

AI Watch: the European Observatory for Artificial Intelligence

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JRC Week on Composite Indicators and Scoreboards, Ispra, 08 Nov 2019

A Union that strives for more

My agenda for Europe

By candidate for President of the European Commission

Ursula von der Leyen



**POLITICAL GUIDELINES FOR THE NEXT
EUROPEAN COMMISSION 2019-2024**



A Union that strives for more

3. A Europe fit for the digital age

I want Europe to strive for more by grasping the opportunities from the digital age within safe and ethical boundaries.



now physical devices and sensors that are linking up with each other. Huge and increasing amounts of data are being collected

In order to release that potential we have to find our European way, balancing the flow and wide use of data while preserving high privacy, security, safety and ethical standards. We already achieved this with the General Data Protection Regulation, and many countries have followed our path.

In my first 100 days in office, I will put forward legislation for a coordinated European approach on the human and ethical implications of Artificial Intelligence. This should also look at how we can use big data for innovations that create wealth for our societies and our businesses.

Artificial Intelligence Policy development (2018-19)

LAW | 8 April 2019

Communication: Building Trust in Human Centric Artificial Intelligence

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Building Trust in Human Centric Artificial Intelligence (COM(2019)168)

[Read more](#)

LAW | 7 December 2018

Coordinated Plan on Artificial Intelligence

Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions - Coordinated Plan on Artificial Intelligence (COM(2018) 795 final)

[Read more](#)

LAW | 15 May 2018

Completing a trusted Digital Single Market for all

Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions - Completing a trusted Digital Single Market for all

[Read more](#)

LAW | 25 April 2018

European Commission Staff Working Document: Liability for emerging digital technologies

European Commission Staff Working Document on liability for emerging digital technologies accompanying the document Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions "Artificial Intelligence for Europe".

[Read more](#)

LAW | 25 April 2018

Communication Artificial Intelligence for Europe

Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions on Artificial Intelligence for Europe.

[Read more](#)

Artificial Intelligence for Europe COM(2018)237



.. the Commission will **systematically monitor AI-related developments**,
e.g. policy initiatives in the Member States, AI uptake and its impact on labour markets as well as AI capabilities, including high-level benchmarking, showcasing current capabilities and developing an AI index in order to inform the discussions.

.. the Commission will work on a **coordinated plan with MSs**

Coordinated Plan on Artificial Intelligence COM(2018)795



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In the course of next year, Member States and the Commission will also **agree on common indicators to monitor AI uptake and development in the Union** and the success rate of the strategies in place, **with the support of the AI Watch developed by the Joint Research Centre.**

Member States and the Commission will monitor progress of the implementation of the plan on annual basis.

AI Watch will contribute to monitoring AI-related development and will provide a number of analyses necessary to support the implementation of the European AI initiative. Among others it will develop AI indexes addressing all dimensions relevant for policy making. Such information will be made available at the AI Watch portal

AI for the public sector

AI-enabled solutions can deliver shorter and richer feedback loops for all levels of governance, providing an opportunity to speed up, improve the efficiency and effectiveness of service delivery.

AI Landscape and indicators

AI is experiencing a period of intense progress, due to several key technological enablers: faster processing, increased amounts of data, and better algorithms. Still lacking official statistics, front end methodologies have been applied to analyse the AI ecosystem and track its evolution.

Data: a cornerstone for AI – Toward a Common European Data Space

For an application of artificial intelligence (AI) to be ready for market entry it has to learn on the basis of training data. Additionally, it may need further data sources in order to fulfil its functions. With its actions, the EC seeks to support wider availability of relevant data.

Education and Skills

Education and training are crucial to harness AI, but AI can also help us rethink what competences and skills will be needed in the future to live a fulfilling life, and master the digital transformation of our society.

Evolution of AI technology

Although AI has a long history of development recent breakthroughs in state of the art algorithms has produced a huge impact on multiple domains, industrial sectors and robotics.

Evolution of AI uptake

AI as a general-purpose technology can rapidly spread across industry sectors and yield strong positive growth effects.

Key Enablers

The Digital Single Market and its regulatory framework will provide key enablers to enhance AI adoption.

Social perspective

It is crucial to think how the concepts of autonomy and identity of individuals as well as security, safety and privacy issues might change under the influence of AI. AI WATCH aims to provide a multidisciplinary understanding of the impact that artificial intelligence has on people and society.

Strategic Actions and Coordination

"In Europe, any successful strategy dealing with AI needs to be cross-border. A large number of Member States agreed to work together on the opportunities and challenges brought by AI. That is excellent news. Cooperation will focus on reinforcing European AI research centres, creating synergies in...

