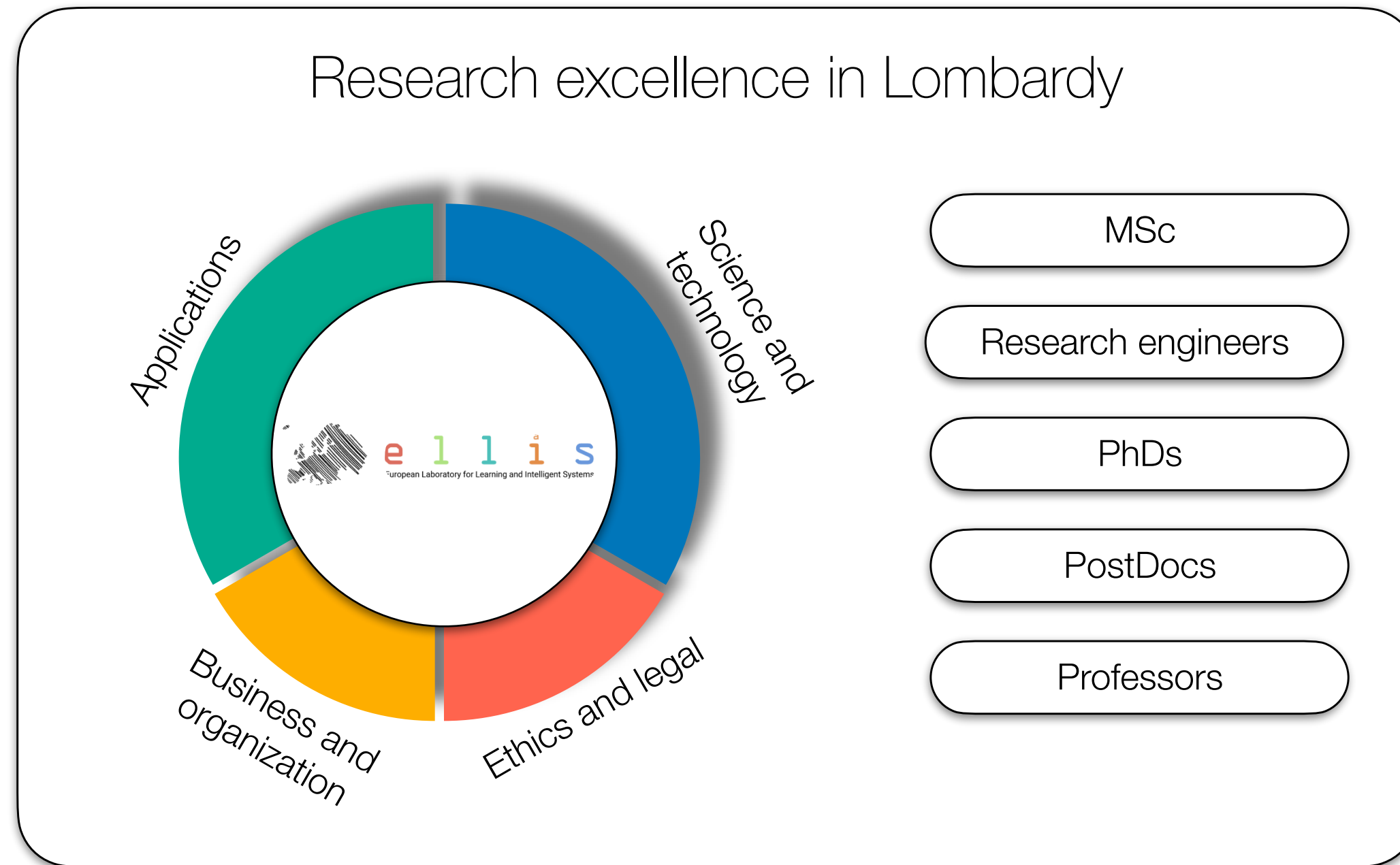
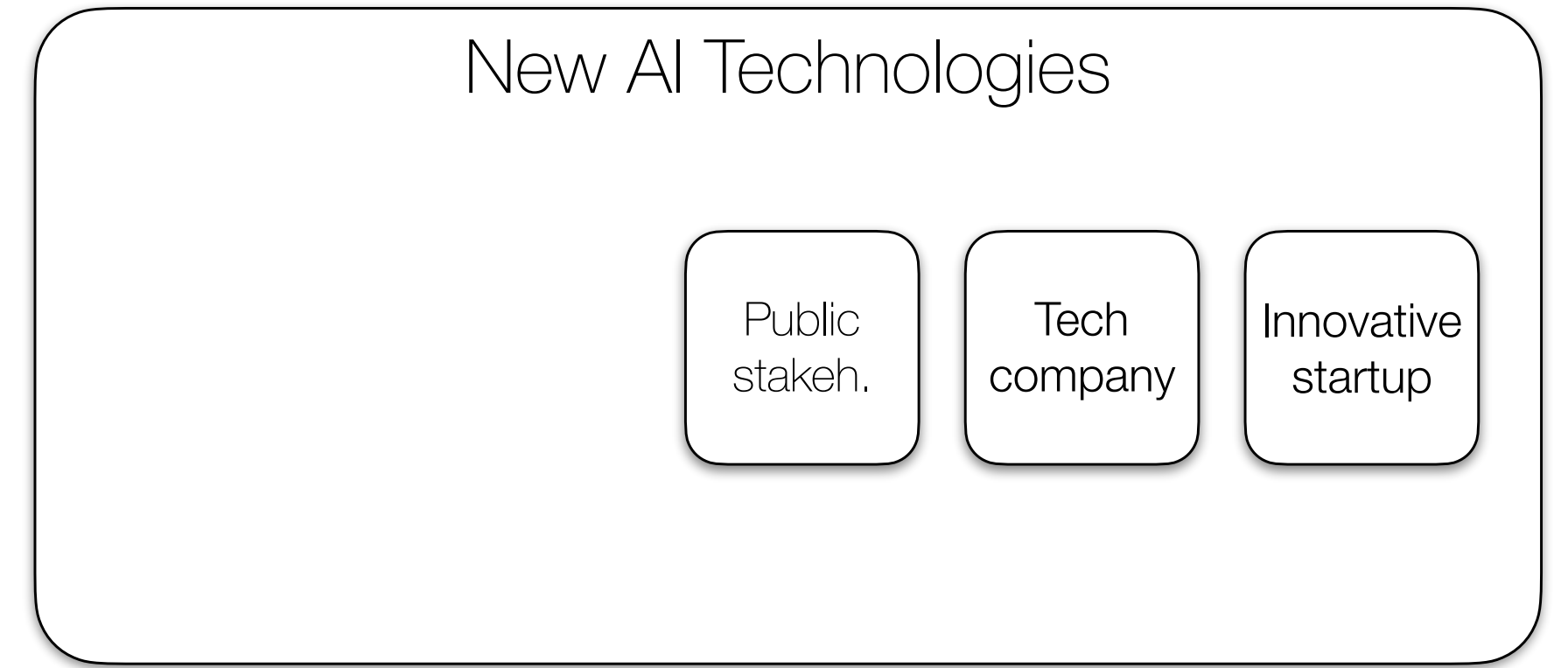
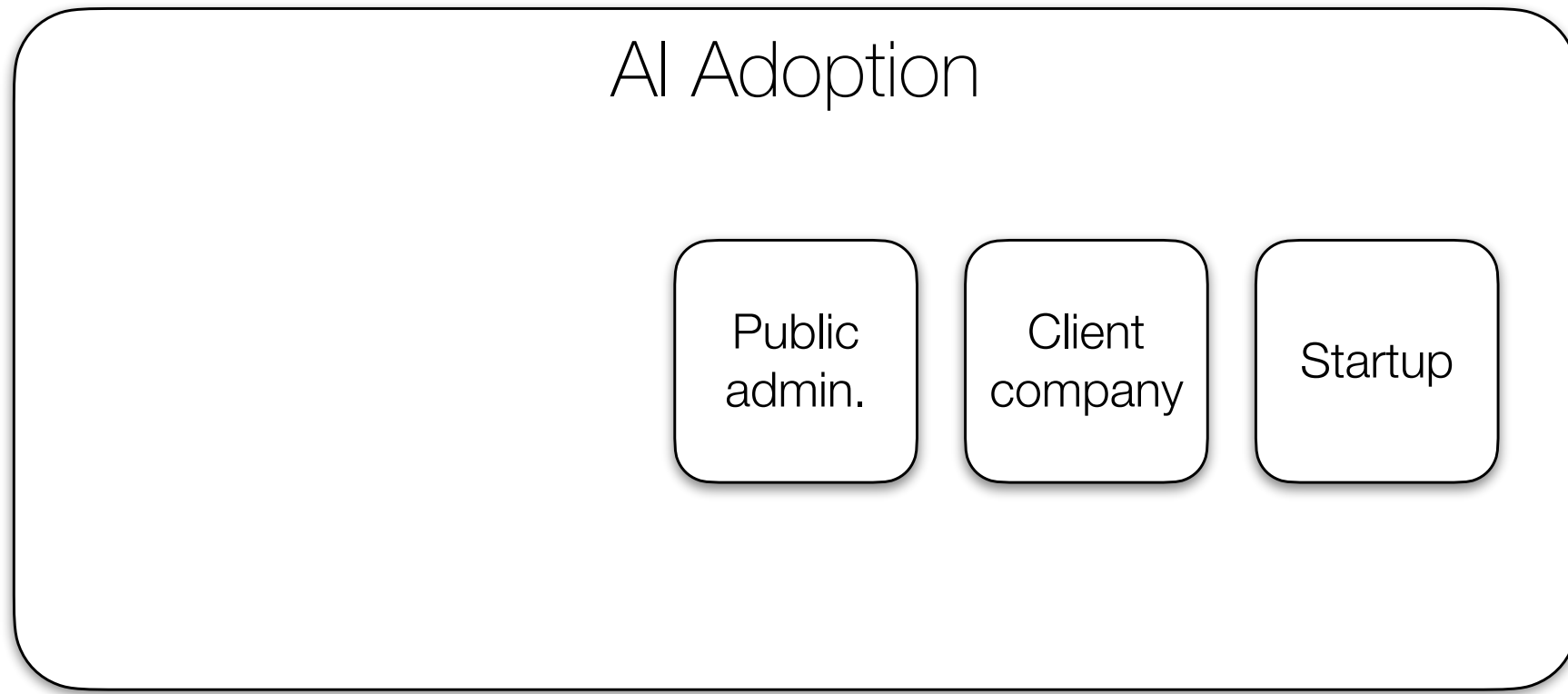


- MSc
- Research engineers
- PhDs
- PostDocs
- Professors

Network of AI companies

Trade associations

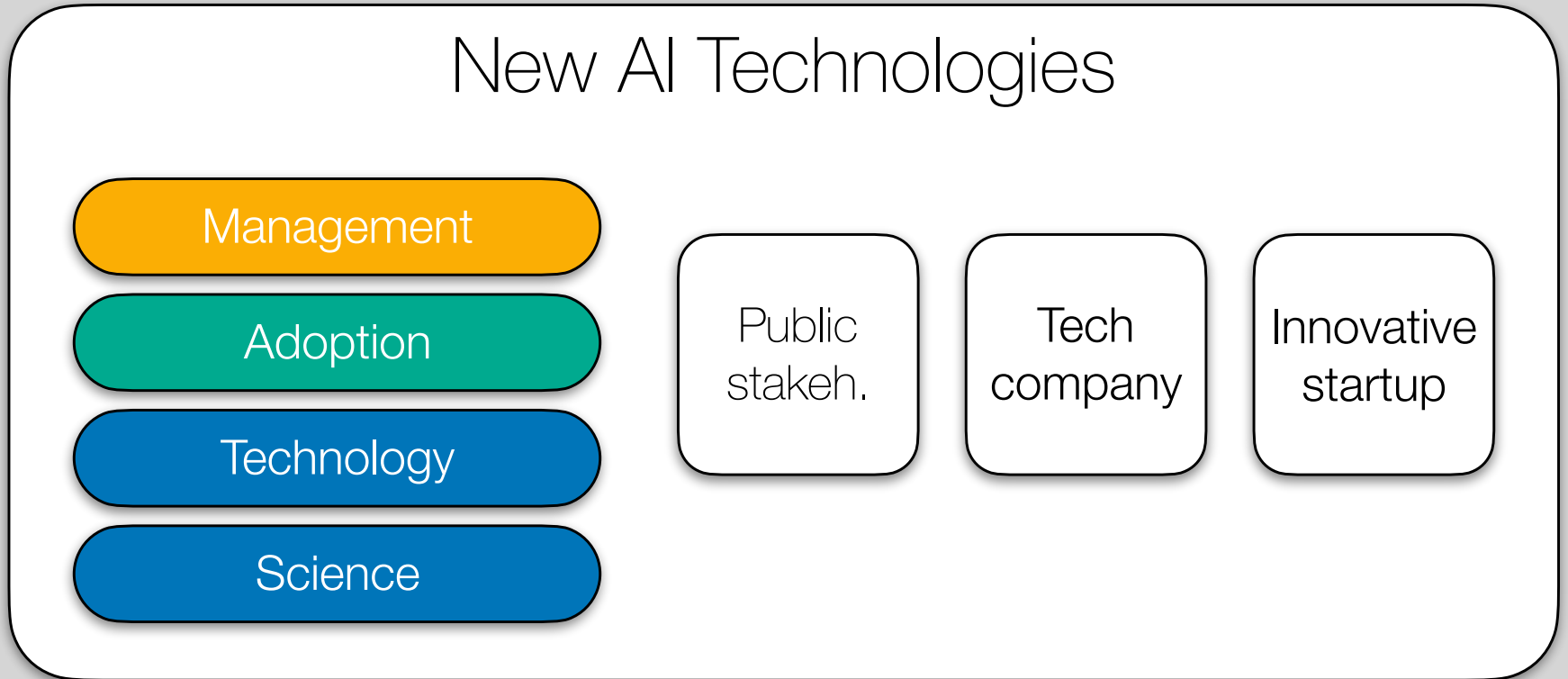
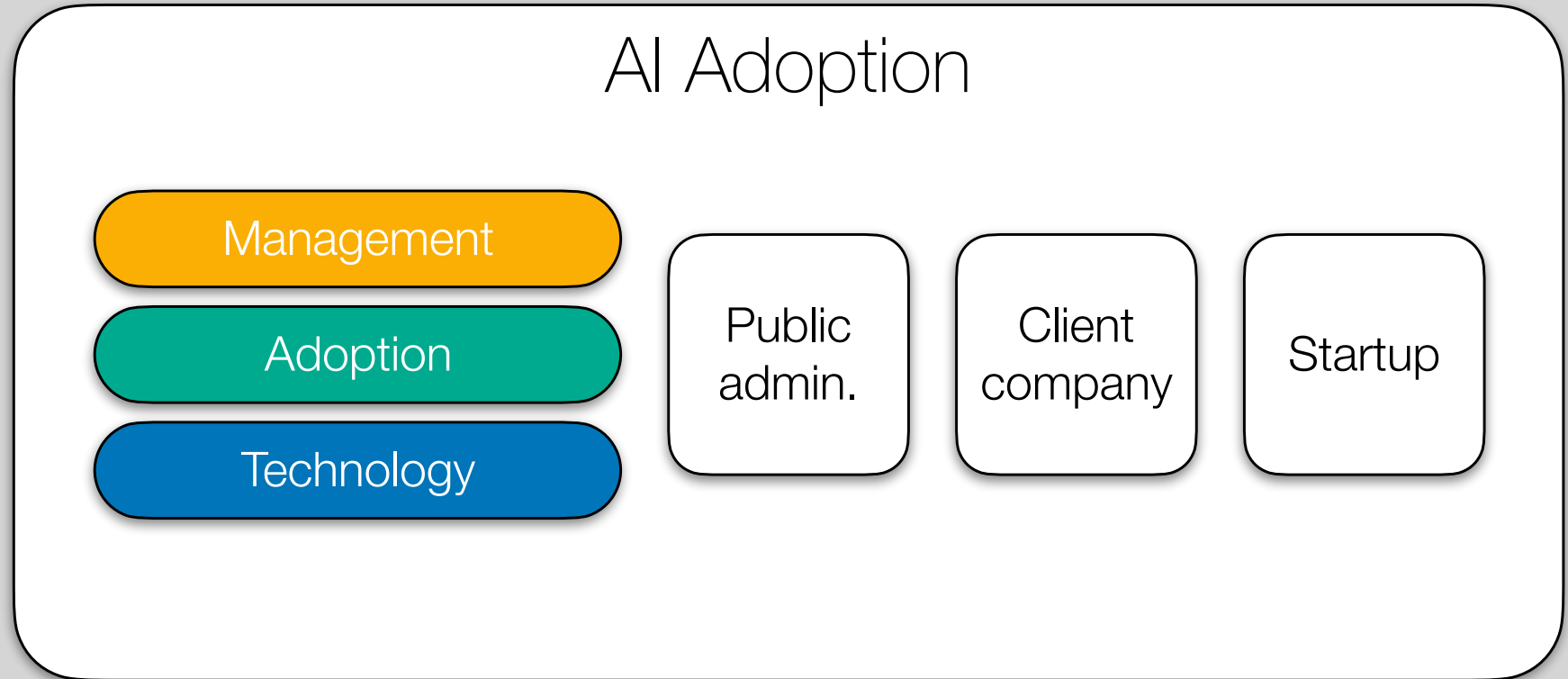
Citizens



