Evolution of the Data Market: Highlights and Projections

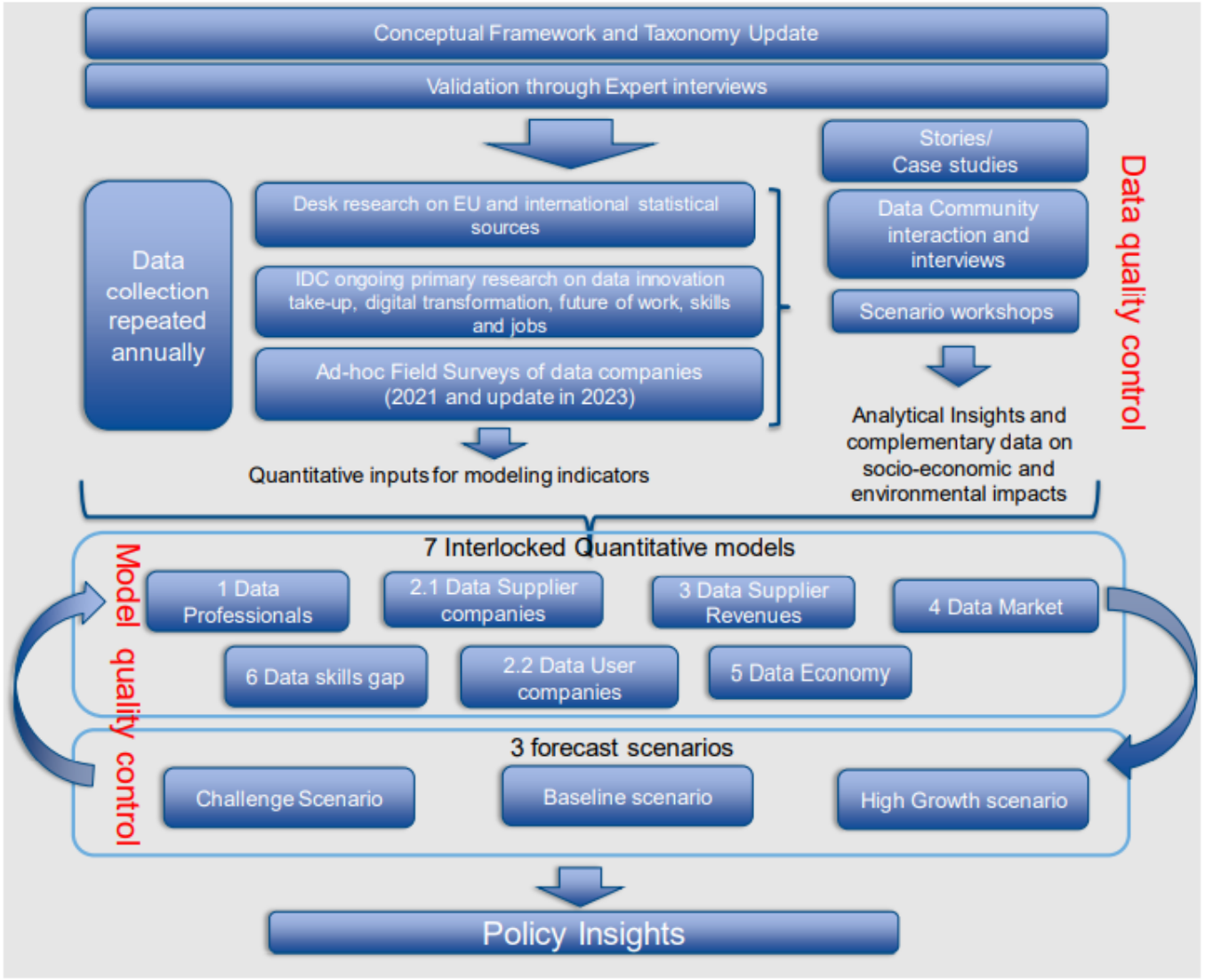
W06 Data-driven applications for industrial and societal challenges: Problems, methods, and computing platforms
DATE 22 (March 17, 2022)

Nuria de Lama
Consulting Director, EU Government Consulting (IDC)

This is what you will get today

- Where is Europe in the Data Economy?
  - Data Market Study 2021-2023
  - Highlights of the study
  - Time evolution picture with projections according to possible scenarios
- A glimpse on some relevant data-related initiatives in Europe

European DATA Market Study 2021–2023



https://digital-strategy.ec.europa.eu/en/library/results-new-european-data-market-study-2021-2023

Forecast scenario methodology

- **Baseline scenario**, with the main assumptions based on the continuation of current growth trends and the evolution of current framework conditions
- **High Growth scenario**, whereby the data market enters a faster growth trajectory, thanks to more favourable framework conditions
- **Challenge scenario**, whereby the data market grows more slowly than in the Baseline scenario because of less favourable framework conditions and a less positive macroeconomic context

- Four main groups of **factors affecting the scenarios:**
  - Macroeconomic factors
  - Policy/regulatory conditions
  - Data market dynamics factors
  - Global megatrends affecting all technology markets

Selection of Critical Factors for Data Market Dynamics Assumptions

DATA MARKET ASSUMPTIONS	Level of Impact on Data Market	Level of Uncertainty
Data technologies supply-demand dynamics	Very High	Medium
Development of the data ecosystem in Europe	Very high	High
Managing data ethics and AI business risks	High	Very high
Deployment of 5G infrastructures	Very high	High

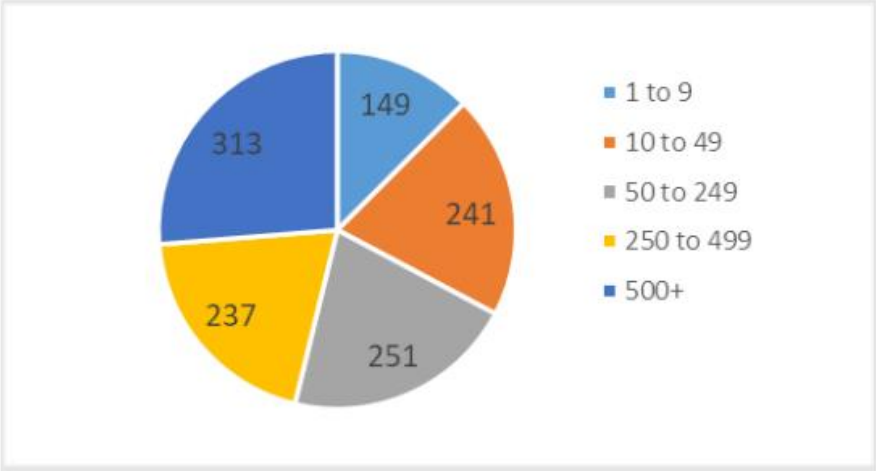
Source: extract from D2.7, Final Report on Facts and Figures – April 2020, Uptake of the EDM Monitoring Tool

Policy and Regulation conditions:
EC Legislative Priorities and Initiatives 2021–2022

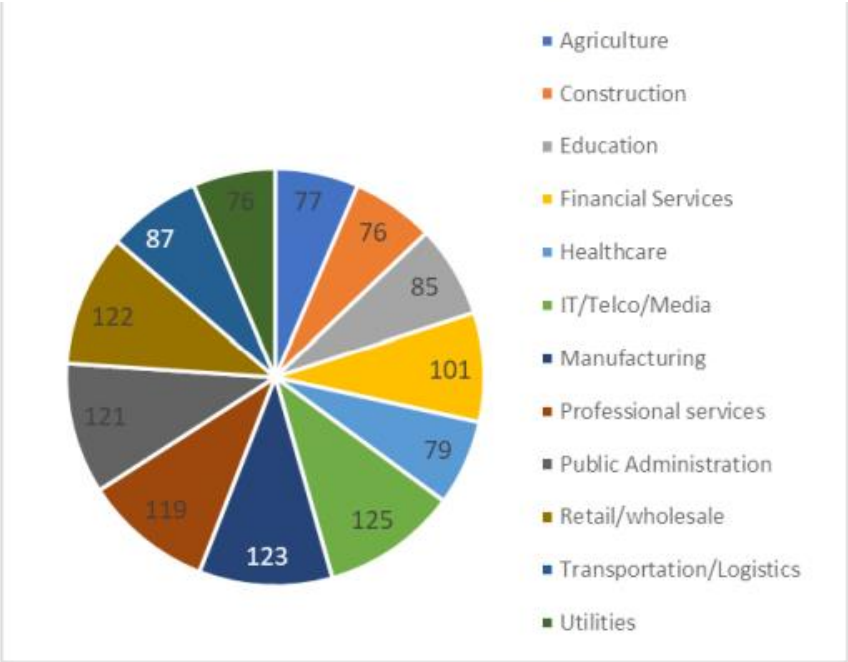
EC Legislative Priorities 2021–2022: A Europe Fit for the Digital Age
Proposal for a REGULATION on European Data Governance (Data Governance Act)
Proposal for a REVISION of Directive 2003/98/EC on the reuse of public sector information (Open Data Act)
Proposal for a REGULATION on the Data Act (legislative, including impact assessment, Article 114 TFEU, Q3 2021)
Proposal for the REVISION of Directive 96/9/EC on the legal protection of databases (Database Directive)
Proposal for a Regulation for Digital Services (Digital Services Act) and amending Directive 2000/31/EC
Proposal for a REGULATION on contestable and fair markets in the digital sector (Digital Markets Act)
Proposal for a REGULATION laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts
Digital levy and a proposal for a digital levy as own resource (legislative, including an impact assessment, Q2 2021)
European Cyber Resilience Act (legislative, including an impact assessment, Q3 2022)