AI Watch Tasks to support the implementation of the European AI Strategy and Coordinated Plan 2019-2021

Providing Indicators and Metrics that matter

1. AI Landscape: From Research to Market and Society
2. Investments in AI
3. Evolution of AI Technology
4. Evolution of AI Uptake across economy (by sectors)
5. Evolution of European Market shares in Robotics
6. EU MS National Initiatives on AI
7. Use and Impact of AI In Public Services
8. AI Index (inc. indicators relevant for policy making)



Main challenges

1. No universal definition of AI (*and political sensitiveness*)
2. Huge competition in measuring (*International, National and Regional AI Observatories*)
3. Report Tsunami (*400 reports/year*)
4. High Political and Media attention on AI
5. No official data fitting for purpose (*no suitable statistics for measuring ICT penetration*). A survey on AI maybe in 3 years
6. Plenty of anecdotic and/or non robust information (*e.g. on impact on job*)


AI impact on jobs

THE VERGE TECH ▾ REVIEWS ▾ SCIENCE ▾ ENTERTAINMENT ▾ VIDEO ▾ MORE ▾

Automation threatens 800 million jobs, but technology could still save us, says report

 **EXPRESS** Home of the Daily and Sunday Express

ROBOT WARNING: Artificial intelligence to steal 'thinking jobs within 45 YEARS'

 **TechRepublic** COVER STORY [f](#) [in](#) [💬](#) [🐦](#) [📌](#) [MORE ▾](#)

Why AI could destroy more jobs than it creates, and how to save them

BBC [Sign in](#) News Sport Weather Shop Reel Travel More

NEWS

WEF: Robots 'will create more jobs than they displace'

FORTUNE

A.I. Expert Says Automation Could Replace 40% of Jobs in 15 Years

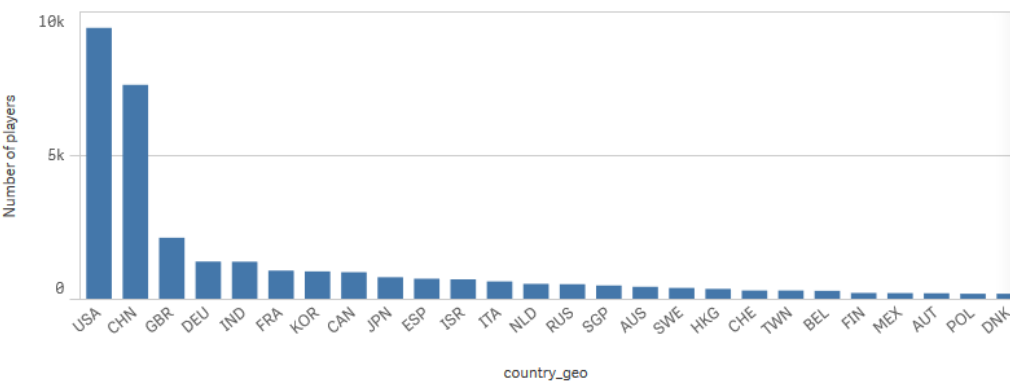
 **CBINSIGHTS** Platform Services

AI Will Put 10 Million Jobs At High Risk — More Than Were Eliminated By The Great Recession

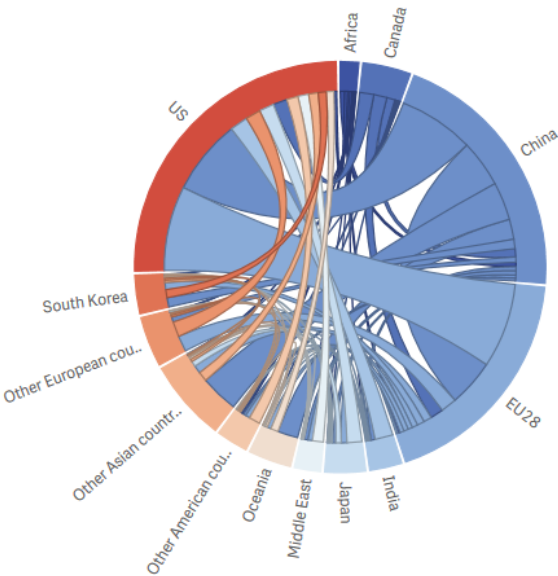
AI Landscape

AI LANDSCAPE - OVERVIEW

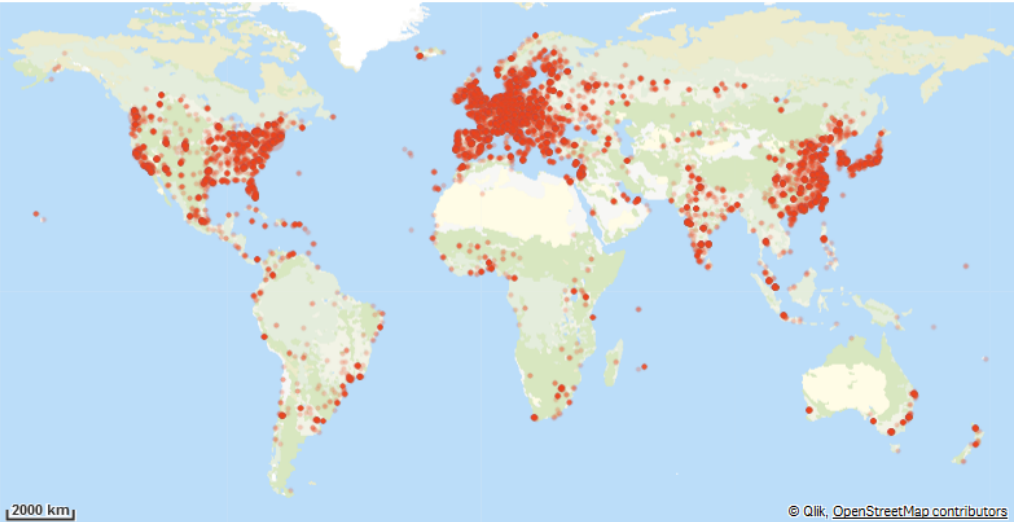
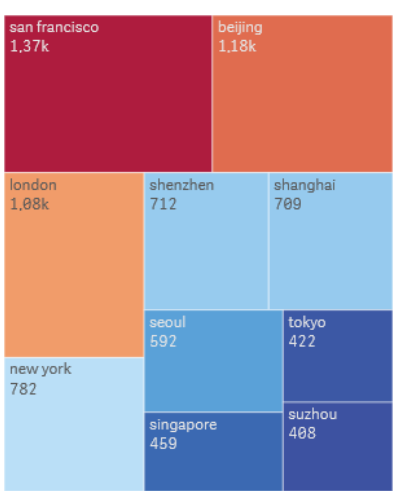
Number of players by country