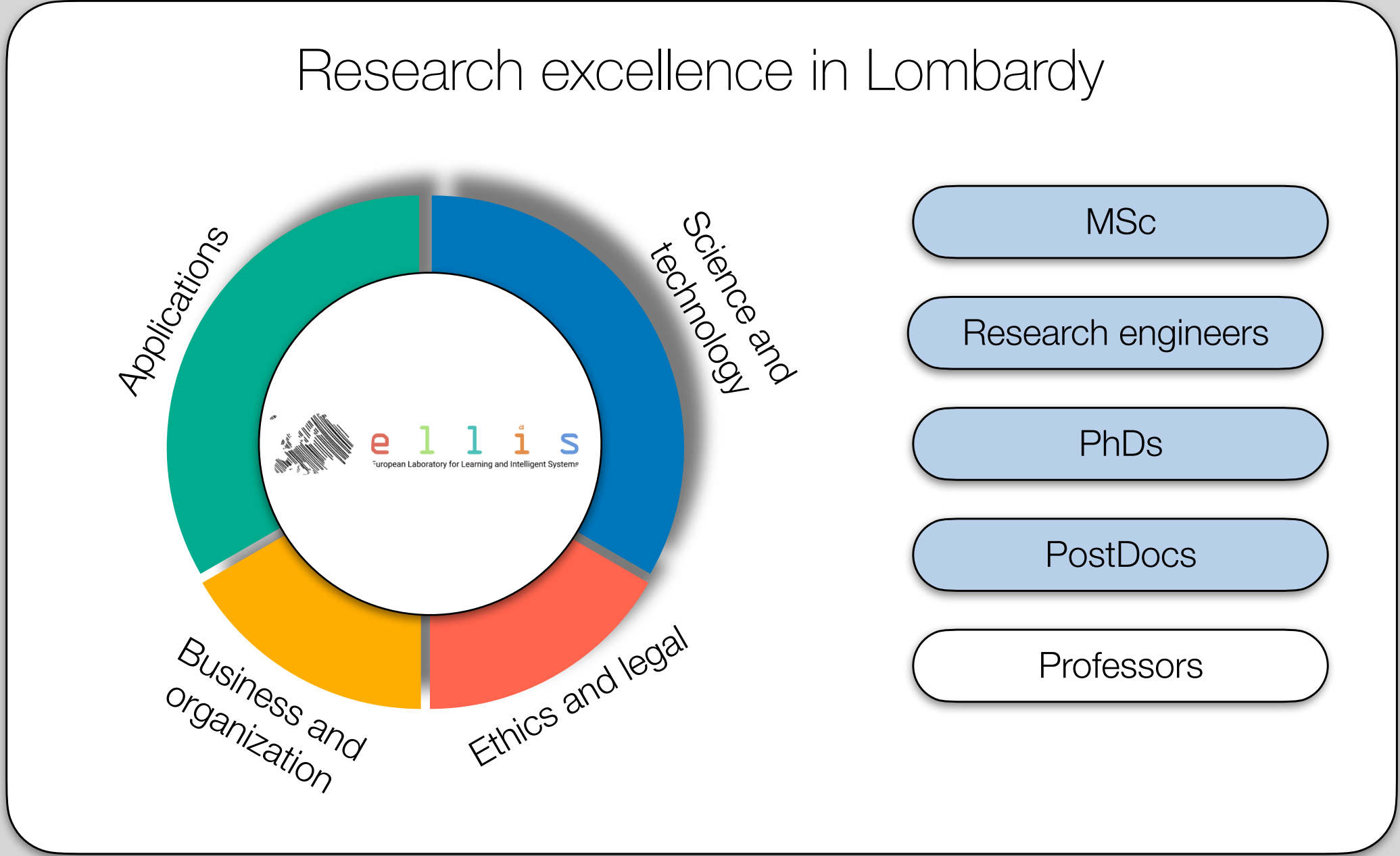
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Trade associations

Citizens



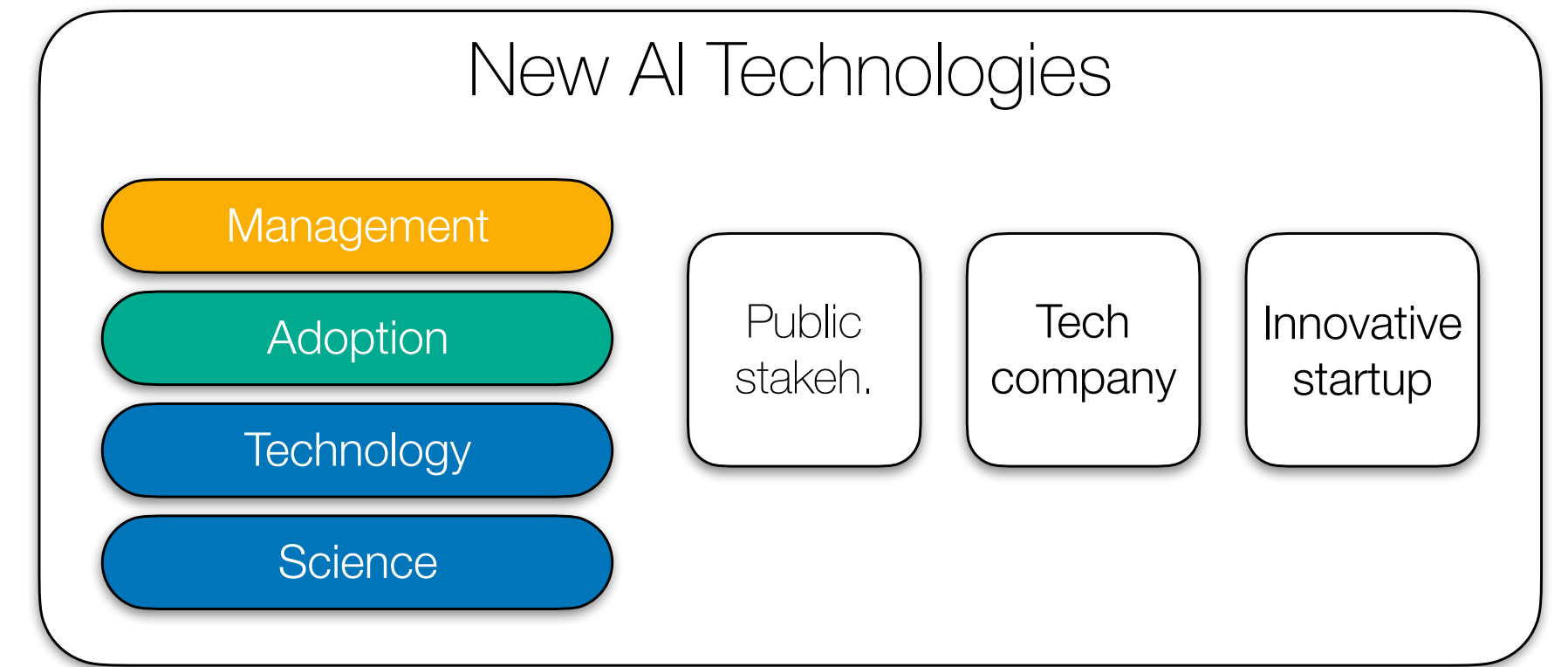
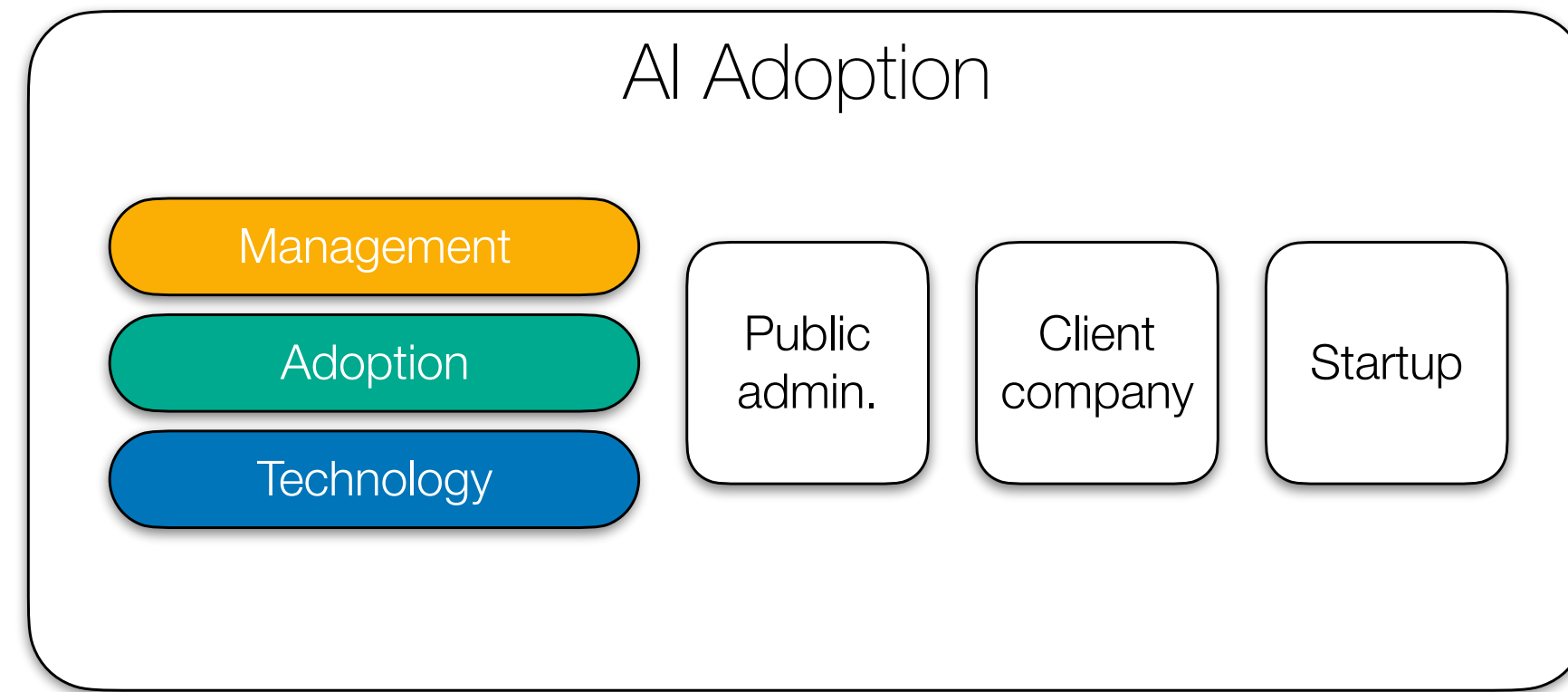
Human Resources (junior and senior)



Network of AI companies

Trade associations

Citizens



Divuligation

Education
(tech/regulation)