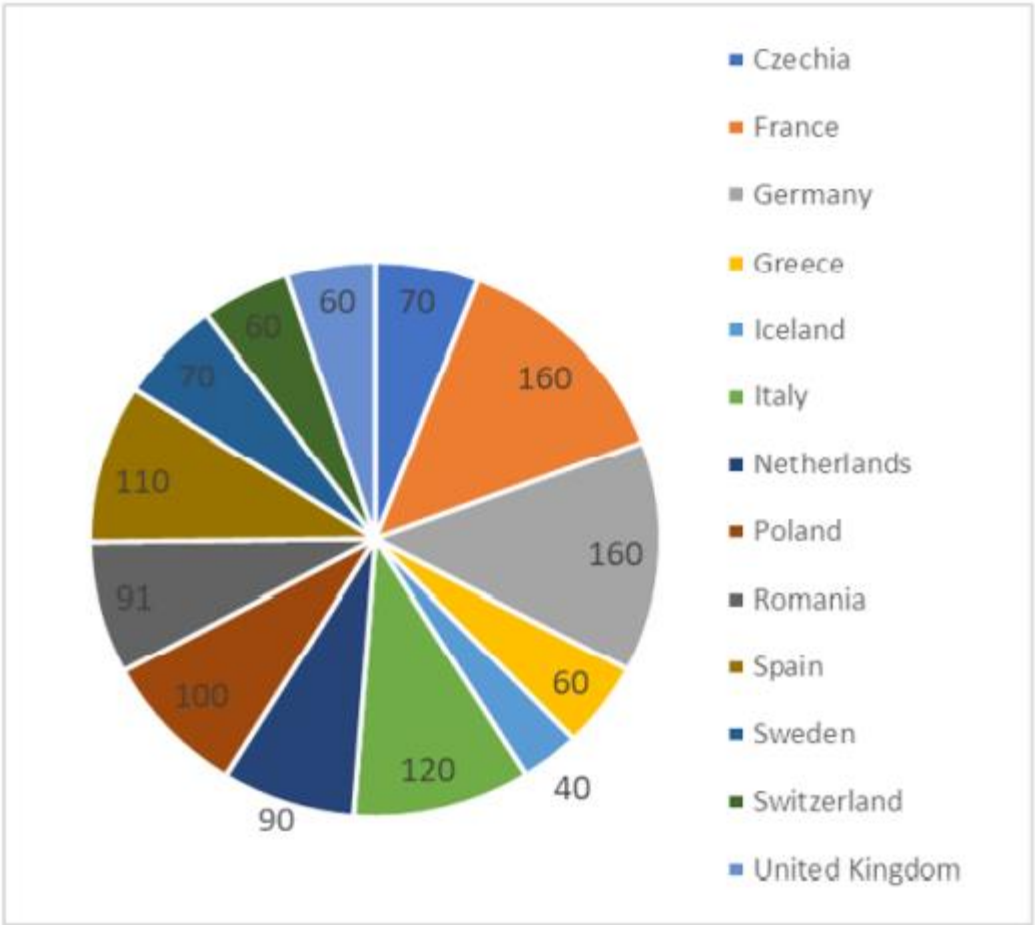
Source: European Commission Work Programme 2021–2022

Methodology of the Data Market Monitoring Tool: company size, geographical distribution and industry segments

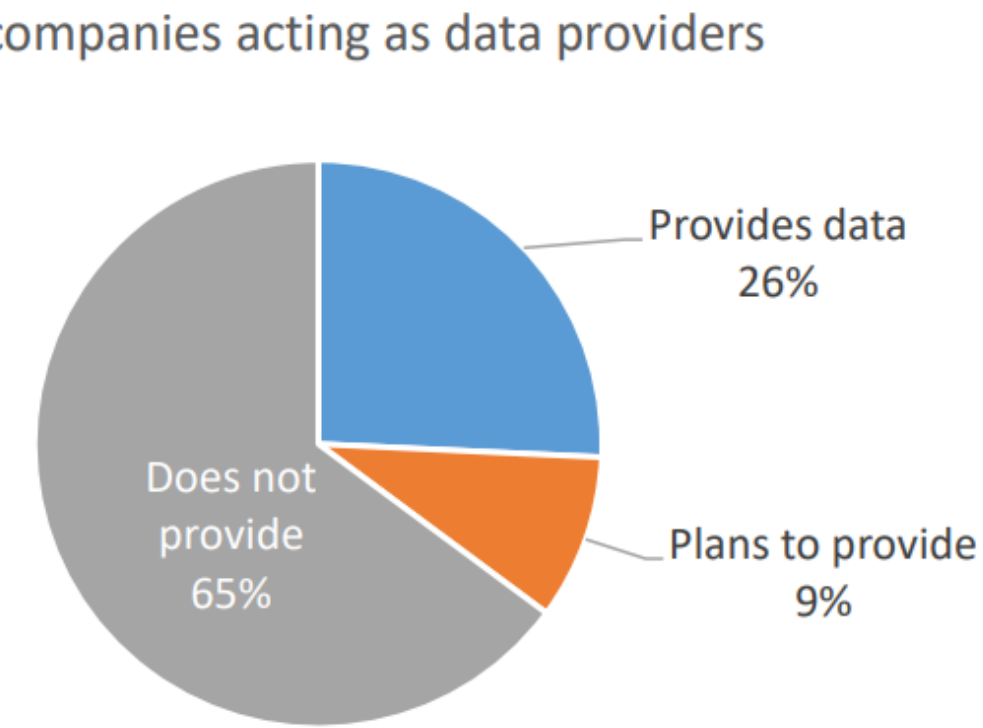


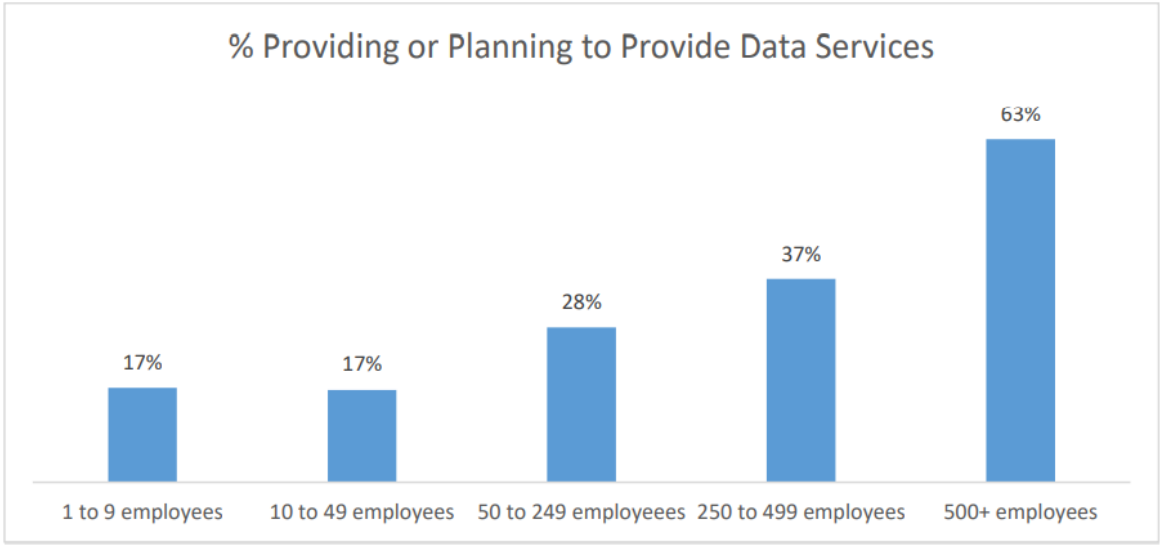
Source: European Data Market Study Survey, 2021