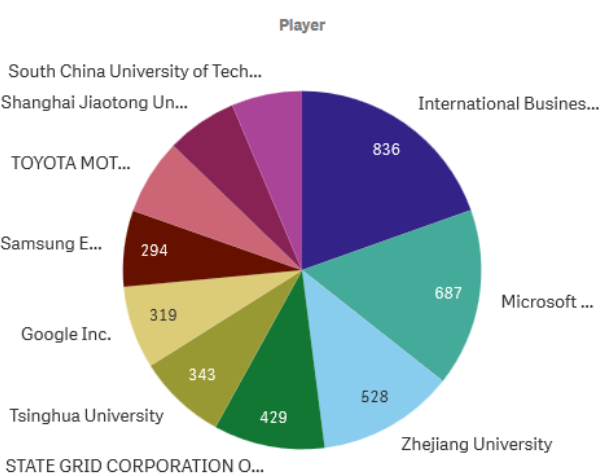
Shared R&D activities by Area



Top 10 cites (by number of players)



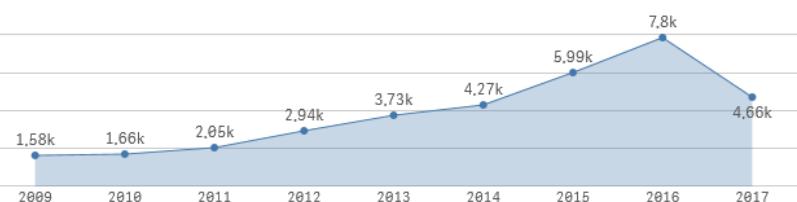
Top 10 R&D players



Organisation Type

Organisation Type	Values			
	Players	Frontier Research	EU projects	Patents
Firm	28559	1871	723	26352
Research Institute	5370	3702	2879	13470
Governmental Institution	403	8	168	461