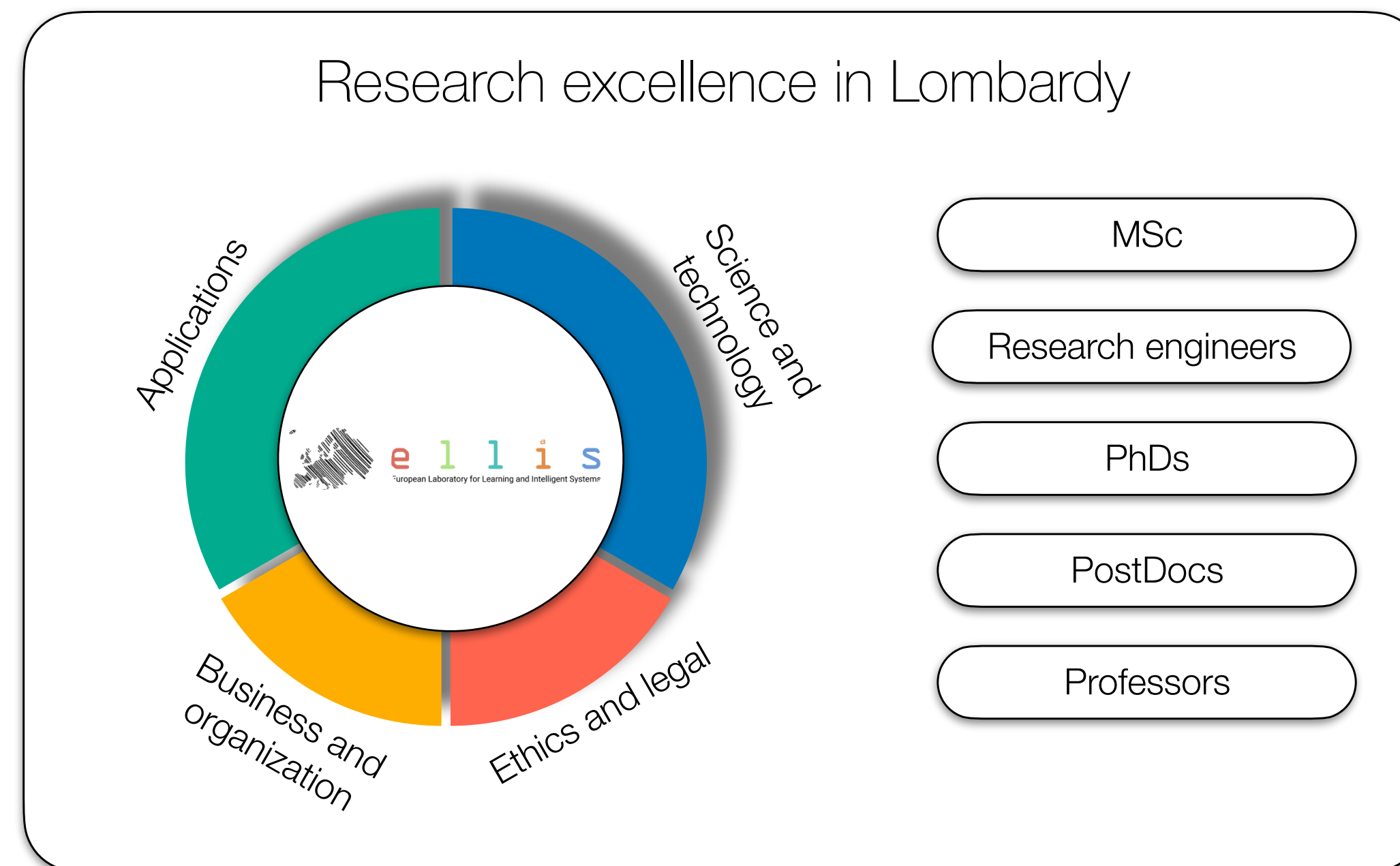
Assessment and
design thinking

Project supervision
(tech/regulation)

Development
(tech/regulation)

Research line
definition

Collaborative
research



Network of AI
companies

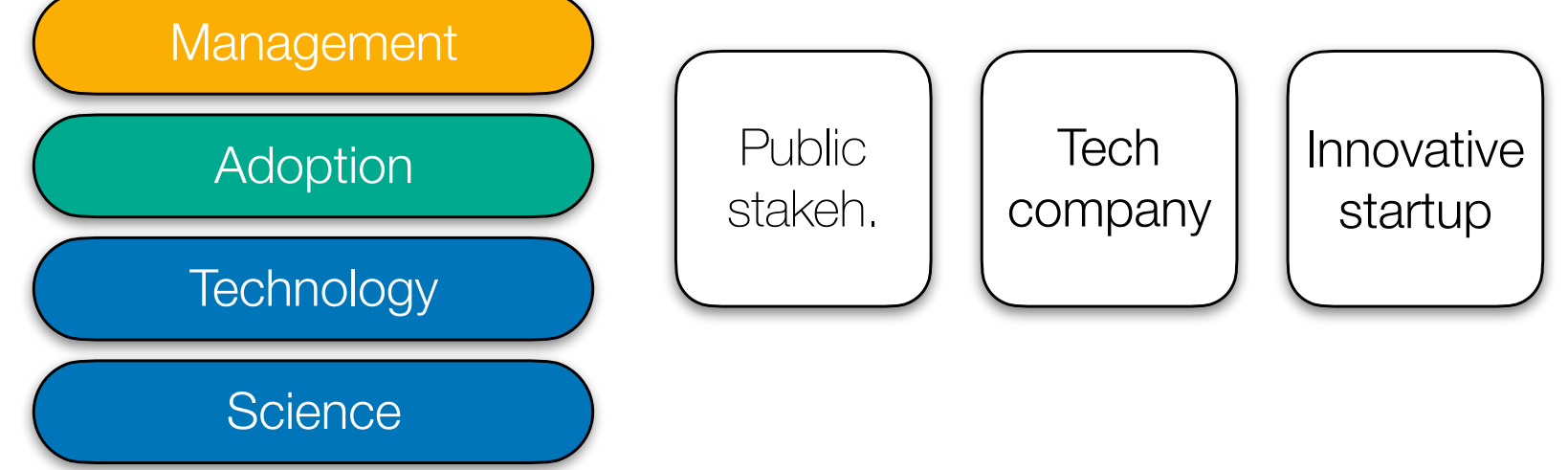
Trade associations

Citizens

AI Adoption



New AI Technologies



Divuligation

Education (tech/regulation)

Assessment and design thinking

Project supervision (tech/regulation)

Development (tech/regulation)

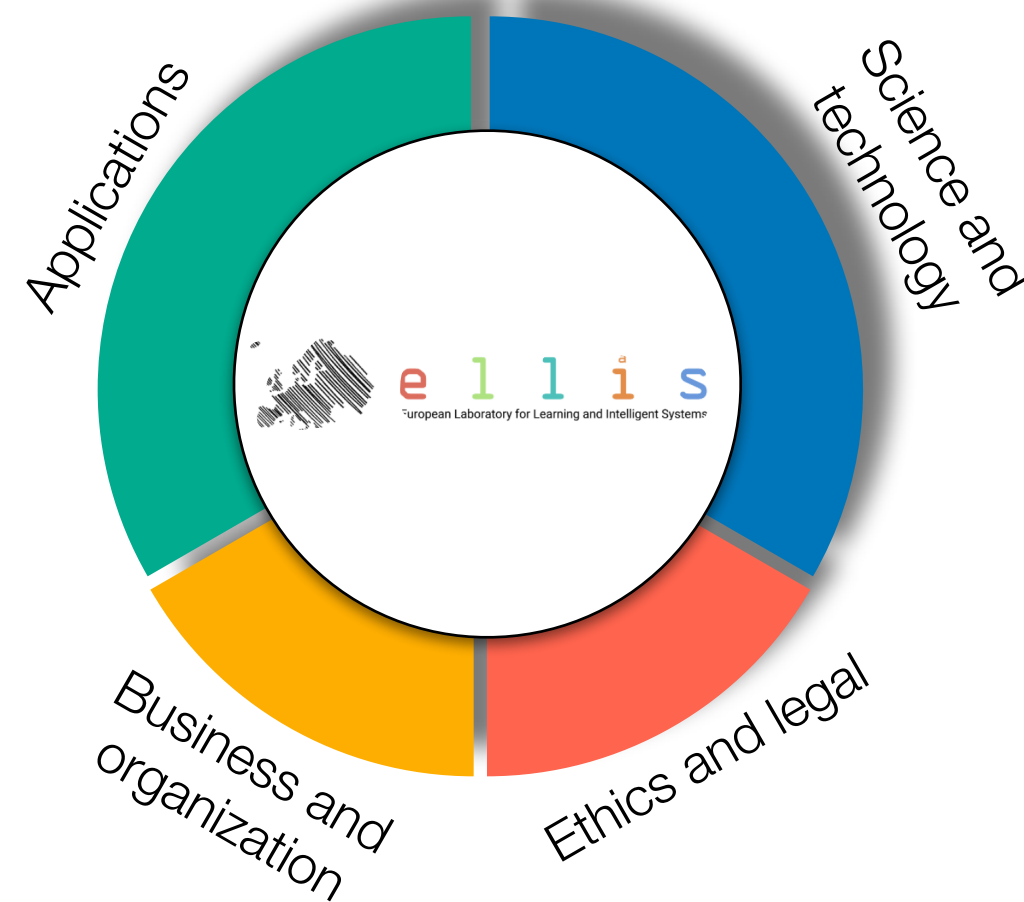
Research line definition

Collaborative research

Services to citizens



Research excellence in Lombardy

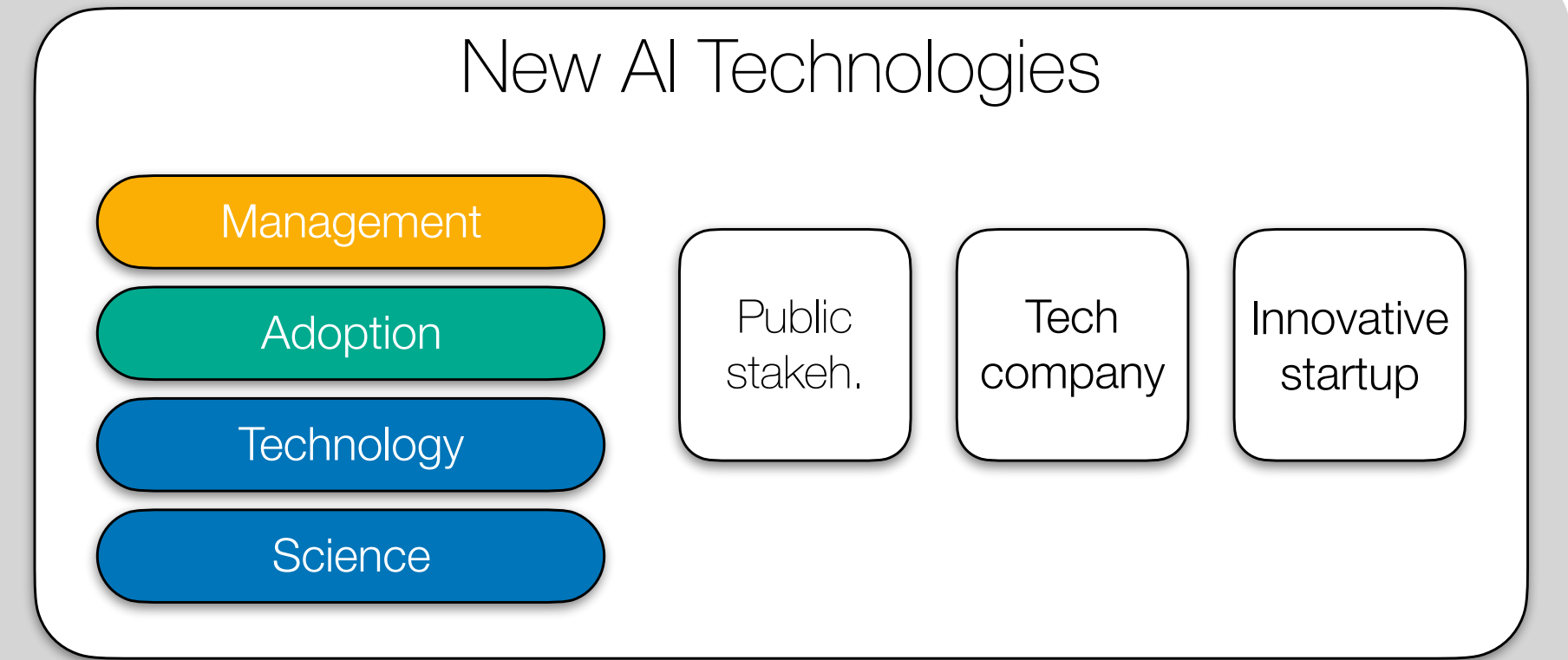
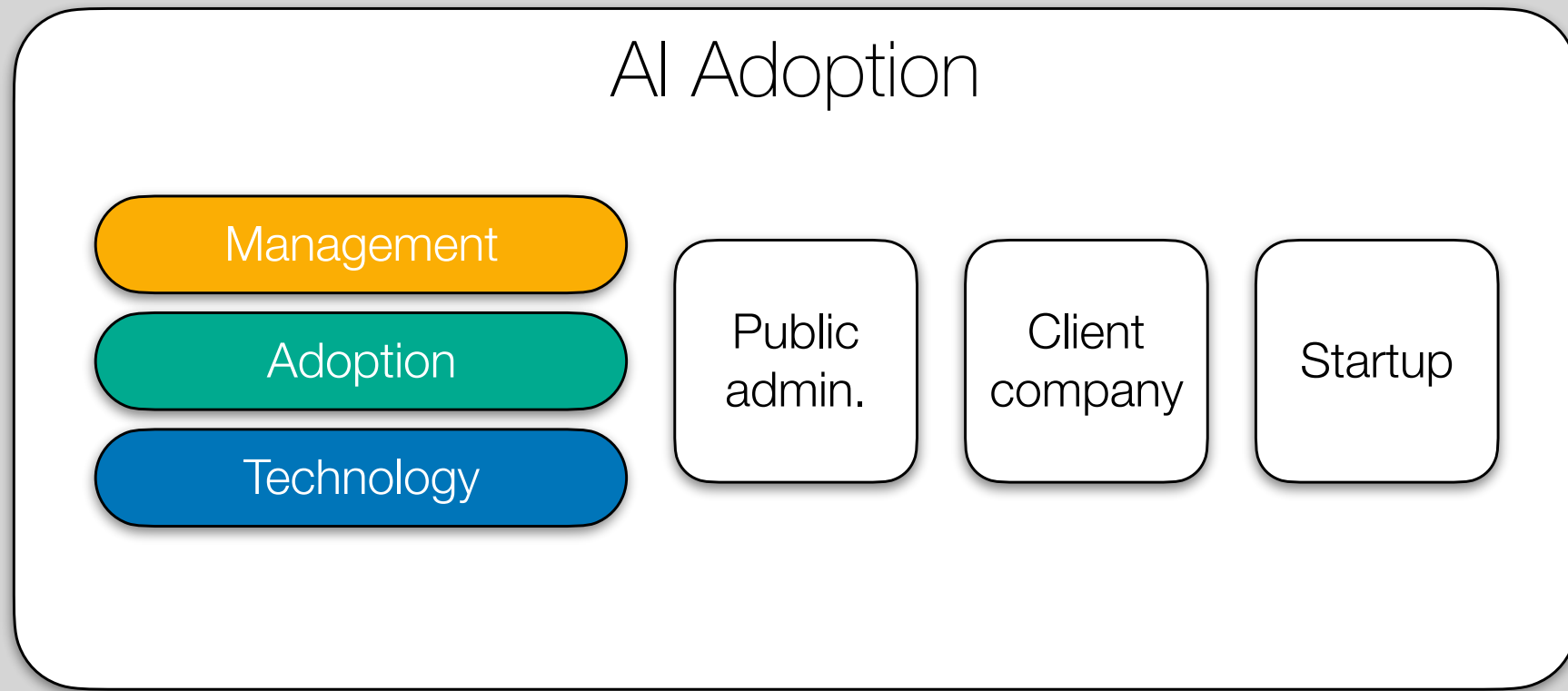