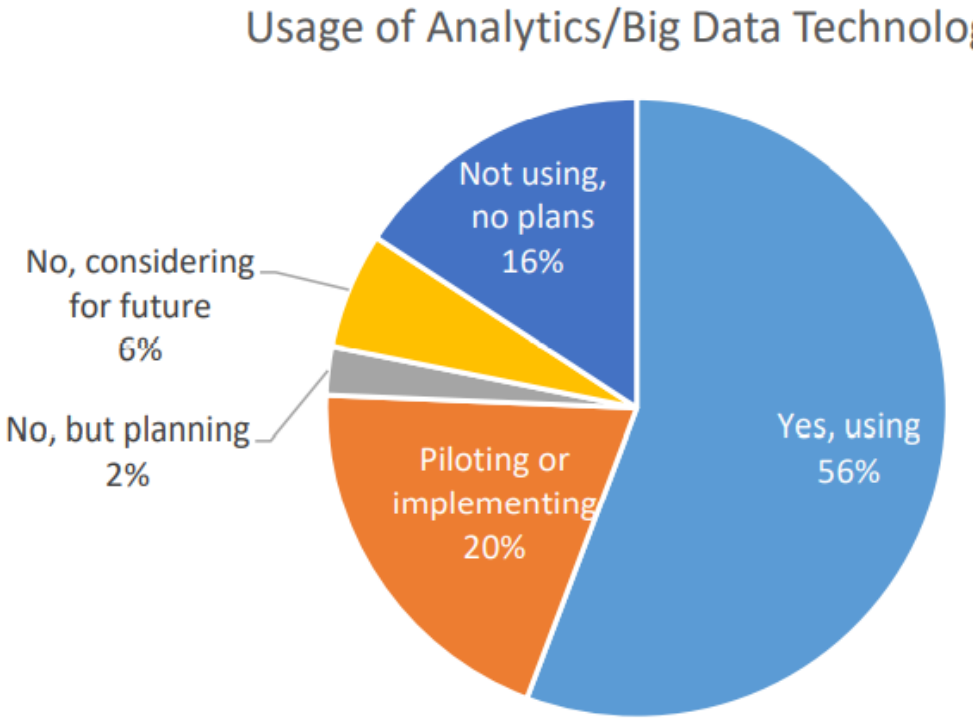
Survey highlights: data providers

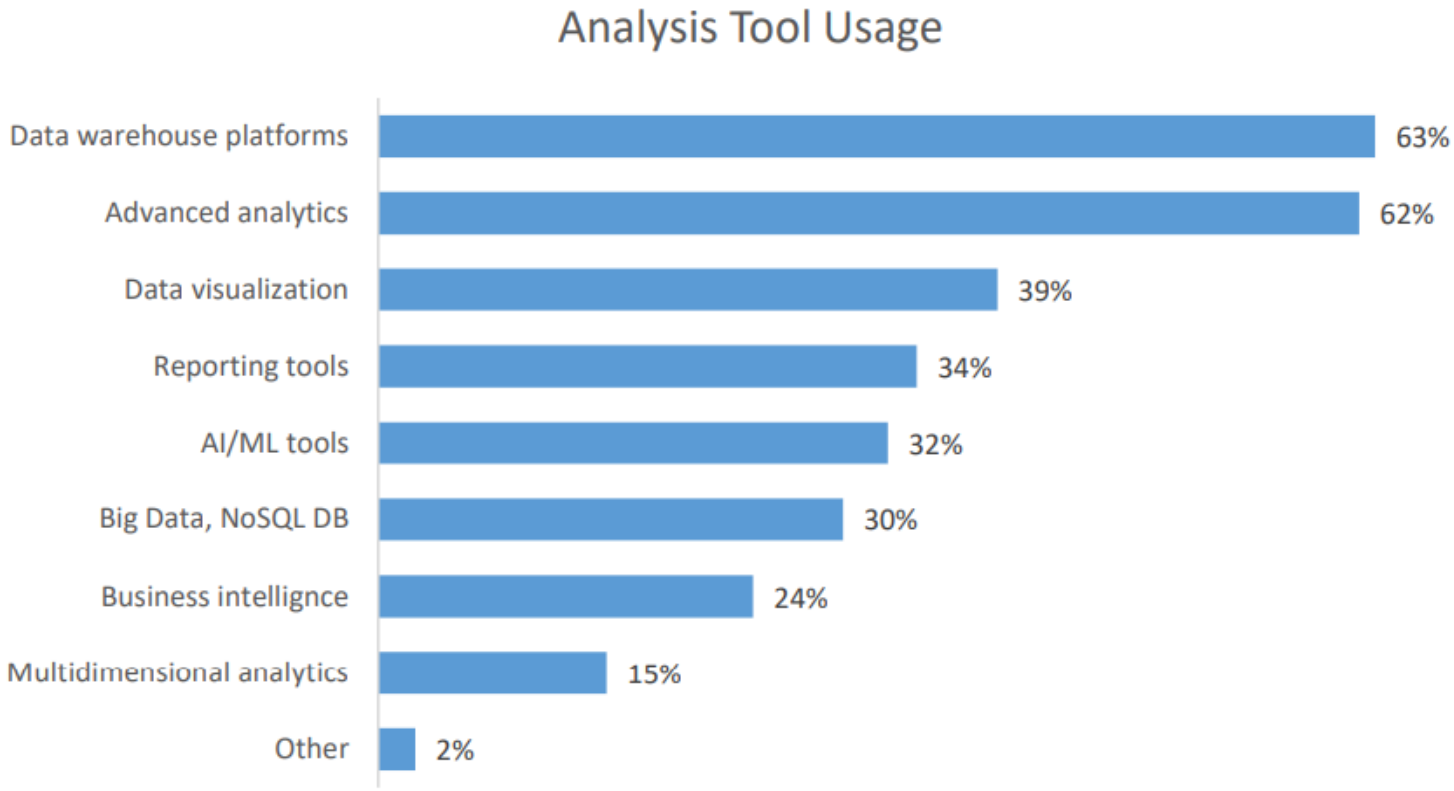




- Differences across industries are wide: While 80% of IT/telecom/media organisations are data providers or planning to be, this percentage shrinks to less than 15% for agriculture, construction, public administration, and logistics.
- The most widespread data service types provided are data-based products and services to end users in specific vertical markets (47%) and access to premium datasets/sources (32%). Around a quarter of the providers furnish marketing/advertising services data (28%) and software/consulting for big data tools (24%).
- Also, there is dramatic variation depending on company size