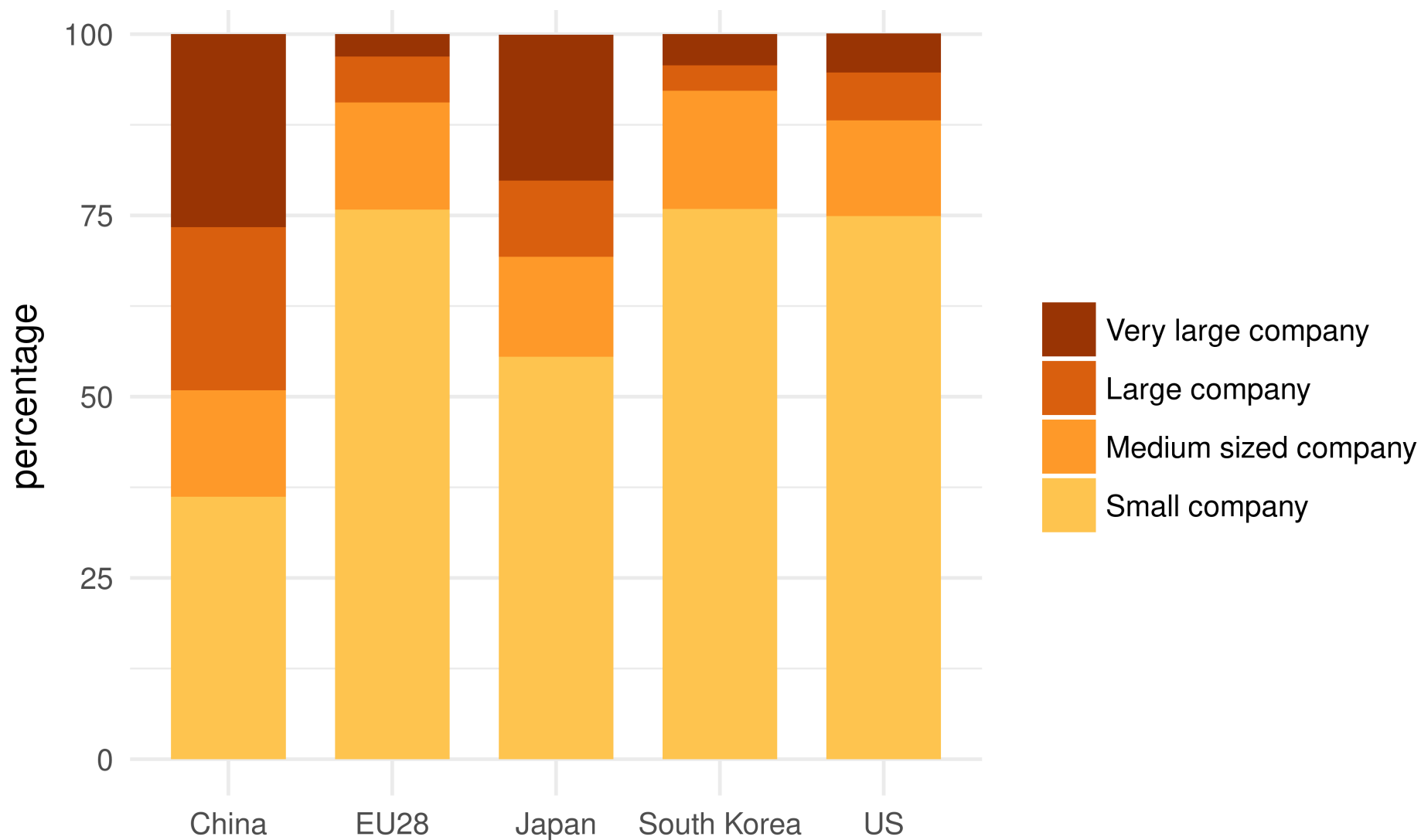
R&D activities by year



AI Landscape

Industry

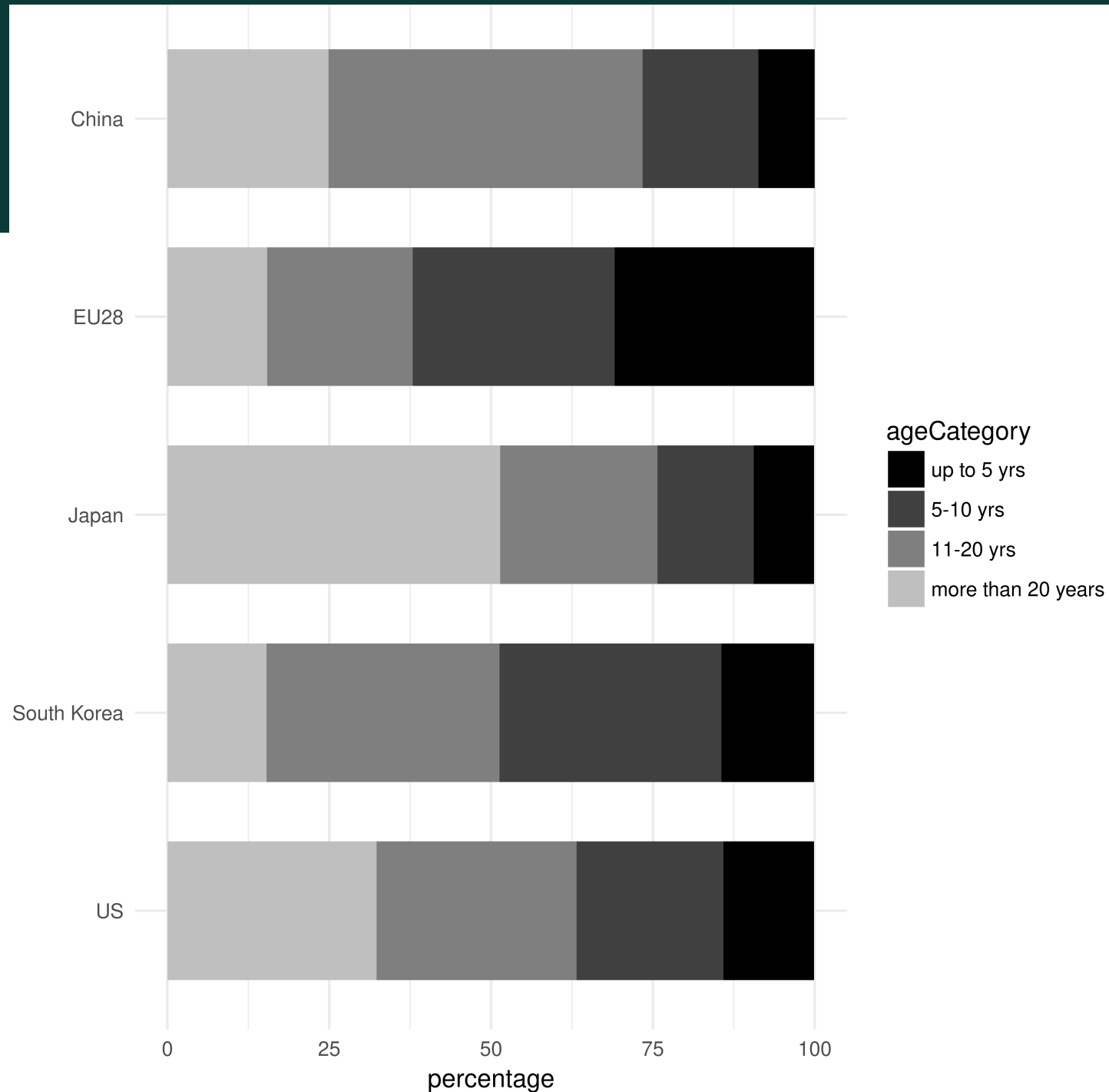
- What size AI firms have?