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Network of AI companies

Trade associations

Citizens



Divuligation

Education (tech/regulation)

Assessment and design thinking

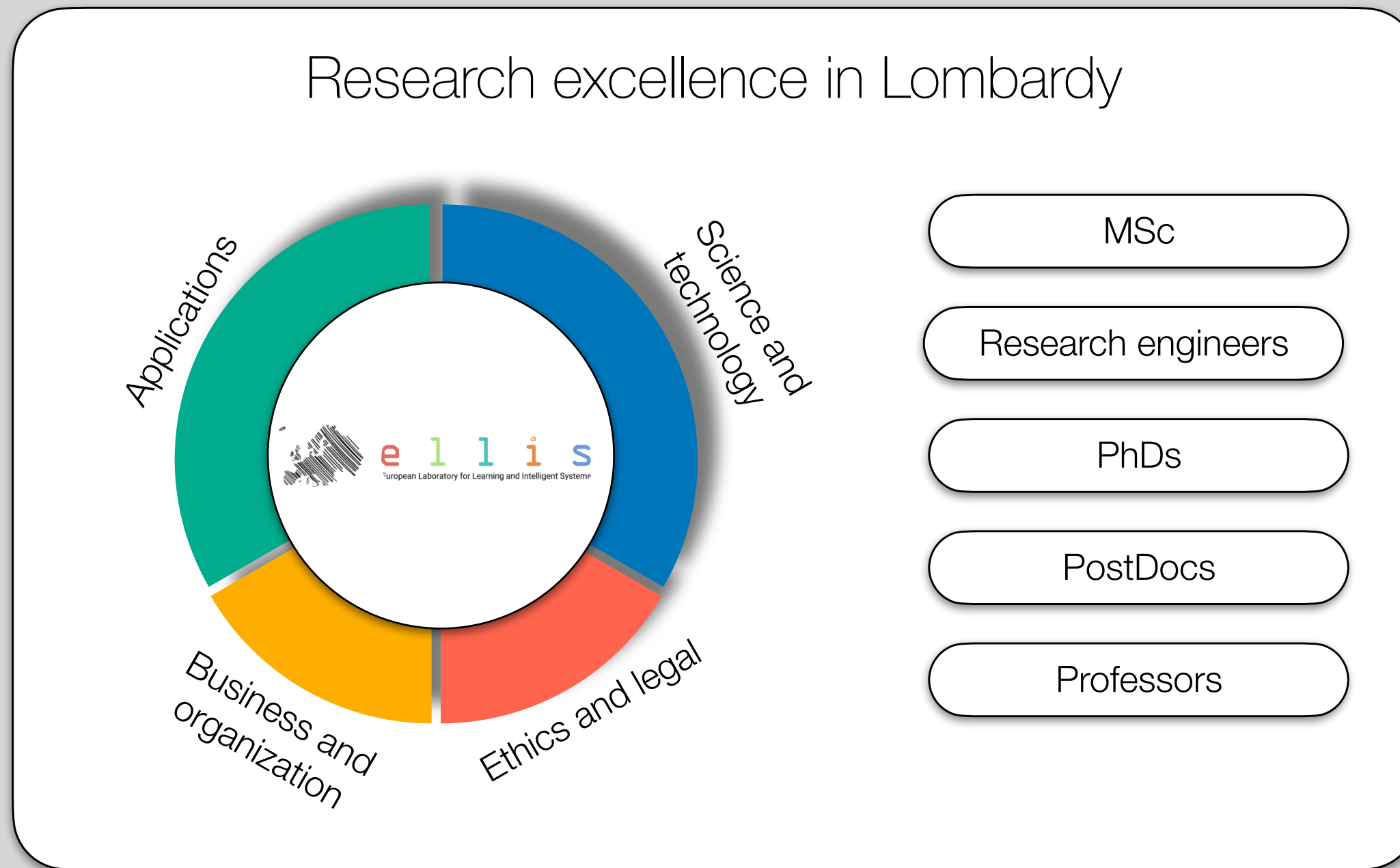
Project supervision (tech/regulation)

Development (tech/regulation)

Research line definition

Collaborative research

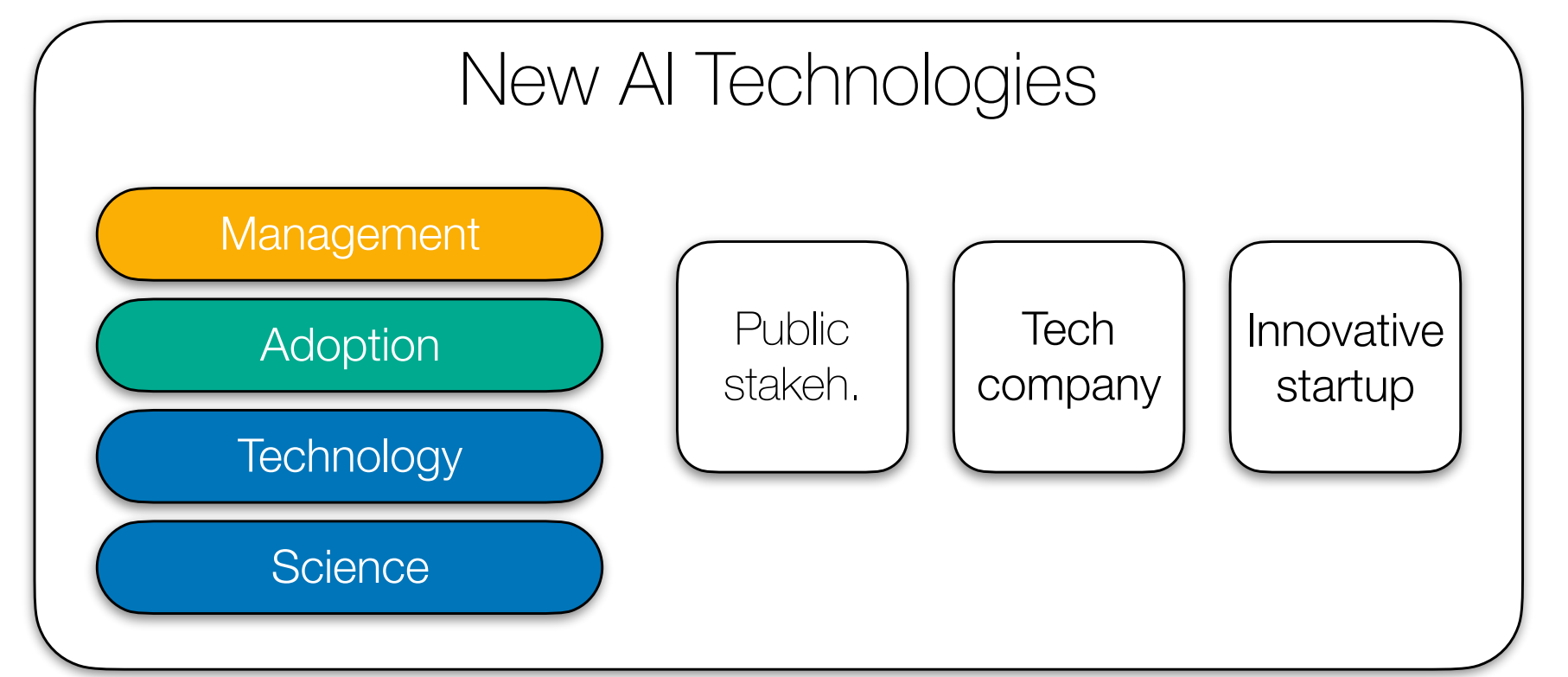
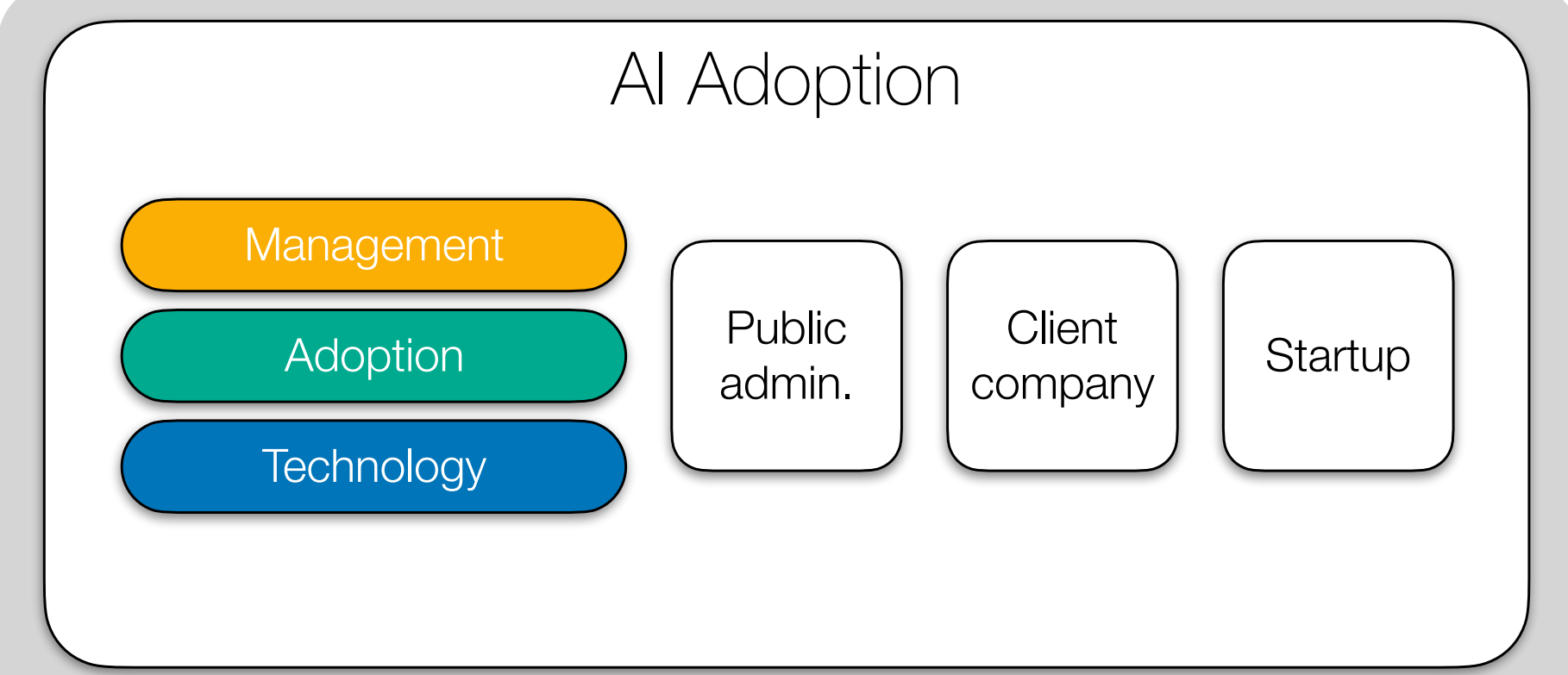
Services to companies



Network of AI companies

Trade associations

Citizens



Divuligation

Education (tech/regulation)

Assessment and design thinking

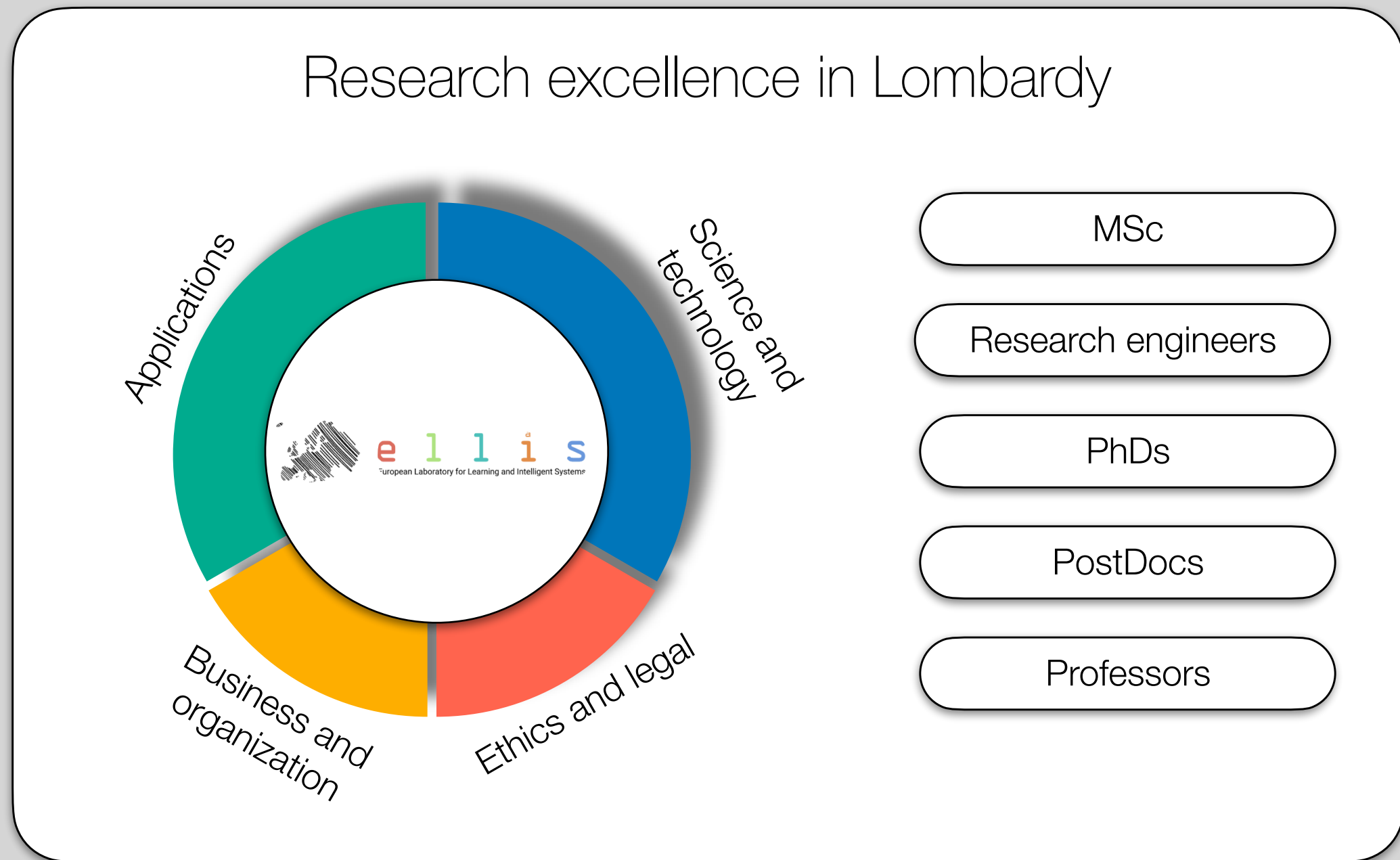
Project supervision (tech/regulation)