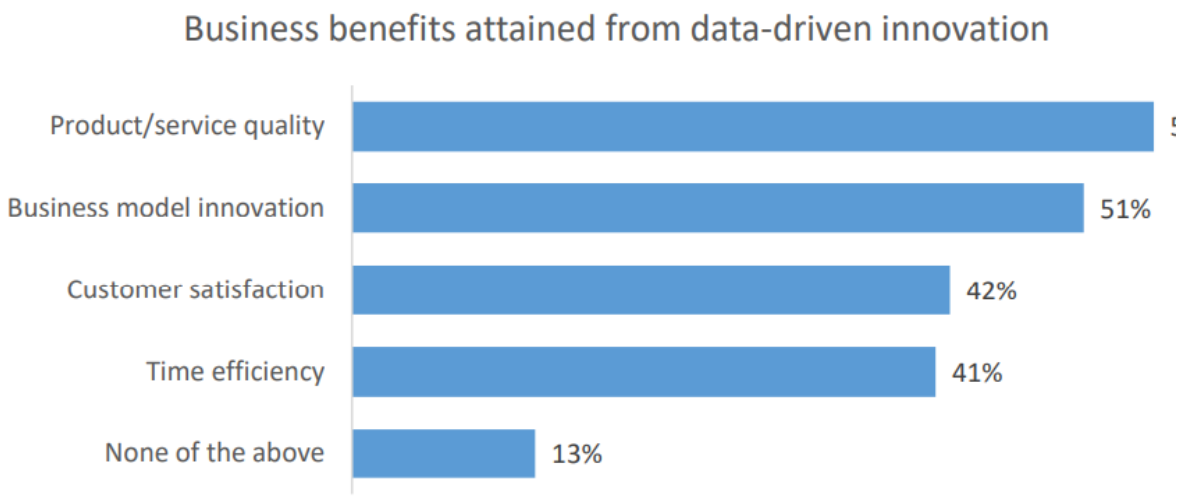
Survey highlights: Big Data Usage

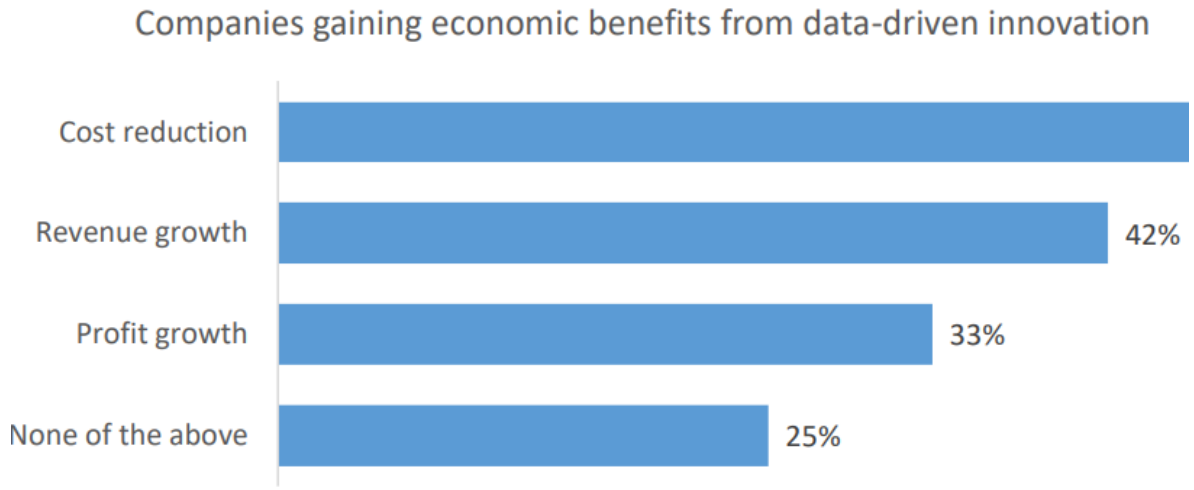




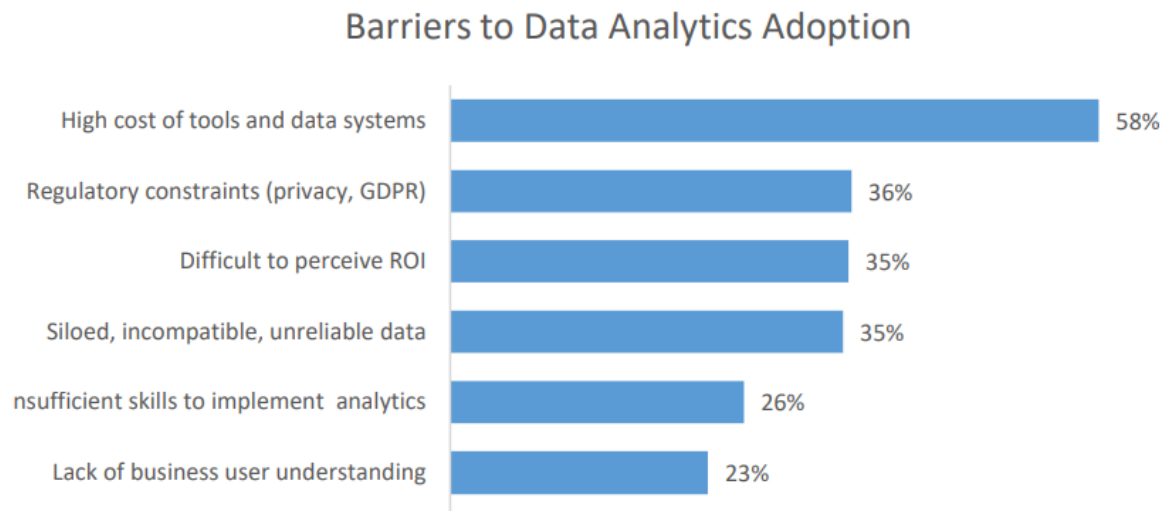
- the more traditional industries and smaller companies show lower usage. Nevertheless, a high number of smaller companies are currently in a transition phase

Survey Highlights: Usage (barriers and benefits)

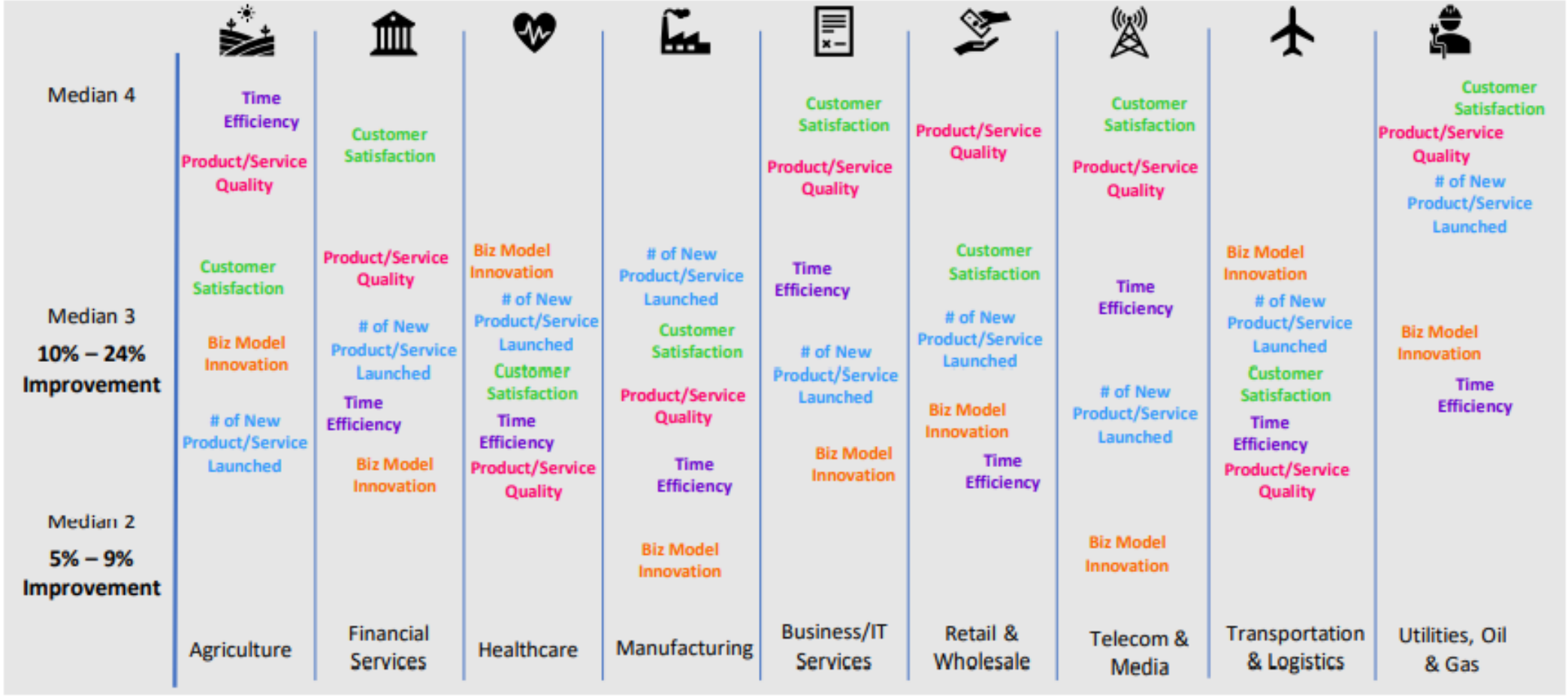




- 3 major barriers: Regulatory constraints, difficulties in perceiving ROI deriving from the use of analytics, and problems with unreliable, inefficient, or siloed data
- Lack of skills and lack of understanding from the business users are also major barriers