Percentage distribution of firms active in AI by category, 2018

AI Landscape

- What is the age?

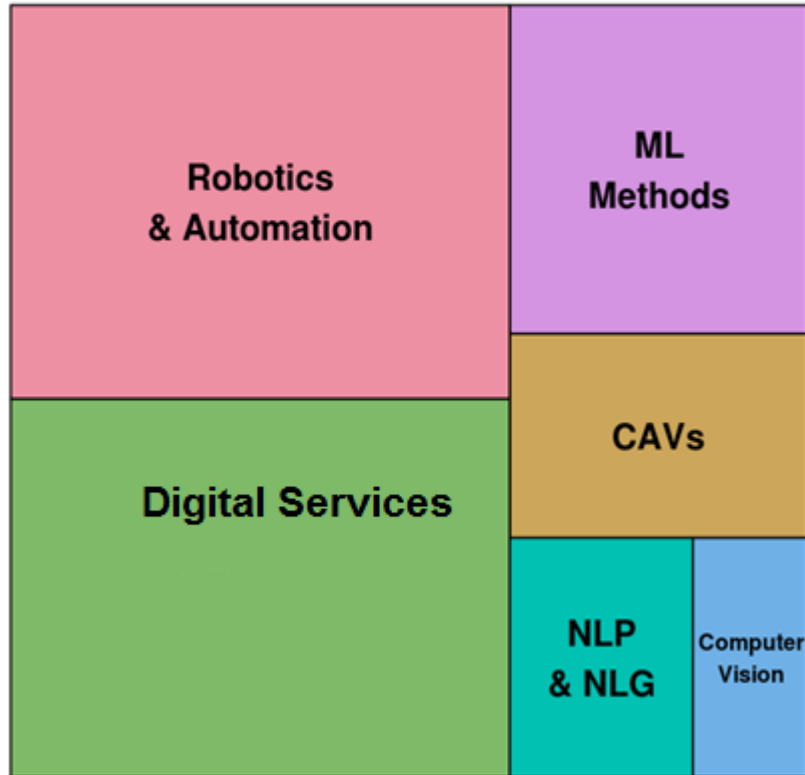


Percentage distribution of firms active in AI
by group of age, 2018

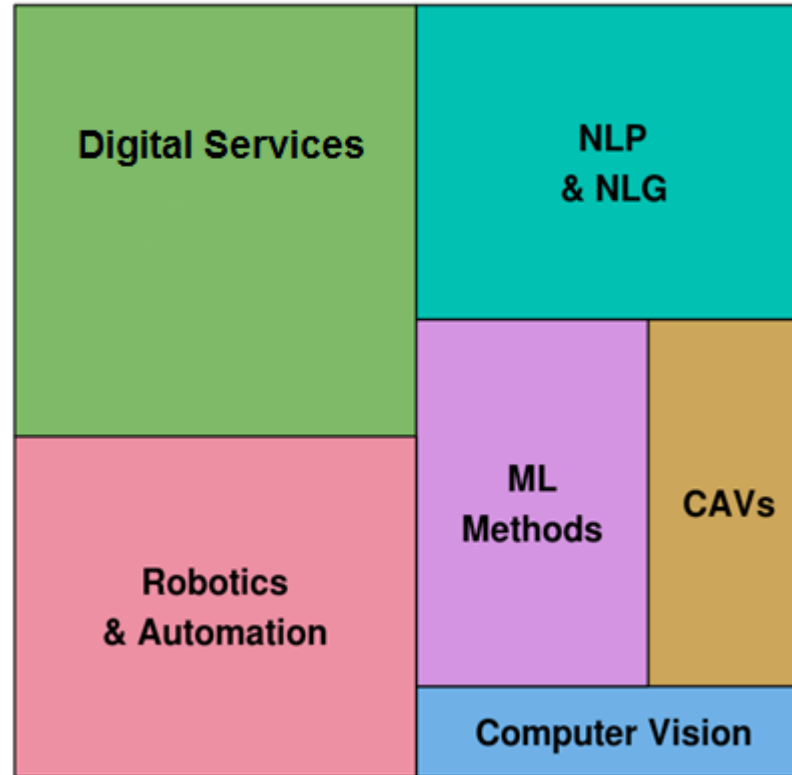
AI Landscape

Key thematic areas