Development (tech/regulation)

Research line definition

Collaborative research

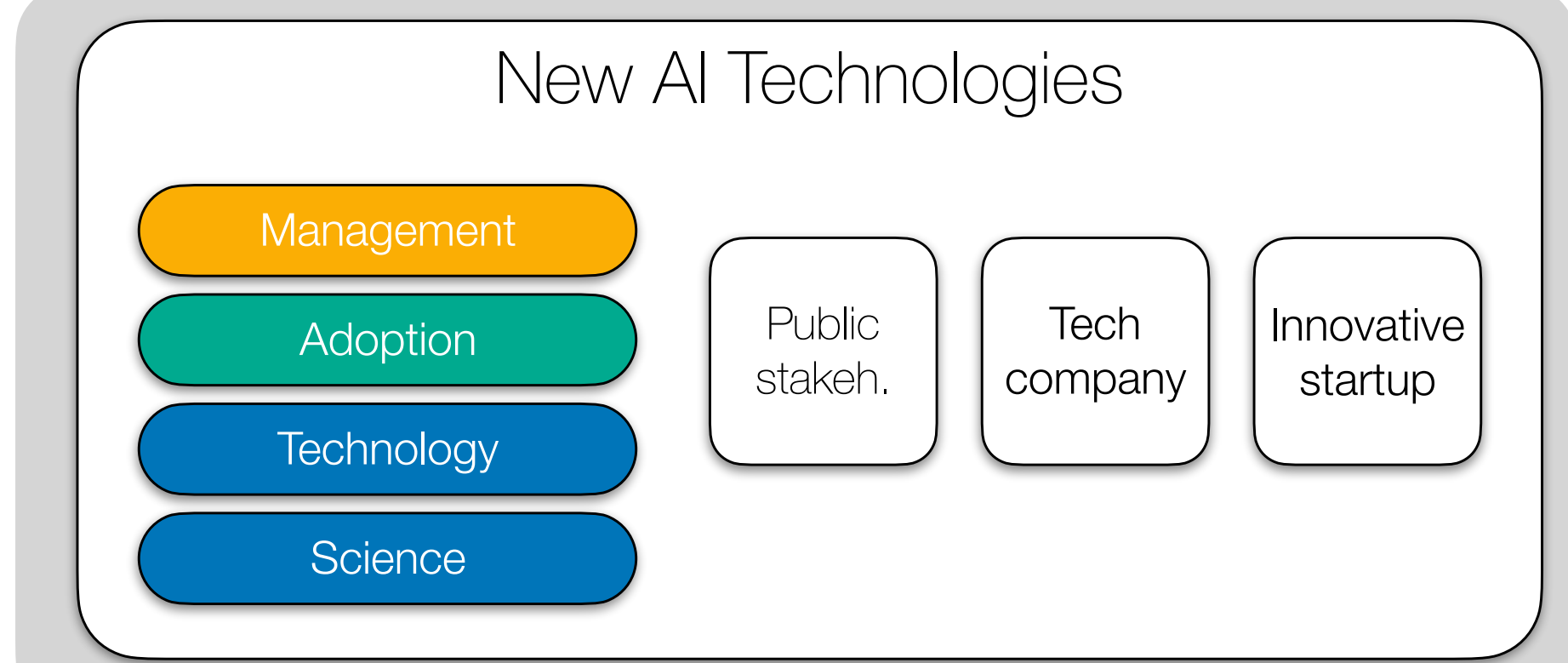
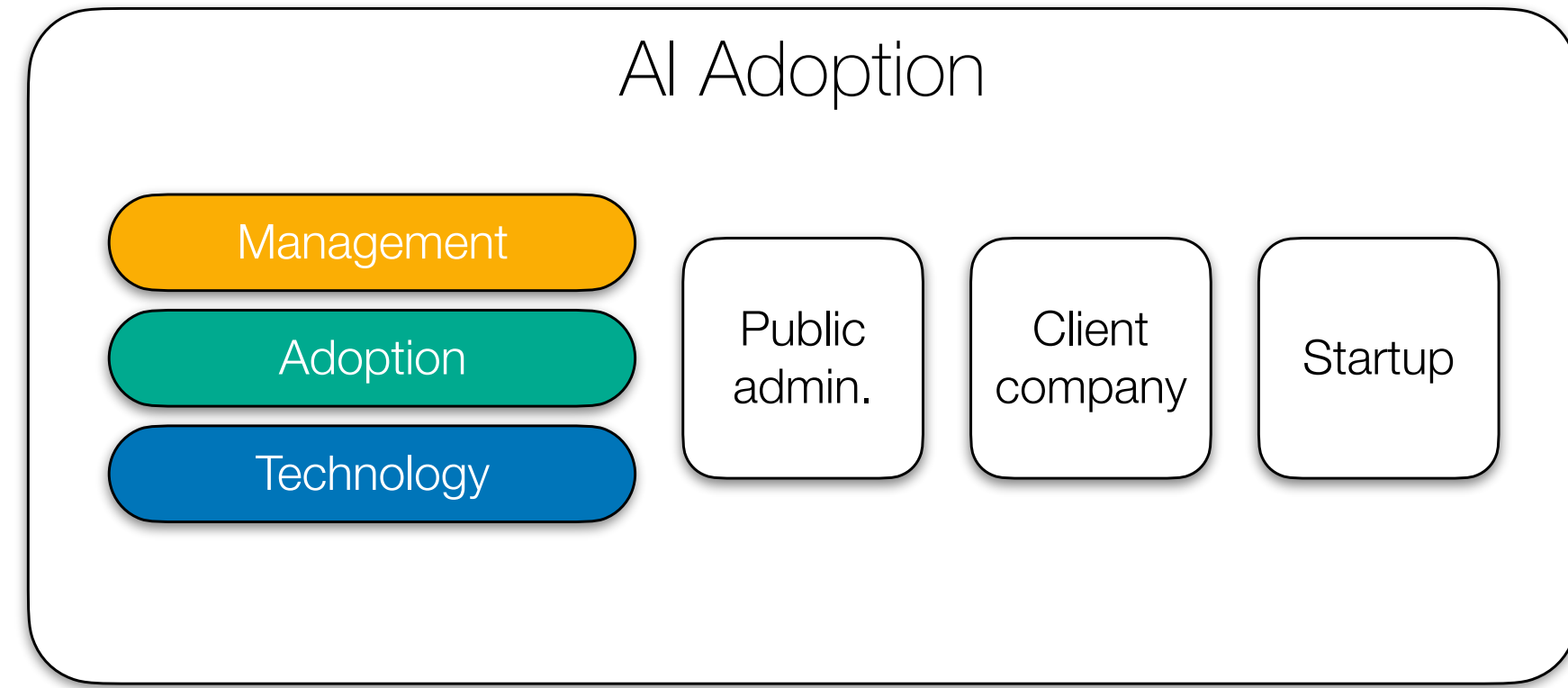
Services to companies



Network of AI companies

Trade associations

Citizens



Divuligation

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Assessment and design thinking

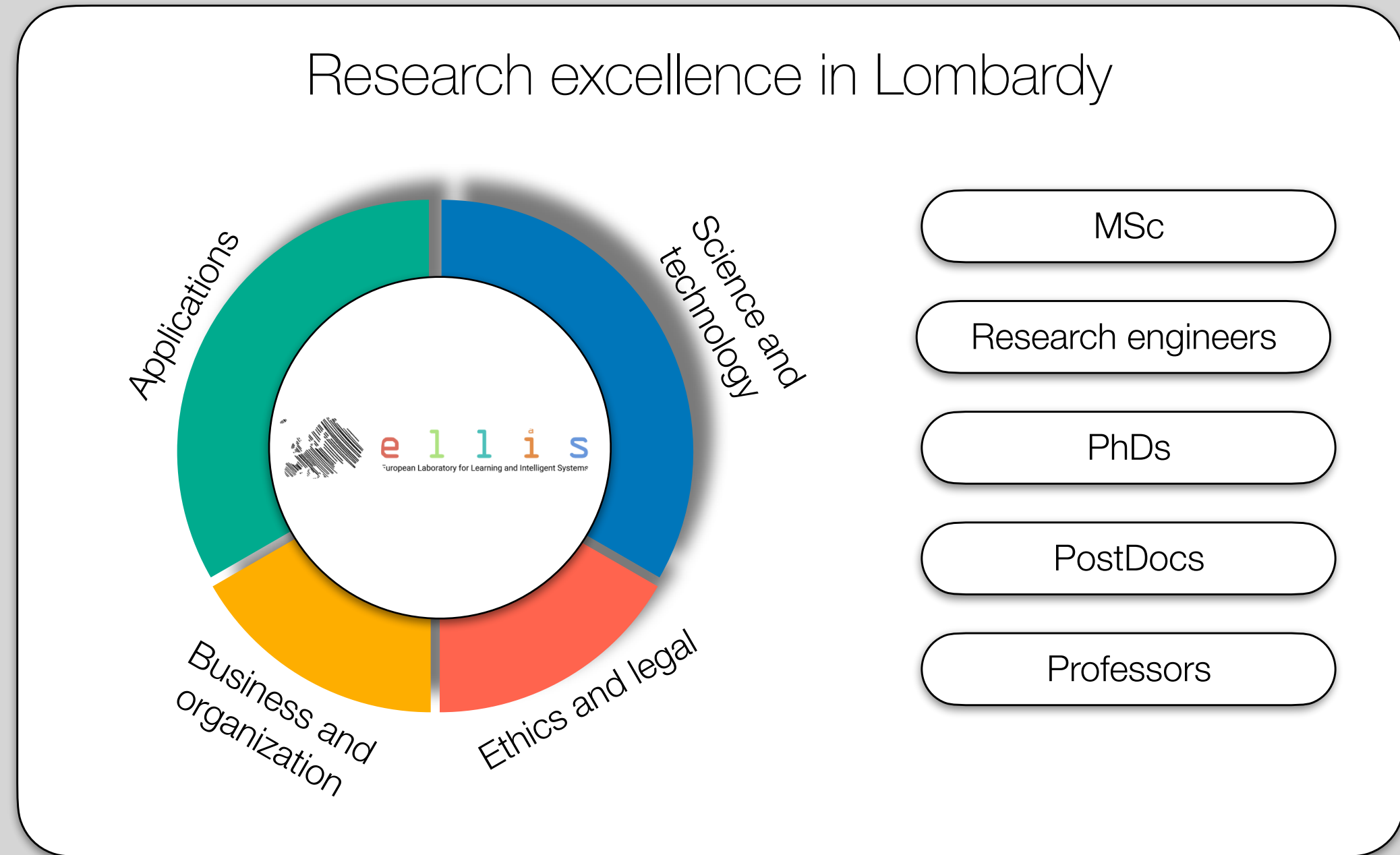
Project supervision (tech/regulation)

Development (tech/regulation)