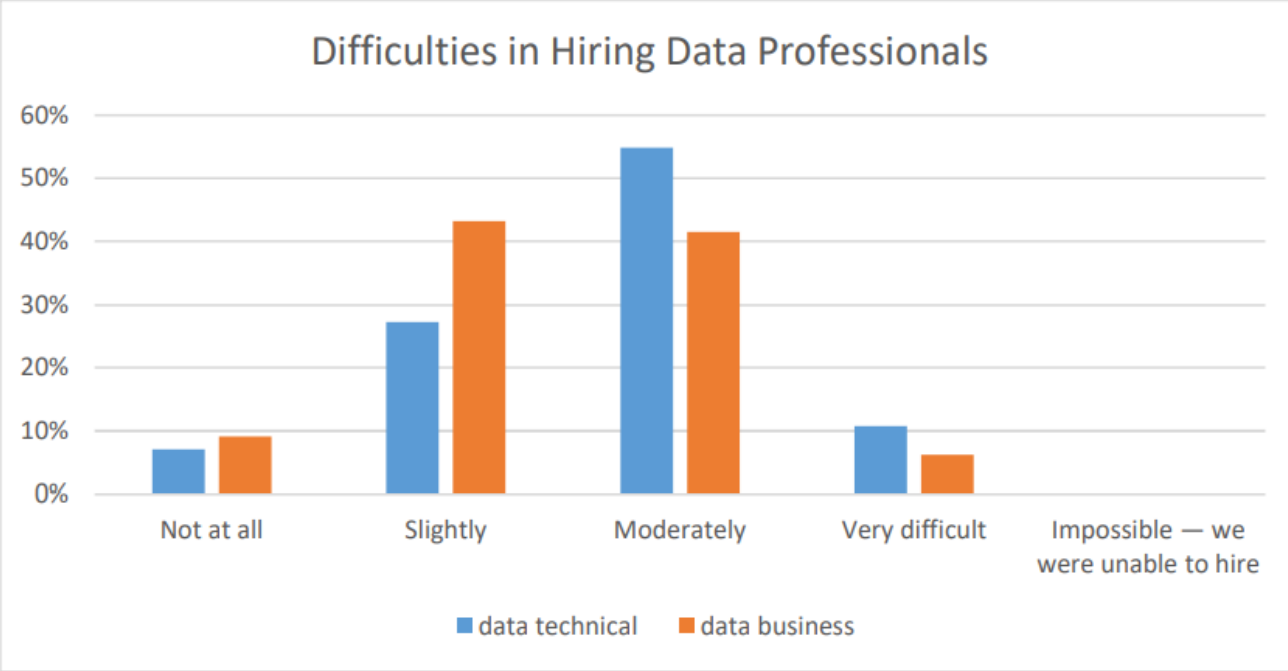


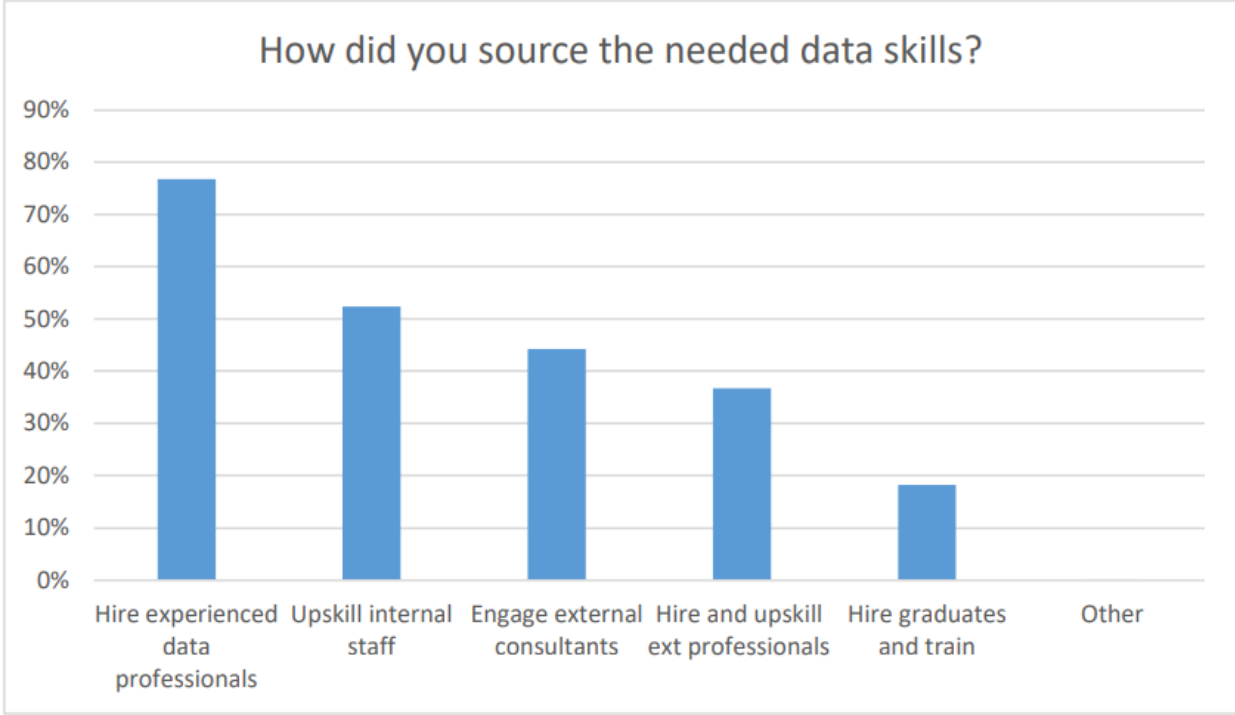
Data-Driven Use Cases: Business Impact Benchmarks Based on KPIs



Source: IDC for DataBench project, 2019

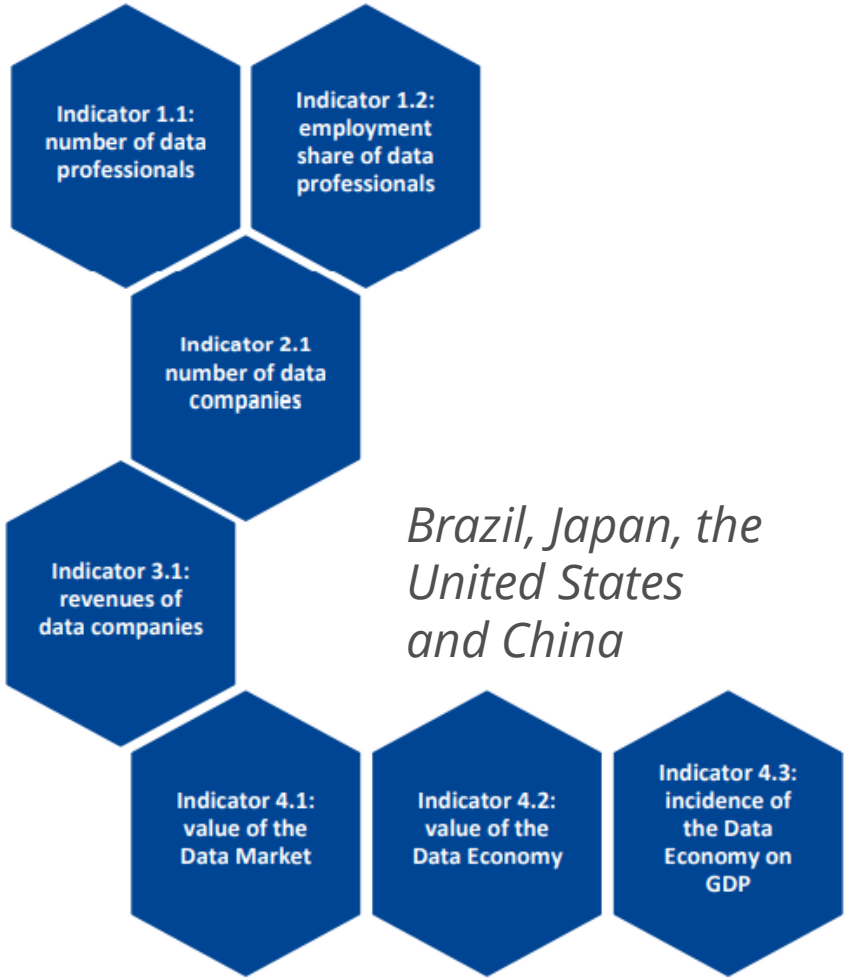
Survey highlights: skills





- Data technical professionals are data engineers, data analysts, and data administrators, while data business professionals are data scientists and business data analysts.
- About a third of the respondents affirm that they had hired a data professional in the last 12 months
- A hiring problem exists in this domain; The problem is slightly more evident for data business professionals than for data technical professionals

Facts & Figures: indicators



Brazil, Japan, the United States and China

Data professionals

Data professionals are workers who collect, store, manage, and/or analyse, interpret, and visualise data as their primary activity or as a relevant part of their activity. Data professionals must be proficient with the use of structured and unstructured data, should be able to work with a huge amount of data, and should be familiar with emerging database technologies. For 2021–2023, the definition includes Data Technical Professionals, Data Business Professionals, and Data Consumers (this one not included in measurements)

Data professionals in the EU27 will account for 8.1 million people in 2025 or 9.6 million data professionals according to the Baseline forecast. The number is expected to rise by a compound rate of 3.4% in the EU27 but is likely to be constrained by the limited supply of professionals

Data Professionals Forecast: 2025; 2030 Challenge, Baseline, and High Growth Scenarios (000's); and CAGRs (%)