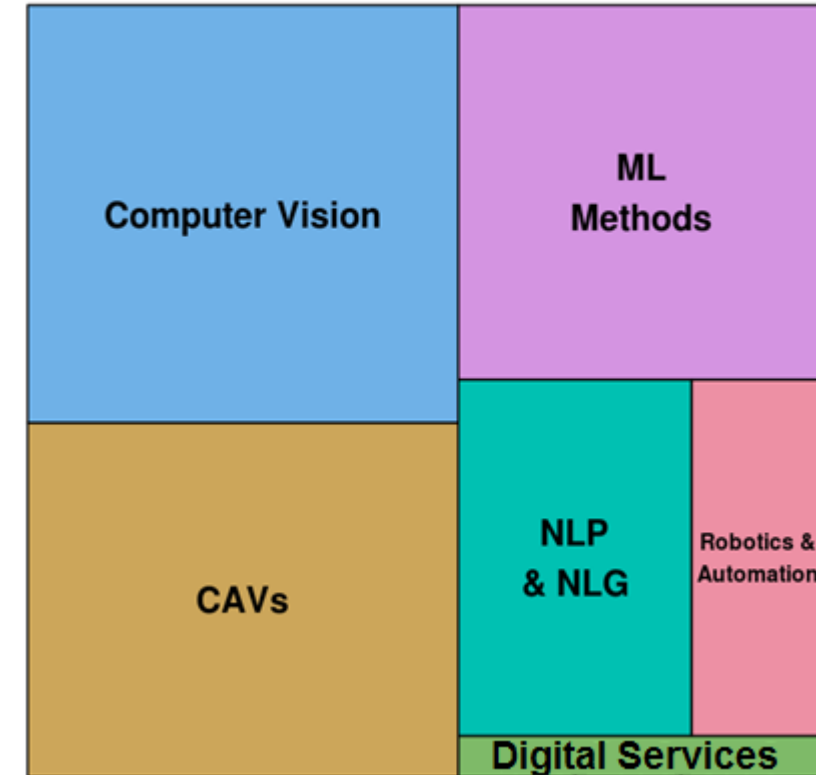
EU28' Thematic Profile



US' Thematic Profile

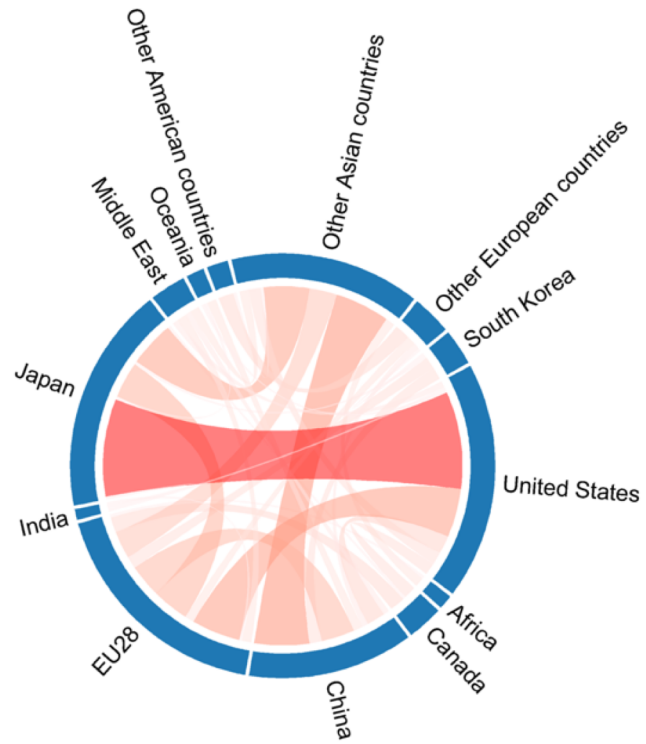


China's Thematic Profile

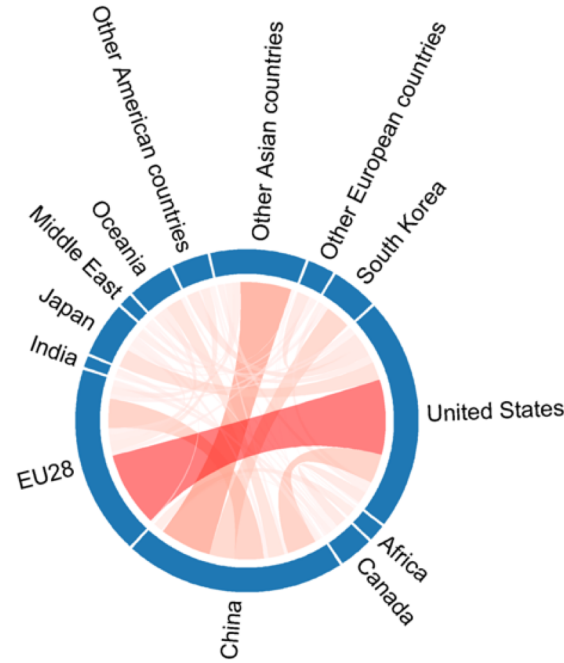


Percentage distribution of firms active in AI by key thematic area of activity in AI, 2018