Research line definition

Collaborative research

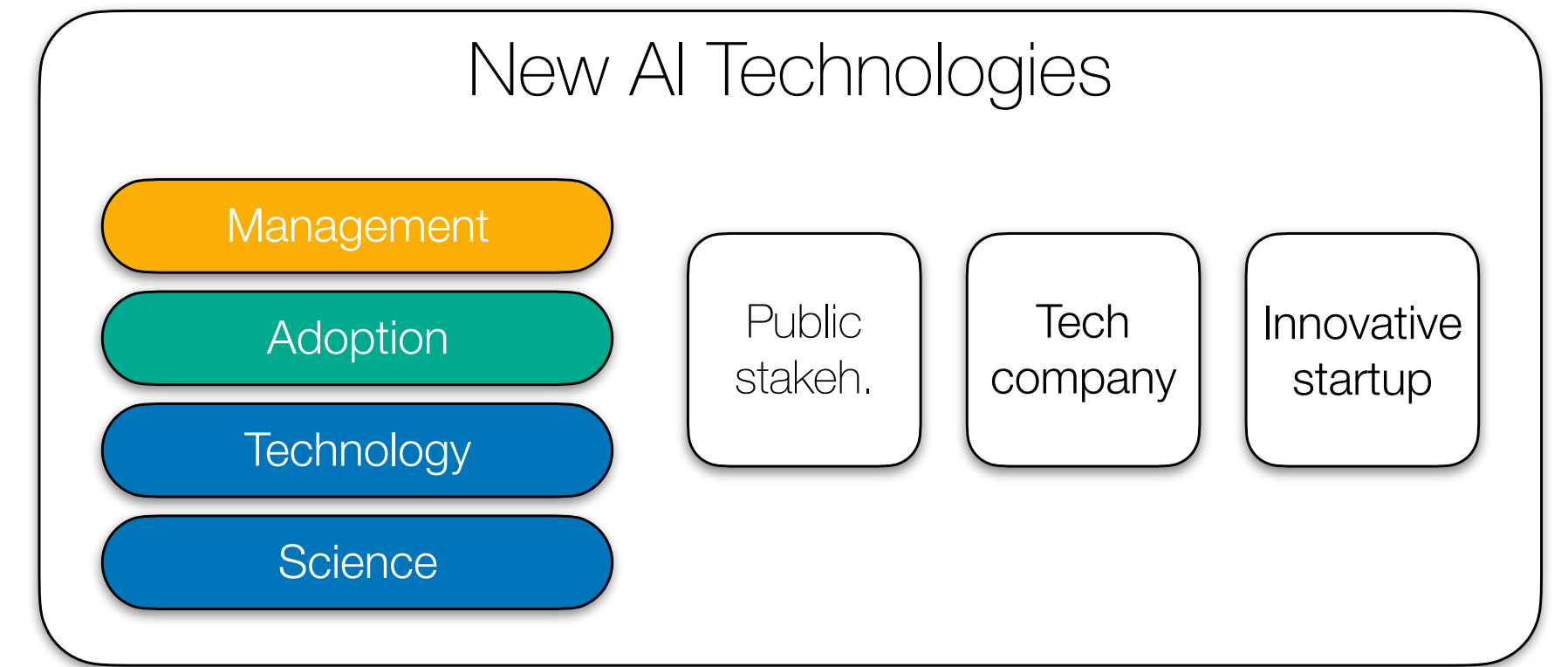
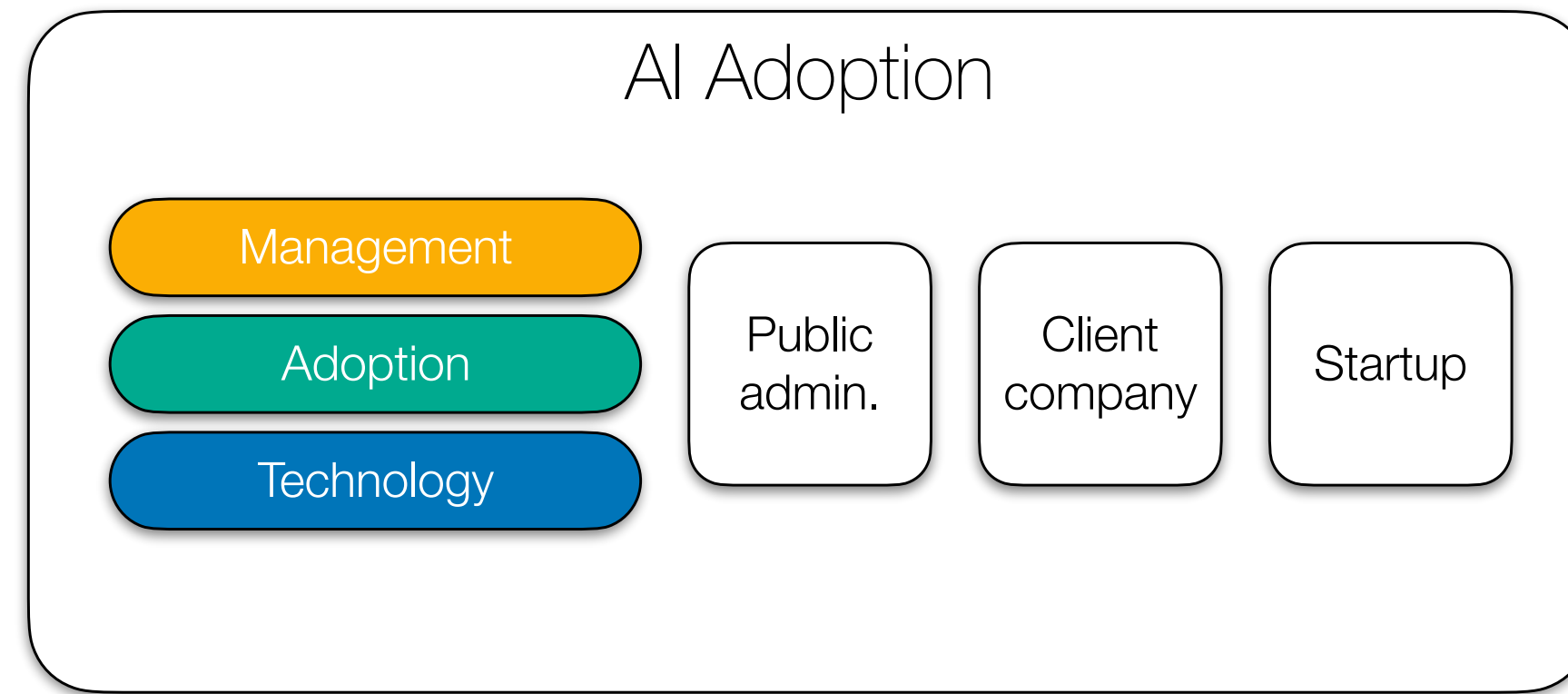
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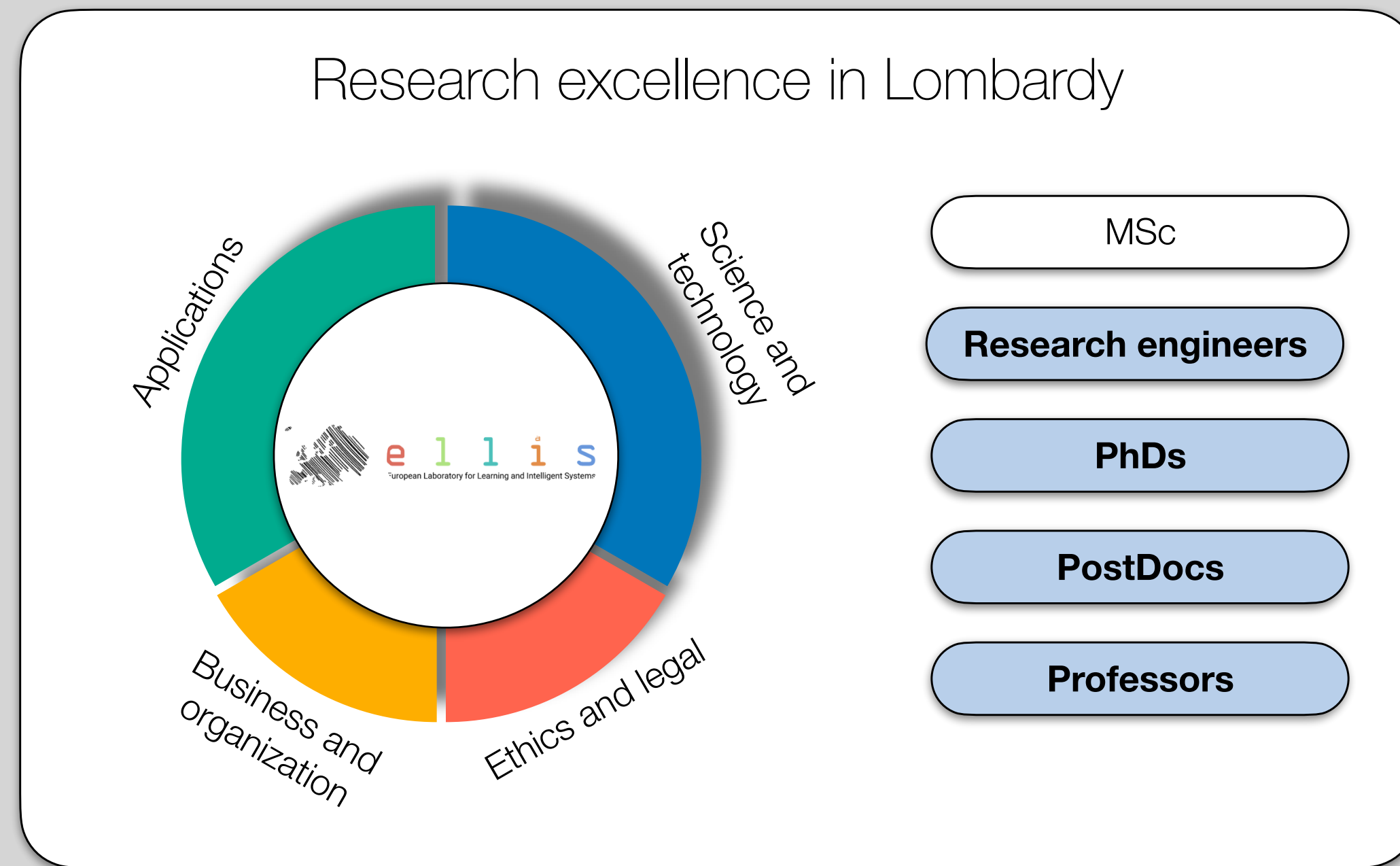
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Research line
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Collaborative
research

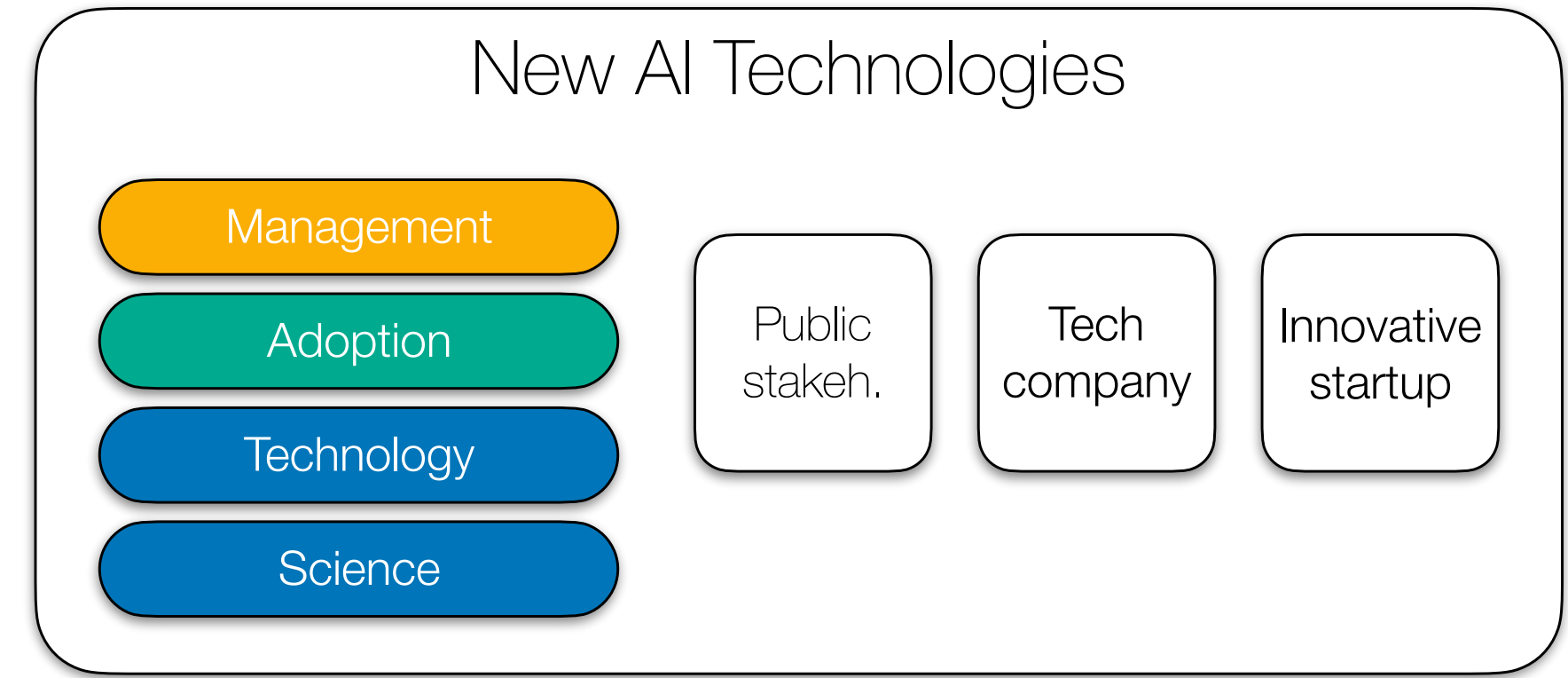
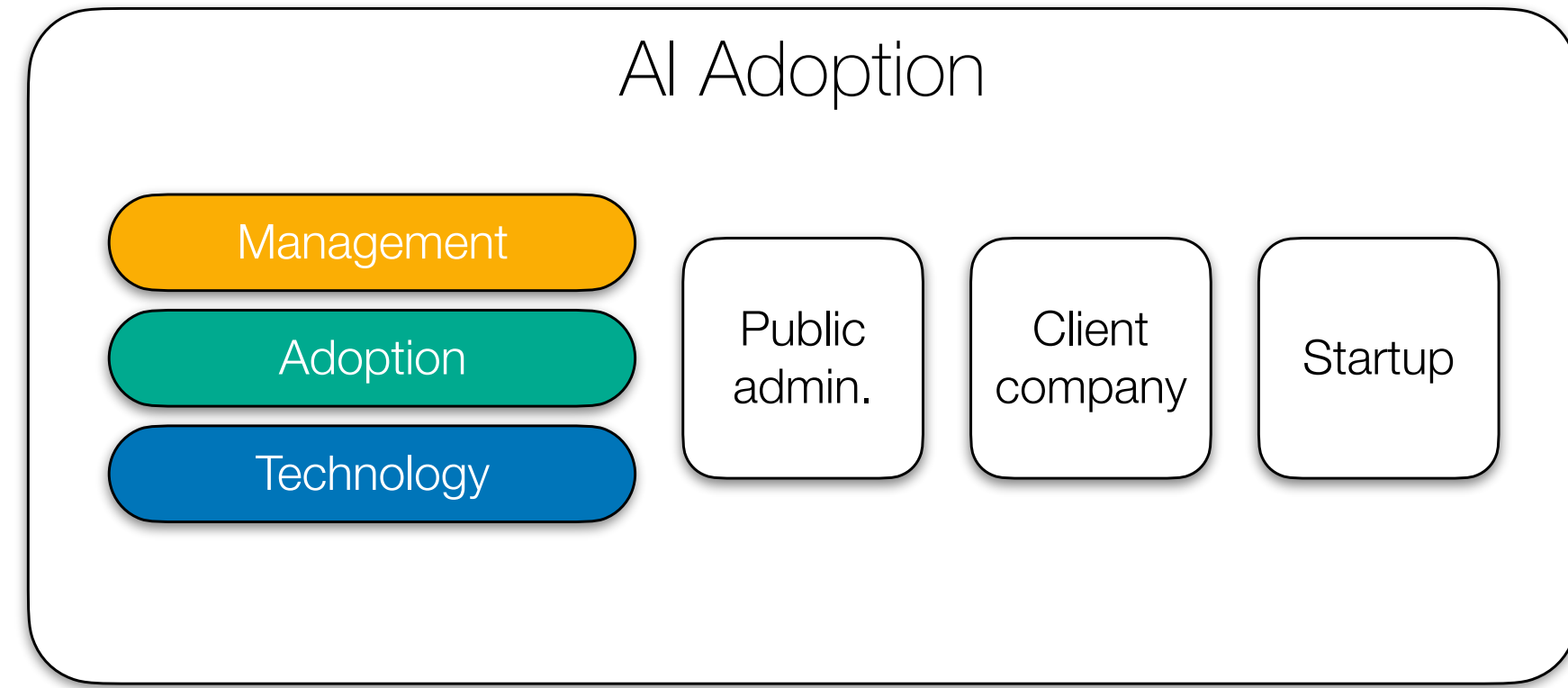
Strengthening scientific research