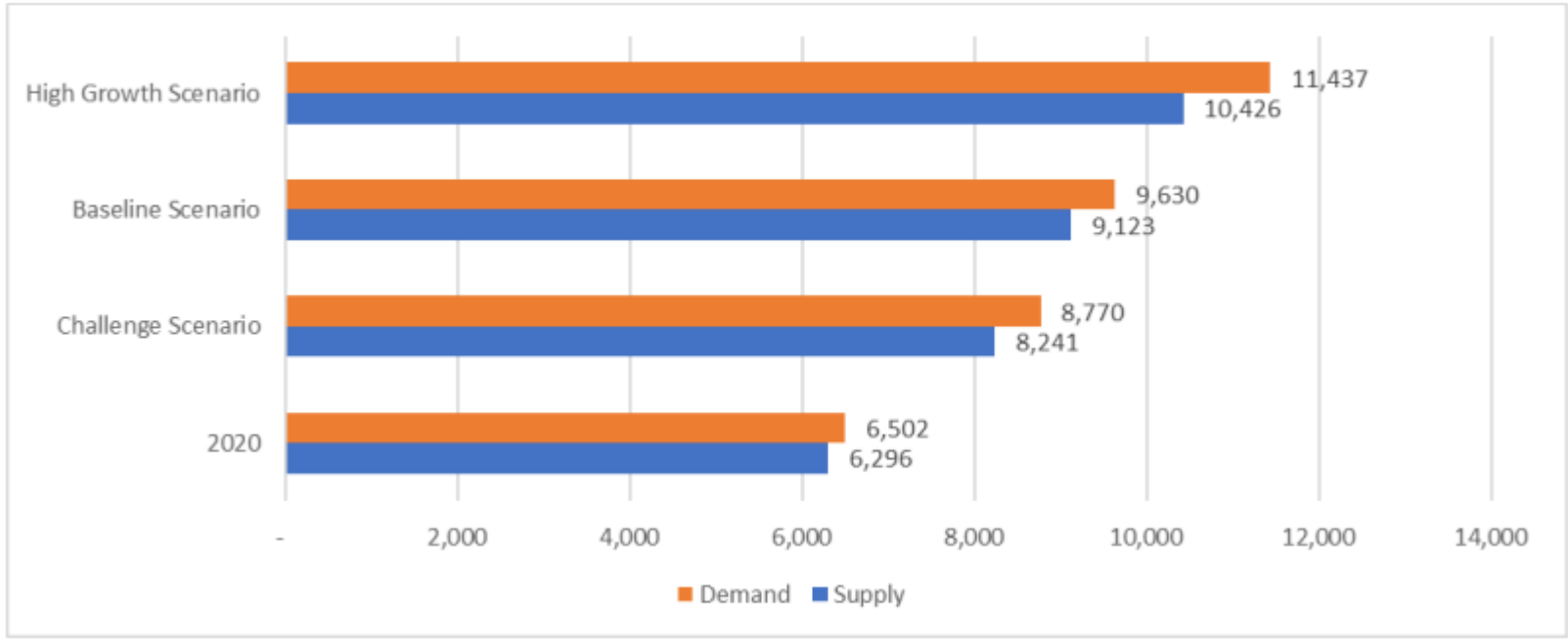
	2025	2030, Challenge	2030, Baseline	2030, High Growth	CAGR: 2020–2025	CAGR: '25–'30, Challenge	CAGR: '25–'30, Baseline	CAGR: '25–'30, High Growth
EU27	8,158	8,770	9,630	11,437	4.6%	1.5%	3.4%	7.0%
EEA (NO, LI, IS) +CH	436	458	507	634	6.0%	1.0%	3.1%	7.8%
Total, all countries	10,806	11,490	12,701	14,997	4.6%	1.2%	3.3%	6.8%

Data Professionals Skills Gap

The Data Professionals Skills Gap indicator captures the potential gap between the demand and supply of data professionals in Europe

The gap for EU27 is estimated at 2.5% of the total number of data professionals in 2020, growing to 5.3% in 2025 and 7% in 2030.

The Data Professionals Skills Gap for the EU27: 2020 and Three 2030 Scenarios ('000s)



Data companies

Data companies are organisations that are directly involved in the production, delivery, and/or usage of data in the form of digital products, services, and technologies. They can be both data supplier and data user organisations:

- *Data suppliers have as their main activity the production and delivery of digital data-related products, services, and technologies. They represent the supply side of the data market.*
- *Data users are organisations that generate, exploit collect, and analyse digital data intensively and use what they learn to improve their business. They represent the demand side of the data market.*

Growth of number of data suppliers is expected but more until 2025 than after that (till 2030). Values will depend significantly on the rise in the number of companies that monetise data in data markets. Data user companies forecast shows higher growth over the period of the forecast when compared with data supplier companies as the data economy begins to drive its way into all business

Data Supplier Companies Forecasts: 2025, Three 2030 Scenarios, and Growth (%)

	2025	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2020–2025	CAGR '25–30, Challenge	CAGR '25–30, Baseline	CAGR '25–30, High Growth
EU27	252,791	283,084	295,043	311,397	8.8%	2.3%	3.1%	4.3%
EEA (NO, LI, IS) + CH	15,247	17,080	17,964	19,080	8.6%	2.3%	3.3%	4.6%
Total, all countries	505,562	564,976	584,542	614,069	8.7%	2.2%	2.9%	4.0%

Data User Companies Forecasts: 2025, Three 2030 Scenarios, and Growth (%)

	2025	2030, Challenge Scenario	2030, Baseline Scenario	2030, High Growth Scenario	CAGR: 2020–2025	CAGR: '25–'30, Challenge	CAGR: '25–'30, Baseline	CAGR: '25–'30, High Growth
EU27	633,359	753,920	898,220	1,086,306	3.1%	3.5%	7.2%	11.4%
EEA (NO, LI, IS) + CH	27,174	32,334	38,832	47,197	3.0%	3.5%	7.4%	11.7%
Total, all countries	875,394	1,041,537	1,237,203	1,492,761	3.2%	3.5%	7.2%	11.3%

Data companies' revenues

Data companies' revenues correspond to the aggregated value of all the data-related products and services generated by Europe-based data suppliers, including exports outside the EU. Data companies' revenues do not include data monetisation as part of the data market.

Revenues generated by data suppliers have registered a constant increase over recent years to reach nearly €71 billion in the EU27 in 2020. Data companies' revenues account for 0.3% of total company revenues in 2020

Data Companies Revenues Forecasts: 2025 (€M), Three 2030 Scenarios (€M), and Compound Growth (%)

	2025	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2020–2025	CAGR 2025–2030, Challenge	CAGR 2025–2030, Baseline	CAGR 2025–2030, High Growth
EU27	104,086	108,964	123,294	152,372	7.9%	0.9%	3.4%	7.9%
EEA (NO, LI, IS) + CH	9,483	10,251	12,958	15,194	5.9%	1.6%	6.4%	9.9%
Total, all countries	140,015	152,625	174,987	213,405	7.3%	1.7%	4.6%	8.8%

Data Market Value and Data Market Economy

*The **data market** is the marketplace where digital data is exchanged as "products" or "services" as a result of the elaboration of raw data. The **data economy** measures the overall impacts of the data market on the economy as a whole. It involves the generation, collection, storage, processing, distribution, analysis elaboration, delivery, and exploitation of data enabled by digital technologies.*

The value of the **European data market** will reach €63.6 billion for the EU27, with a growth rate of 4.9% in 2021. France, Germany, Italy, Spain, and the Netherlands tend to contribute the most to the **data economy** in the EU27. The NGEU again plays a significant role, as around 50% of total resources will be distributed across the four biggest countries in the EU27, making a significant difference in the next five years.

Data Market Forecast: 2025 (€ '000s), Three 2030 Scenarios (€ '000s), and Compound Growth (%)

	2025	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2020–2025	CAGR 2025–2030, Challenge	CAGR 2025–2030, Baseline	CAGR 2025–2030, High Growth
EU27	90,121	94,218	105,619	125,238	8.2%	0.9%	3.2%	6.8%
EEA (NO, LI, IS) + CH	8,453	8,822	10,327	12,316	7.5%	0.9%	4.1%	7.8%
Total, all countries	125,221	130,640	145,335	171,087	8.2%	0.9%	3.0%	6.4%

**Check data economy values in the report*

Industry-driven research and innovation community with more than **240 members** all over Europe. And growing!!

Data Strategy

AI Strategy

Digital Transformation

European Ecosystem

BDV BIG DATA VALUE ASSOCIATION

Network of Collaborations

Big Data Value cPPP

BIG DATA VALUE PUBLIC-PRIVATE PARTNERSHIP

AI, Data and Robotics Partnership

BDV BIG DATA VALUE ASSOCIATION

CLAIRE

ellis European Laboratory for Learning and Intelligent Systems

eu ROBOTICS

EurAi

EuroHPC JU

EuroHPC Joint Undertaking

ETP 4 HPC EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING

BDV BIG DATA VALUE ASSOCIATION

Data Spaces Business Alliance (DSBA)