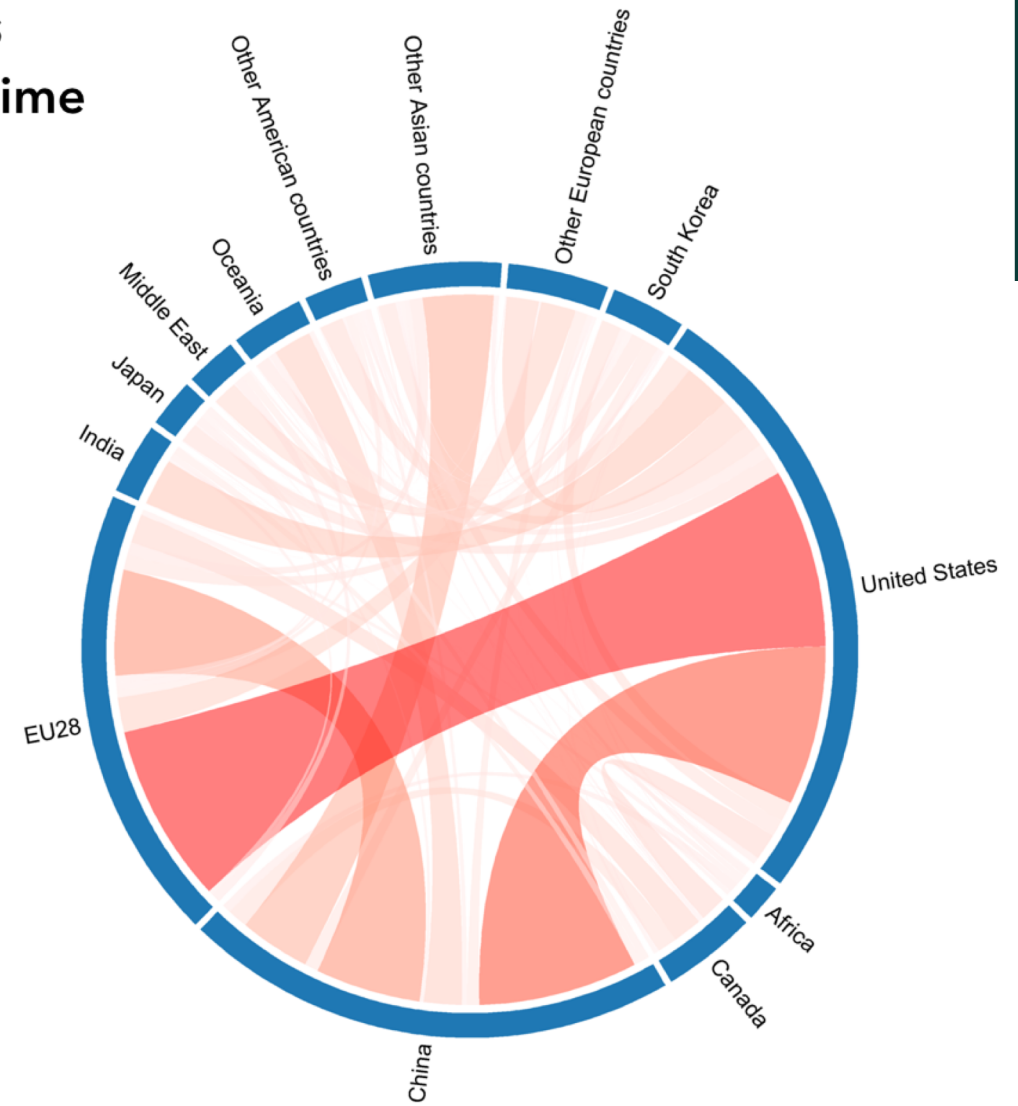
AI Technological Collaborations between Geo-Political Areas, over time



2009-2011



2012-2014



2015-2017

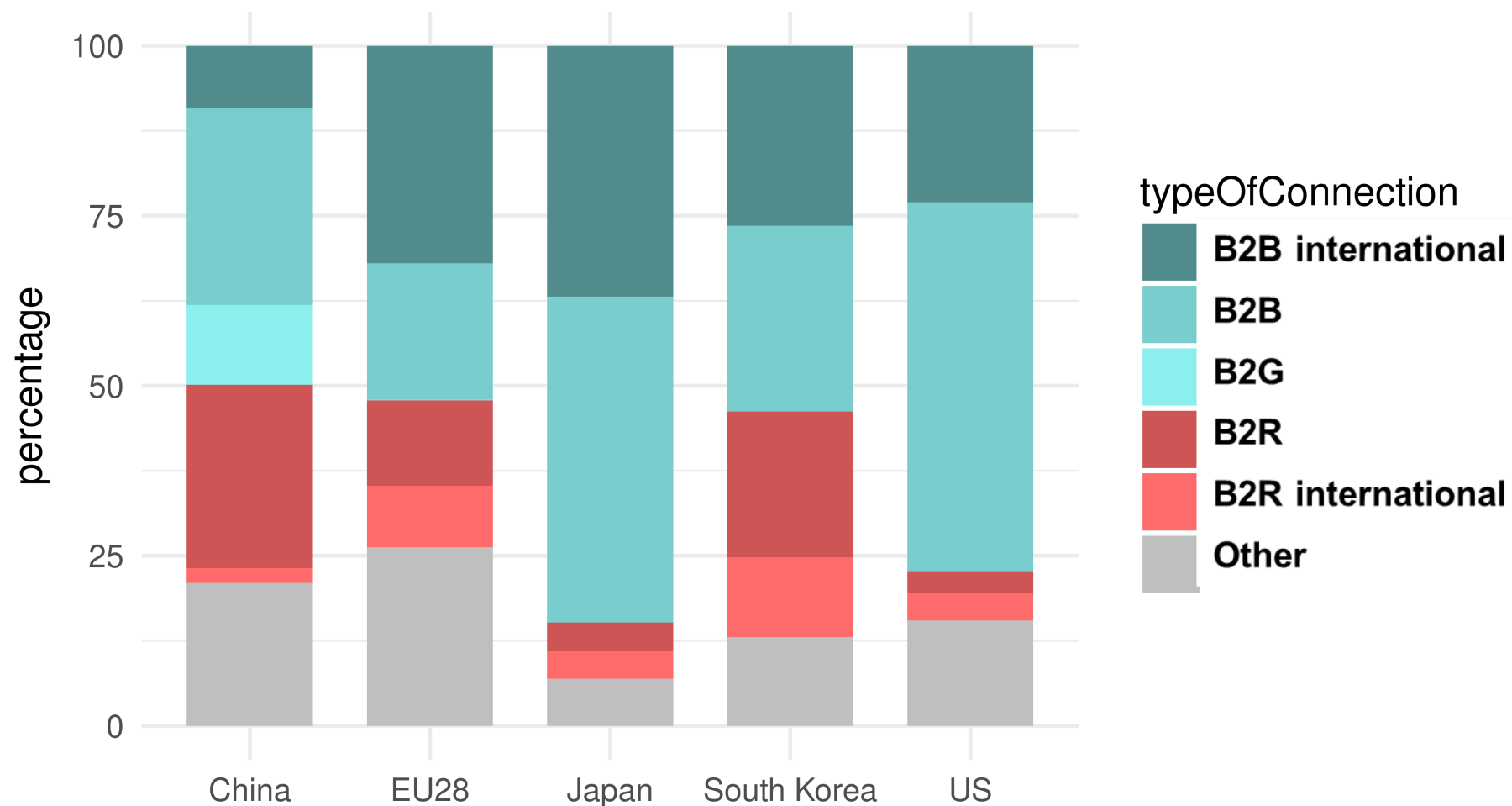
Radius of the diagrams proportional to the amount of external collaborations in the corresponding period of time