Network of AI companies

Trade associations

Citizens



Divuligation

Education
(tech/regulation)

Assessment and
design thinking

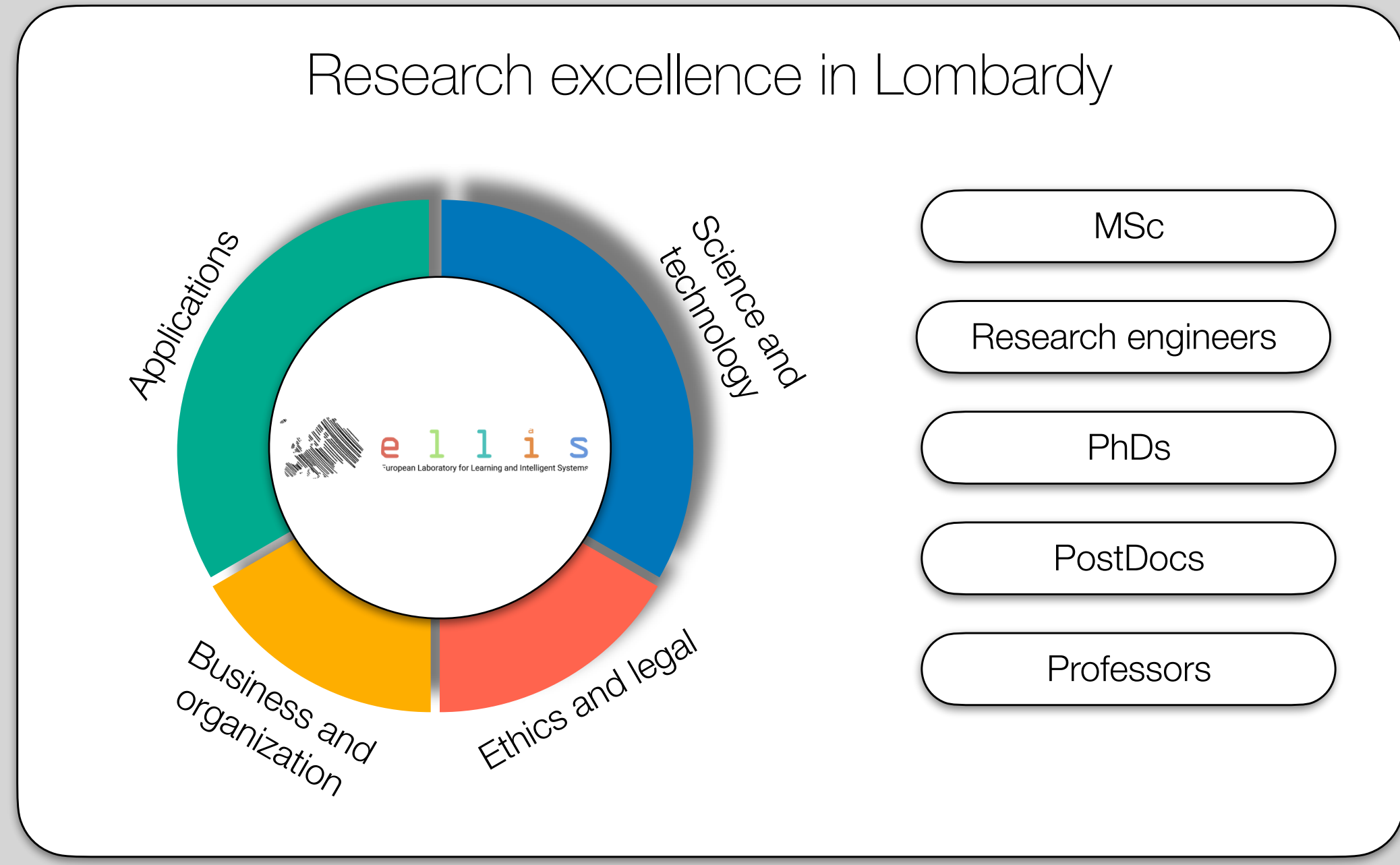
Project supervision
(tech/regulation)

Development
(tech/regulation)