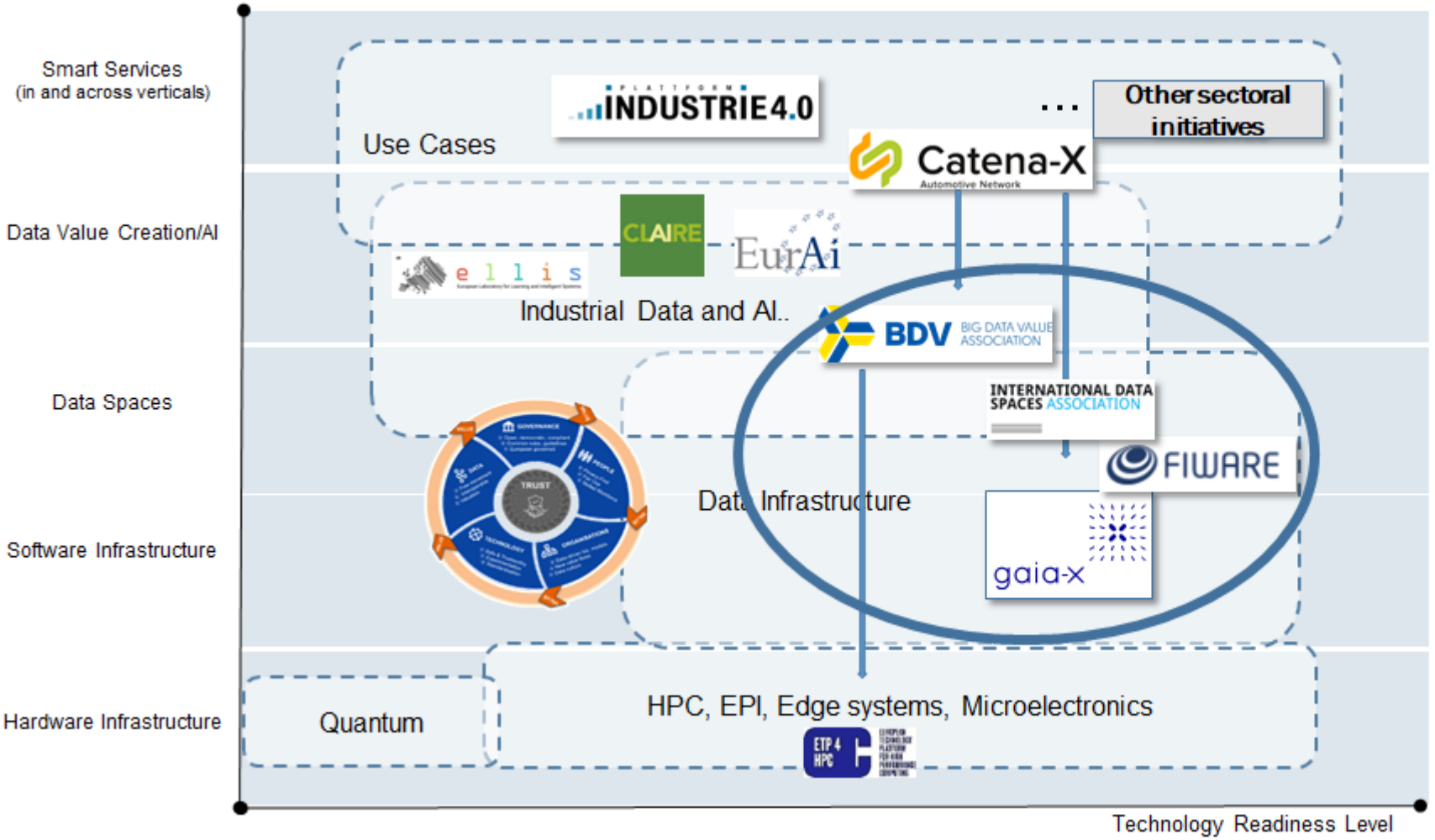
BDV BIG DATA VALUE ASSOCIATION

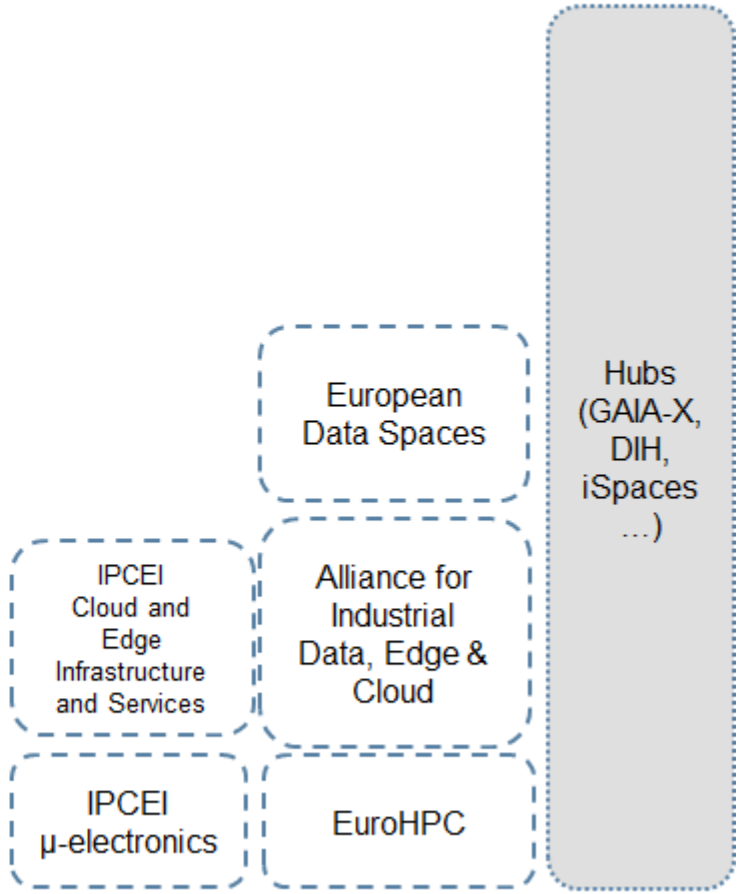
INTERNATIONAL DATA SPACES ASSOCIATION

FIWARE FOUNDATION

gaia-x

Strategic Digital/Data related initiatives for Europe (technology coverage of a sample of them)





Data Spaces Business Alliance: Work-Plan structure

Deployment

Data Spaces Funnelling / Roll-out plan and process

Coordinate the evolution of the most promising data spaces,

- *Group the lighthouse initiatives and promising data spaces to a frontrunner data spaces initiative*
- *Map similar initiatives in different MS, and match-making.*

Data Space Handbooks

- *Create individual handbooks per data space*
- *Make use of use case template and use case playbooks*
- *Individual plans per data space, coherent to a common framework*

Data Space Deployment

Continuous knowledge transfer to the data spaces

- *Enable consortia to grow and realize the data space*
- *Network of experts / mobilise talent*
- *What value will you find in the harmonized model? Transition stories for early adopters*

Data Space Operations

- *Support to create all the elements needed for roll-out a Data Space, Not only the technical, but organisational, skills, etc, etc.*
- *Basic principles of intra-organisational and inter-organisational aspects*
- *Governing body and operating company(ies)*

Monitor

Radar and Maturity Assessment

Retrieve information on data space endeavours / Scout promising and mature endeavours
Identify Lighthouses and best practises / Benchmarking

Long-term enablers

Standards

- *Influence standards (European and Global standards)*
- *Standards landscape*
- *Liaisons*

Regulation

- *Understand,*
- *influence,*
- *Implement*
- *Educate*
- *Compliance*

Technology Roadmap and Strategy

- *Map technologies on timeline*
- *Identify challenges and gaps*
- *Derive technology roadmap*
- *Strategic Agenda*
- *Future frameworks / Evolution*

Disruption and Innovation

- *How do we bring disruption and innovation into the ecosystems?*
- *Incubator / Testbeds / Experimentation*
- *Scientific reflection on the evolution of the framework*
- *Network of research experts*

Data Space Education

- *Data Spaces designer, engineer, operator and PM profile*
- *Training and educational courses*
- *General Awareness Programme*

Framework

Common Data Space Framework

- *Reference conceptual framework, Common set of rules and design principles, based on existing frameworks – governance, soft infrastructure*
- *Minimum set of requirements (operate, interoperate, comply, get value,…)*

Reference Technology Framework

- *SW integration of components*
- *Integration of existing solutions*
- ***Map technologies to process***

Common voice

- *Mission and Vision*
- *Joint plan*

HUBs

- *Map*
- *Coordinate*
- *Collaborate*

Ecosystem engagement and Communications

Data Spaces Support Centre

DSBA HUBS LANDSCAPE

Gaia-X HUBS

* National Hubs
* Europe
* Current Hubs
* Hubs in process of joining

01 Austria
02 Belgium
03 Finland
04 France
05 Germany
06 Greece
07 Italy
08 Luxembourg
09 Netherlands
10 Poland
11 Portugal
12 Slovakia
13 Slovenia
14 Spain
15 Sweden
16 Czech Republic
17 Denmark
18 Estonia
19 Great Britain
20 Ireland
21 South Korea
22 Switzerland

IDSA HUBS & COMPETENCE CENTRES

* Regional Hubs
* Europe

01 Big Data for Smart Society (GATE) Sofia, Bulgaria
02 Cefriel Milaan, Italy
03 CERTH/ITI Thessaloniki, Greece
04 Czech Technical University in Prague Prague, Czech Republic
05 Innovalia Association Bilbao, Spain
06 Institut Mines-Telecom Paris, France
07 TNO The Hague, Netherlands
08 VTT Espoo, Finland
09 Tecnalia Bilbao, Spain
10 University of Patras, LMS Patras, Greece
11 L3S Research Center, Leipniz University Hannover, Germany
12 Fraunhofer-ISST Dortmund, Germany