AI Landscape

R&D Network

- How countries collaborated in AI R&D internally and abroad?

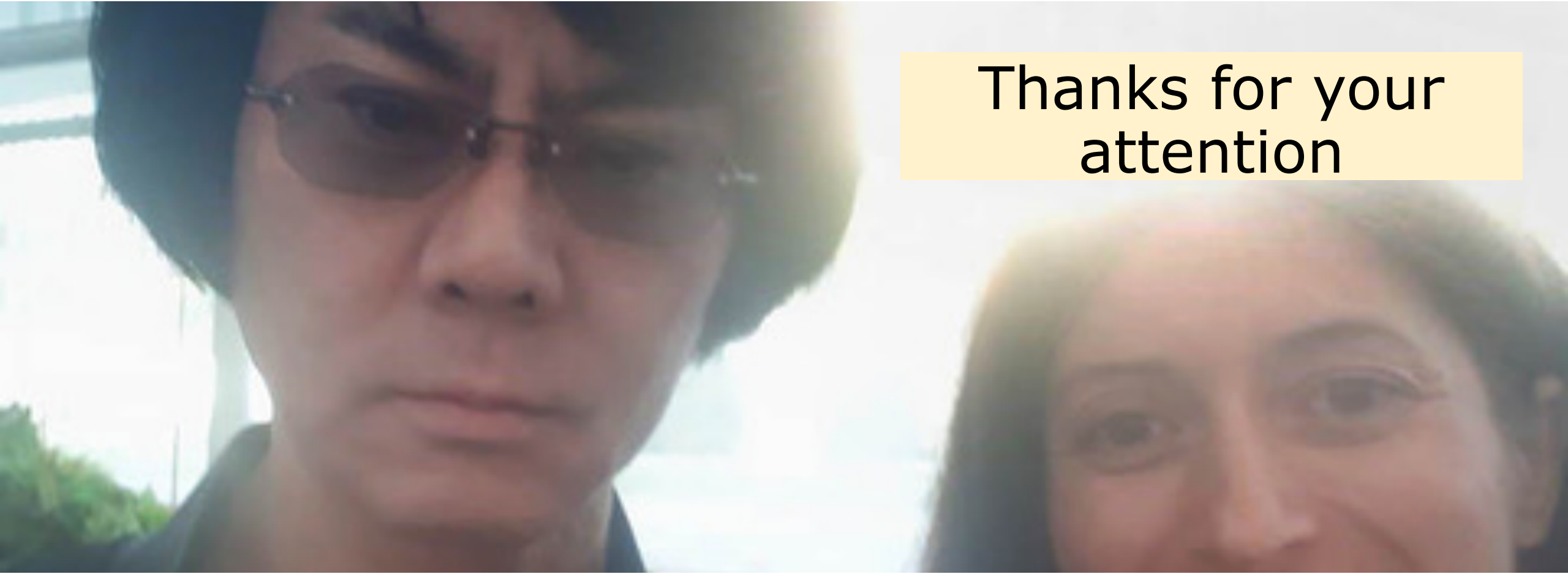
Percentage distribution of R&D activities by type of peers collaboration, 2013-2016



Hiroshi Ishiguro: The Man Who Made a Copy of Himself



My colleague met Hiroshi Ishiguro or his copy?



Thanks for your
attention