Research line
definition

Collaborative
research

Communication

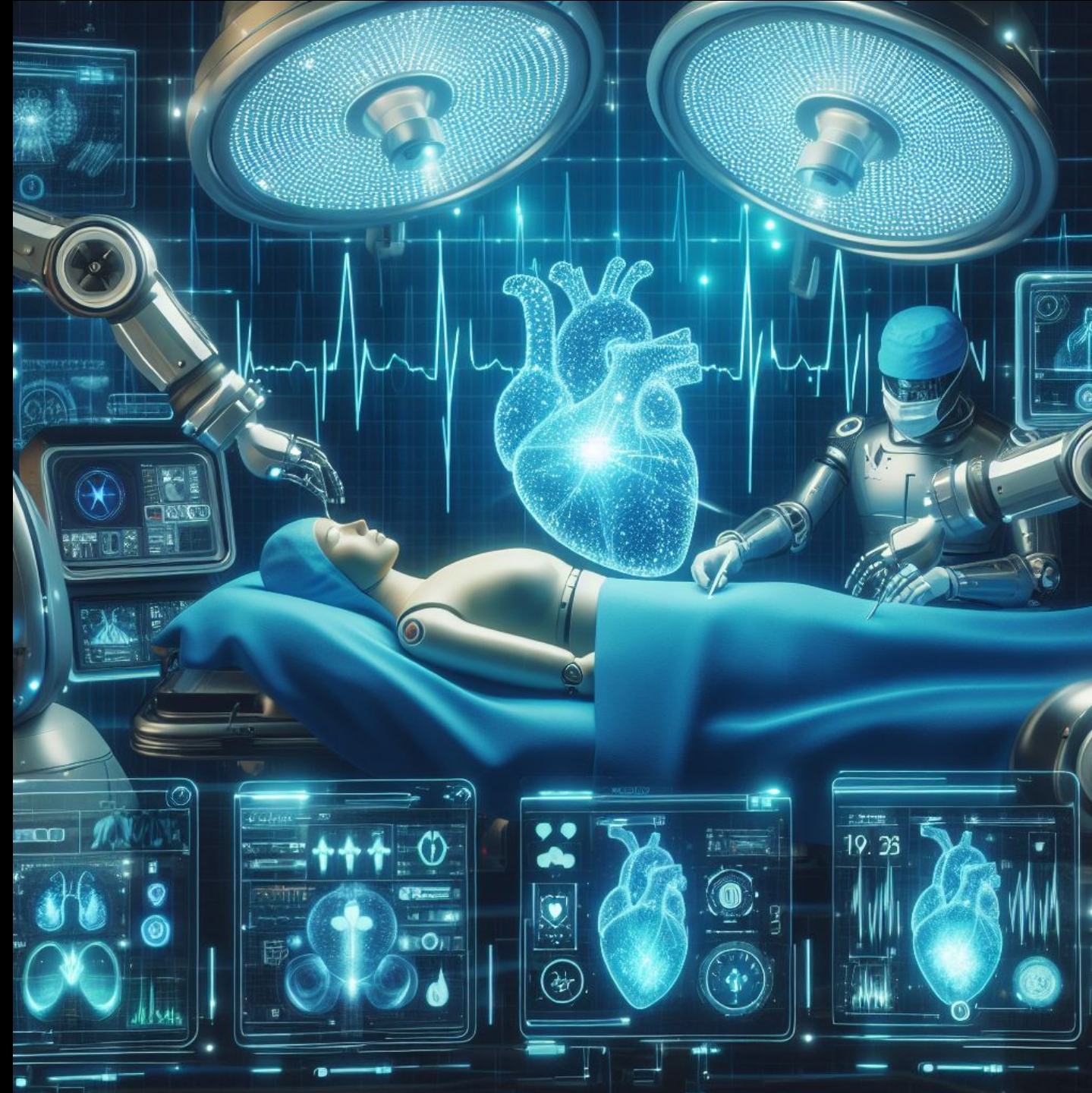


Network of AI
companies

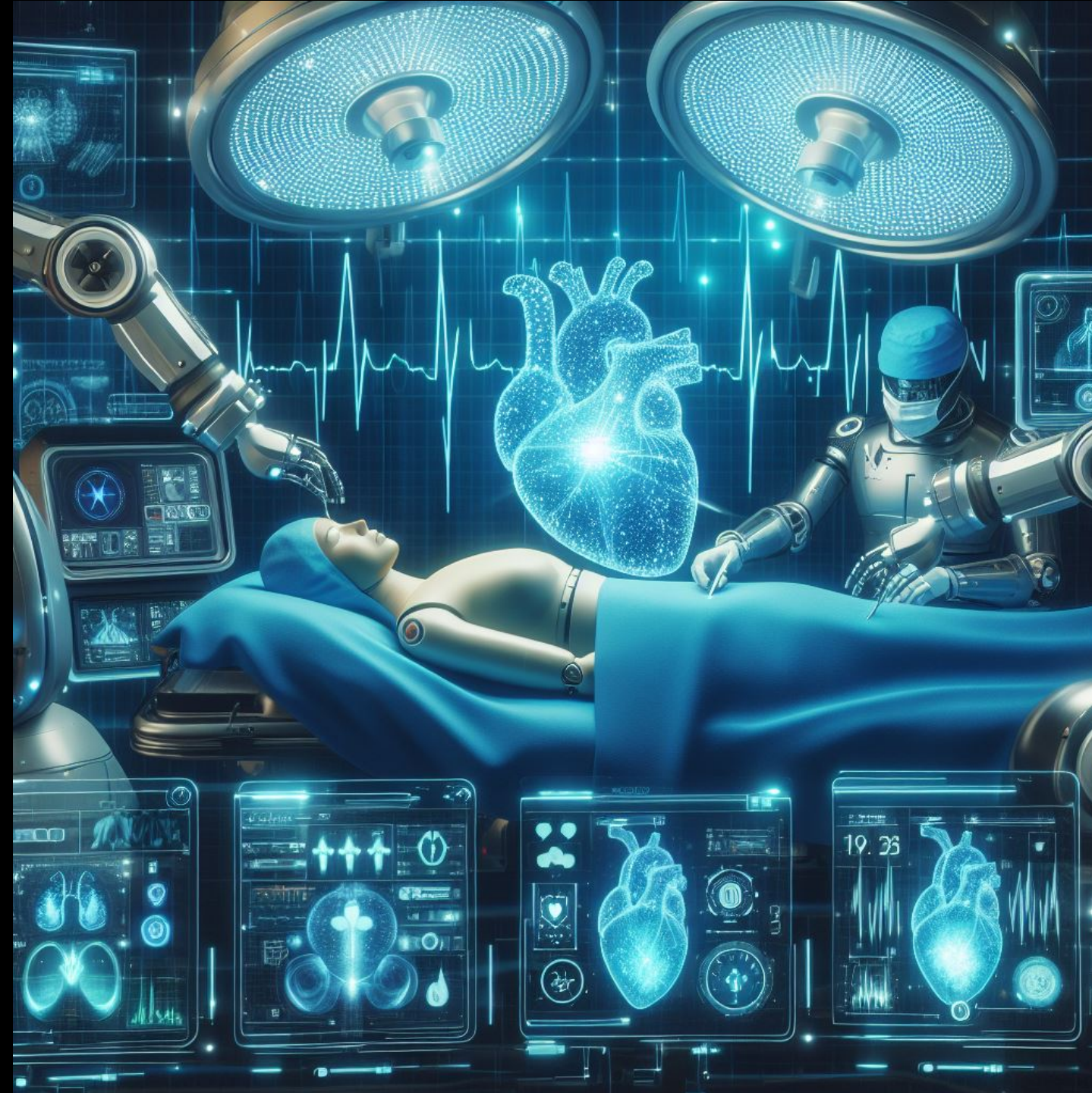
Trade associations

We recommend to focus
on four areas

AI for Health

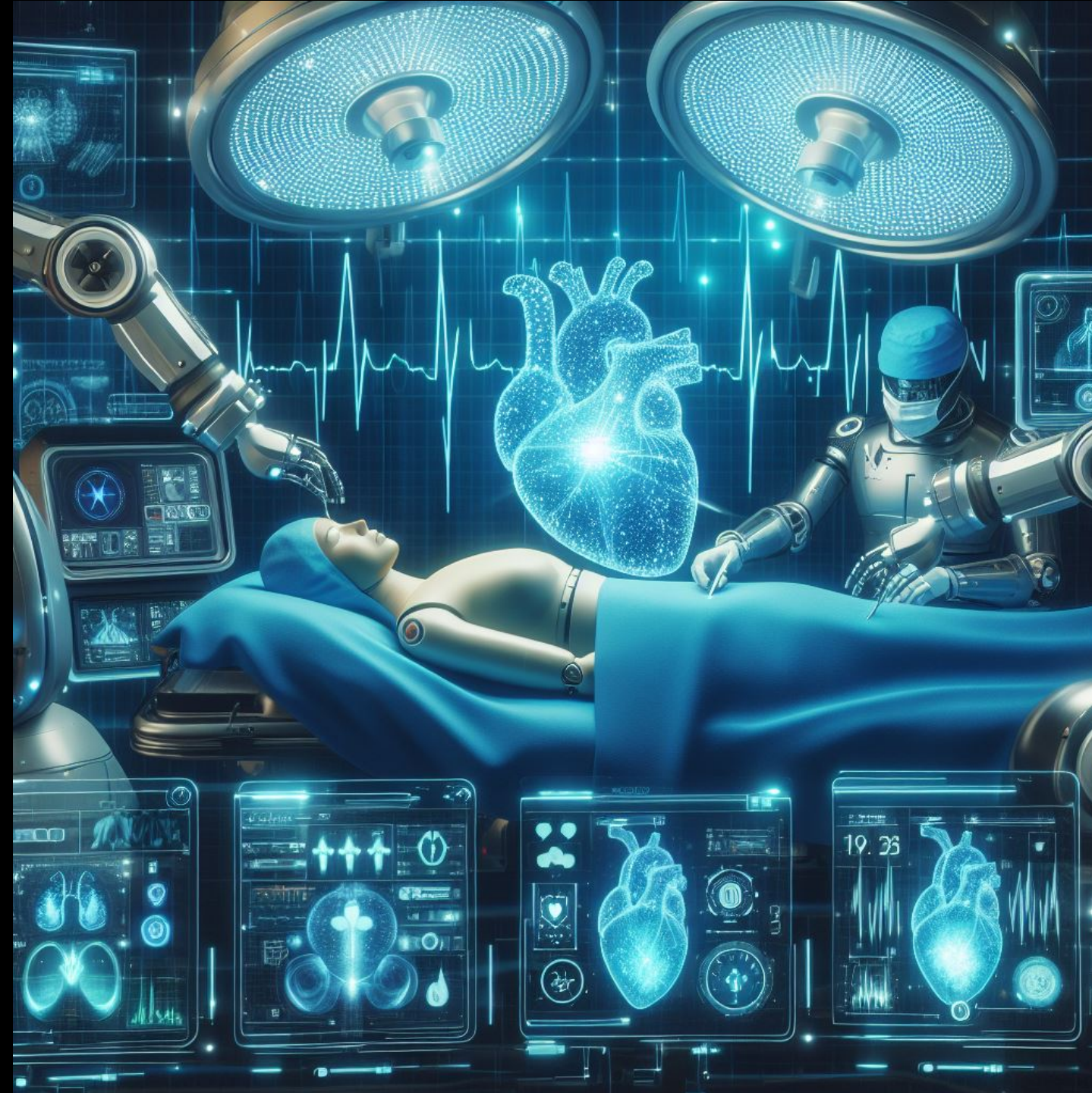


AI for Health

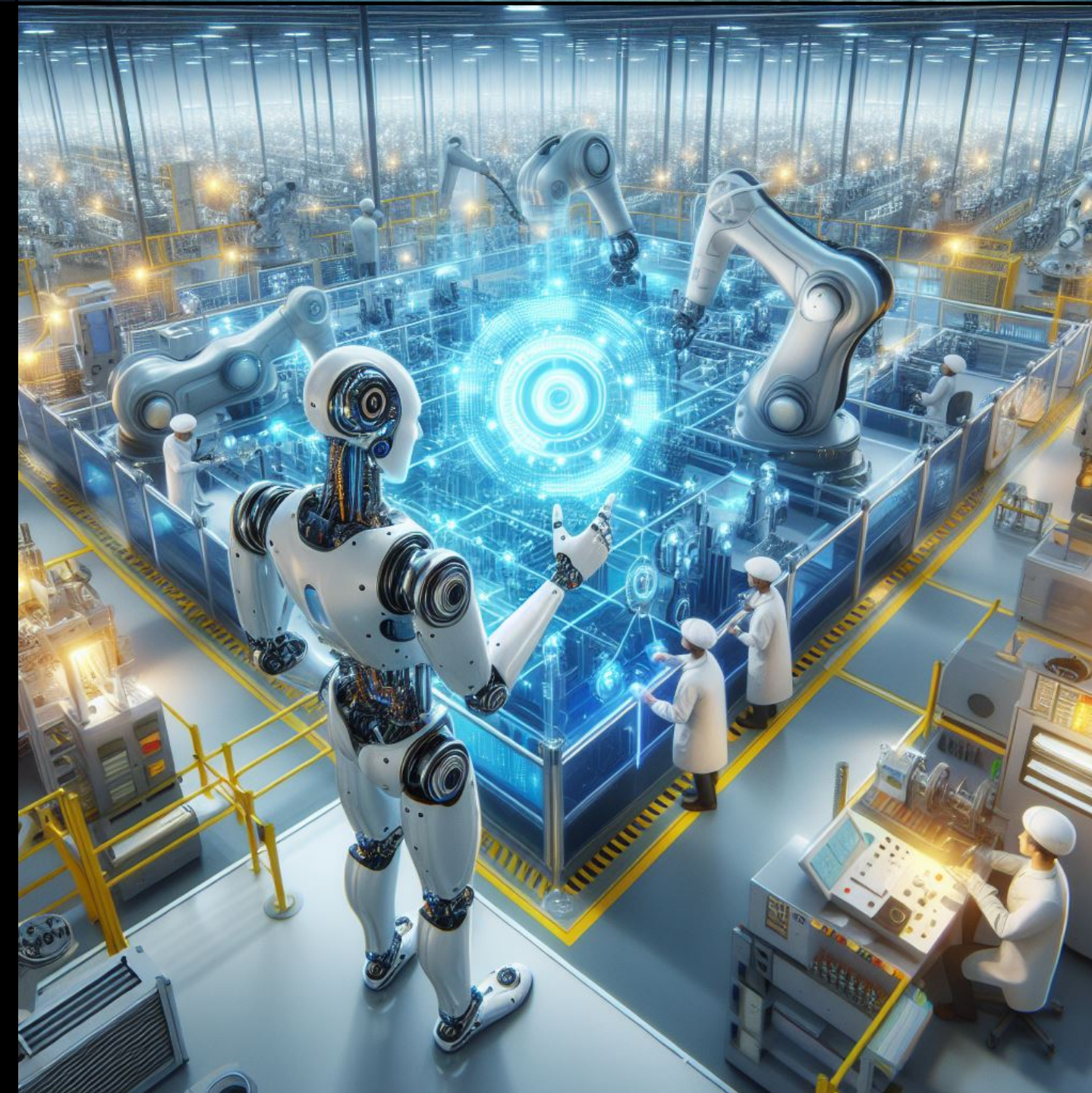


AI for Finance and
Commerce

AI for Health

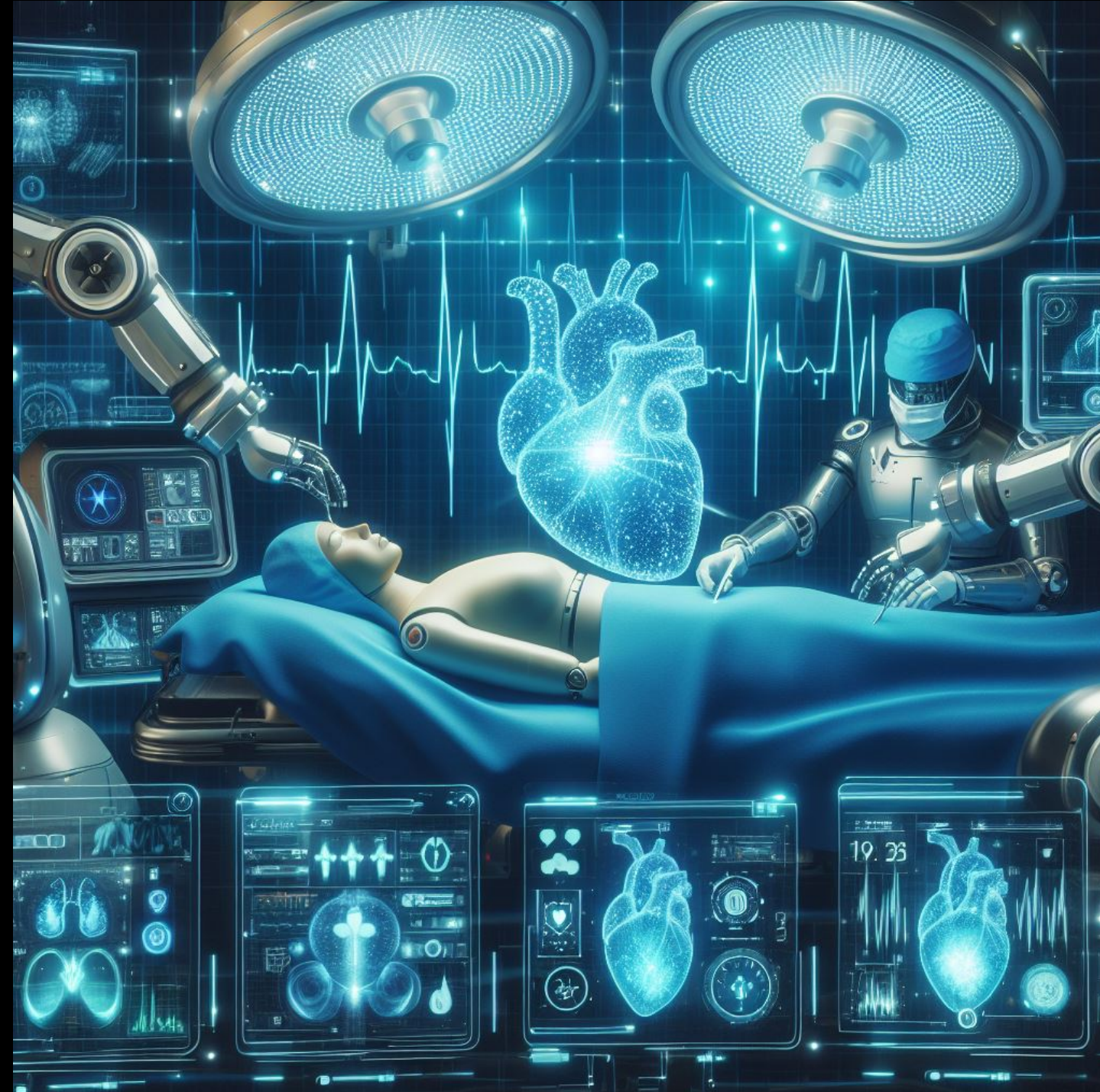


AI for Finance and
Commerce



AI for Manufacturing

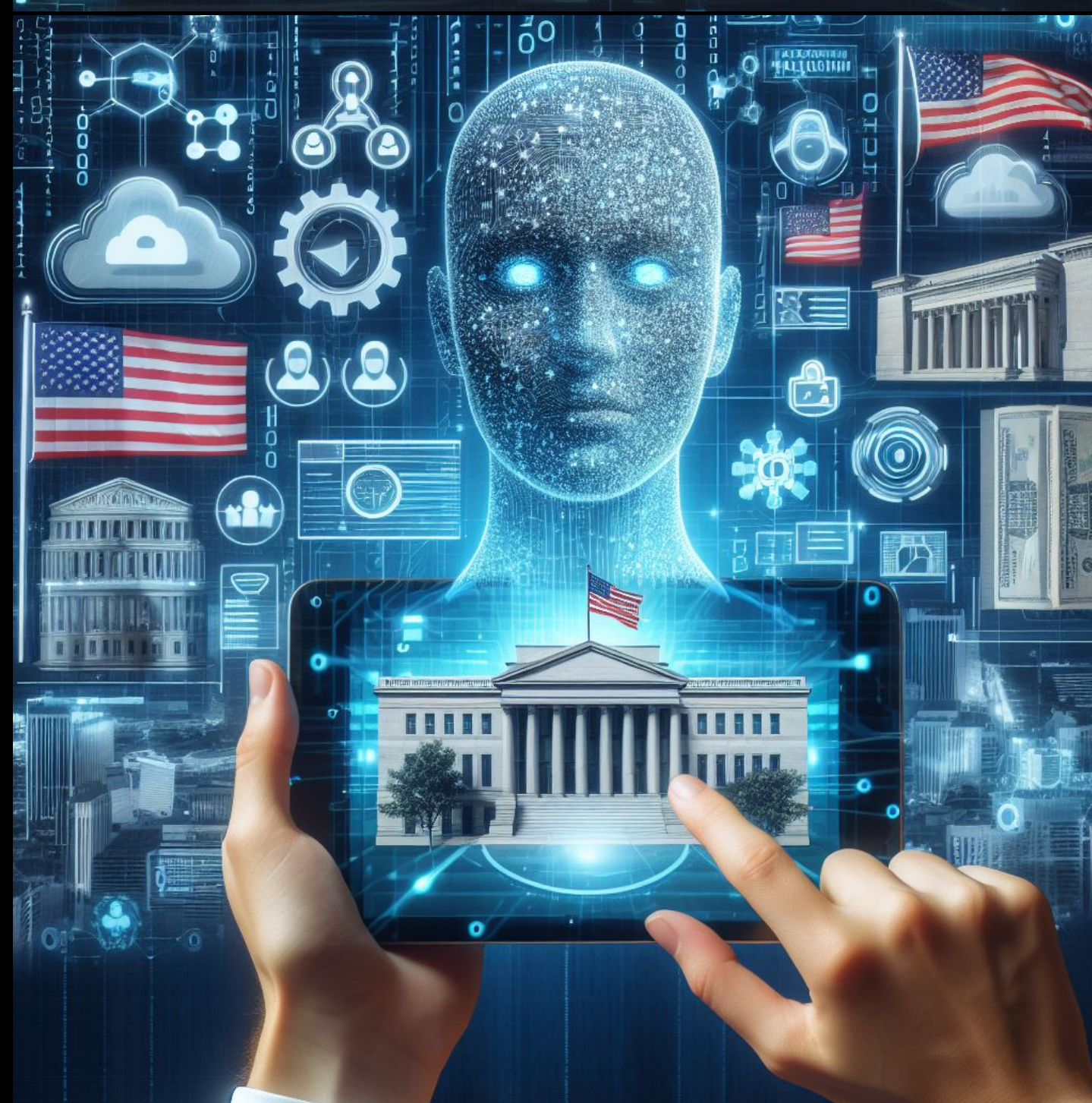
AI for Health



AI for Finance and Commerce



AI for Society and Democracy



AI for Manufacturing