FIWARE iHUBS

* Regional Hubs
* Europe
* Global

01 A. Castro Servicios & Tecnologia Montevideo, Uruguay
02 Astrid Wolfsburg, Germany
03 ATIO Barcelona, Spain
04 Centifo Hub Grasse, France
05 Ciudades del Futuro iHub Buenos Aires, Argentina
06 Detecon FIWARE iHub Cologne, Germany
07 DigiCity Connect Atlanta, USA
08 DIHBAI-TUR Balearic Islands, Spain
09 Faubourg Numérique Saint-Quentin, France
10 FiiHub Azores DIH Azores, Portugal
11 FiiHub Canary Islands Tenerife, Spain
12 FIWARE Innova iHub Perugia, Italy
13 FIWARE OIL iHub Lund, Sweden
14 FIWARE Space Bajadoz, Spain
15 FIWARE Zone Seville, Spain
16 Future City iHub Amersfoort, Netherlands
17 Hellenic FIWARE iHub Athens, Greece
18 IDEASFORUM Herne, Germany
19 iHub FIWARE Bridge Tunis, Tunisia
20 IoT Lab iHub Geneva, Switzerland
21 LaNIF México City, Mexico
22 Madeira FiiHUB FIWARE iHub Madeira, Portugal
23 Maroc Numeric Cluster Casablanca, Morocco
24 MOA GLOBAL Santana de Parnaíba, Brazil
25 The Texas Project iHub Austin, Texas USA
26 Uni FIWARE iHub Athens, Greece

BDVA i-SPACES

* Regional Hubs
* Europe

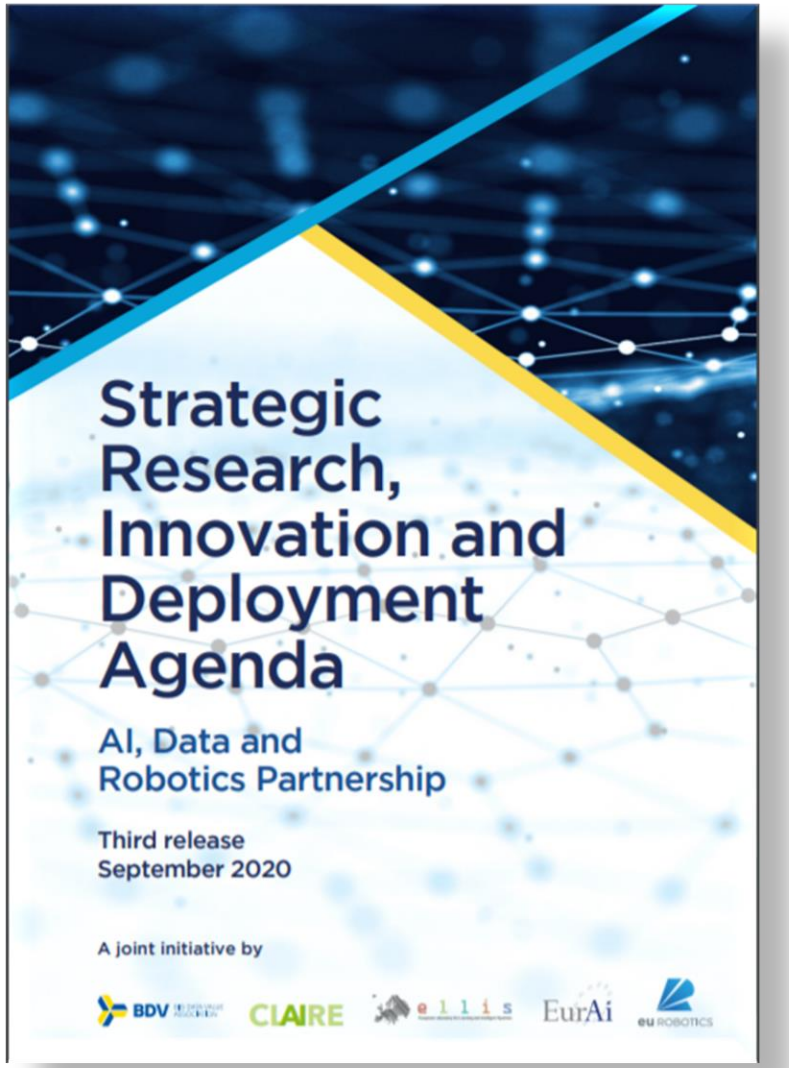
Gold
01 Attica Hub for the Economy of Data and Devices Athens, Greece
02 AIR4S (Universidad Politécnica de Madrid) Madrid, Spain
03 Aragón DIH (ITA) Aragón, Spain
04 BIGDATACoE (Eurecat) Barcelona, Spain
05 CeADAR Dublin, Ireland
06 DIH GIGAL Vigo, Spain
07 ICE Data Center (RISE) Luleå, Sweden
08 ITI Valencia, Spain
09 Know-Center Graz Graz, Austria
10 EGI Amsterdam, Netherlands
11 Gemini (Sintef) Trondheim, Norway
12 SCAI (CINECA) Bologna, Italy
13 Stichting Smart Connected Supplier Network Eindhoven, Netherlands
14 PRODUTECH DIH Porto, Portugal
15 TeraLab (Institut Mines- Télécom) Paris, France
Silver
16 Algebra Lab Zagreb, Croatia
17 Belgrade Data Innovation Hub Belgrade, Serbia
18 Cybersecurity Hub, z.s. Czech Republic
19 DataLife Santiago de Compostela, Spain
20 DIH4AISEC Leibniz, Germany
21 DIH TECHNICOM Košice, Slovakia
22 ECIPA Venice, Italy
23 Edinburgh International Data Facility (EPCC) Edinburgh, United Kingdom
24 HPC4Poland (Poland Super Computing Centre) Poznań, Poland
25 Latvian IT Cluster DIH Riga, Latvia
26 Linz Center of Mechatronics GmbH Linz, Austria
27 nZEB Smart Home DIH Thessaloniki, Greece
28 Machine Intelligent Garage London, UK
29 Plan4All Horní Bříza, Czech Republic
30 Smart Data Innovation Lab (KIT) Karlsruhe, Germany
31 Transilvania Digital Innovation Hub Cluj-Napoca, Romania
Bronze
32 Innovation Cluster Drachten (ICD) Drachten, Netherlands
33 Minasmart Grenoble, France
34 Munich Innovation Hub for applied AI Munich, Germany
35 UDG Donja Gorica, Montenegro

EUROPE

GLOBAL

Data Spaces & Support Center

AI, Data and Robotics



Artificial Intelligence – a real business driver for Europe?

Artificial Intelligence (AI), Data and **Robotics** will create new opportunities, transform many if not all verticals and ultimately shift the balance of power in the shortest possible time.

AI, Data and Robotics combined will be the core driver of innovation, productivity and economic growth. Together they can be used to solve the greatest challenges we face: Environmental sustainability; energy, food and water security; and improving health and quality of life.

Europe can and must be the pacemaker worldwide!

In Europe we must not be shy or afraid. We have our strengths – which we should not neglect. We should use them!

Our strengths are our excellent research networks, our well-established companies that are world market leaders in several major verticals, our growing startup communities and, not to forget, our European values.

Of course, we must be open and accept the challenges and worldwide competition.

To leverage our strength, we brought major European activities for **AI (Claire, Ellis, EurAI), Data (BDVA)** and **Robotics (euRobotics)** into a **Partnership** and setup cooperation with other major European and regional initiatives.

This **Partnership** is the European focal point for AI, Data and Robotics. Europe has all the expertise needed to progress rapidly in the deployment of these technologies, but it needs to direct energy towards building a coherent infrastructure to stimulate deployment and adoption, build up an effective innovation ecosystem and drive excellent research.

This **Partnership** will federate and cohere the communities that underpin European AI, Data and Robotics. It will stimulate private investment and orient public funding to address the key challenges. Collaboration within the Partnership will deliver Europe's vision for a human centric and trustworthy use of AI, Data and Robotics.

It is a pleasure for us to present you this paper – the **Strategic Research, Innovation and Deployment Agenda!**

This paper results from the joint work of BDVA, Claire, Ellis, EurAI and euRobotics colleagues. It includes hundreds of contributions collected in consultations with stakeholders, member states, associations, and individuals.

Many thanks to all contributors!

Thomas Hahn President Big Data Value Association (BDVA) Lead entity, main contact	Morten Irgens Executive board, Confederation of Laboratories for Artificial Intelligence Research in Europe (CLAIRE)	Bernd Liepert euRobotics President
Barry O'Sullivan Past President, European Artificial Intelligence Association (EurAI)	Arnold WM Smeulders Envoy of the European Laboratory for Learning and Intelligent Systems, ELLIS	David Bisset Executive Director euRobotics
Edward Curry Vice President, Big Data Value Association (BDVA)	Michela Milano Past Deputy President, European Artificial Intelligence Association	Sonja Zillner SRIDA Lead Big Data Value Association (BDVA)

https://ai-data-robotics-partnership.eu/wp-content/uploads/2020/09/AI-Data-Robotics-Partnership-SRIDA-V3.0.pdf

Nuria de Lama
ndelama@idc.com
www.linkedin.com/in/nuriadelama


IDC.com


linkedin.com/company/idc


twitter.com/idc


blogs.idc.com