

# How do platforms use data for innovation

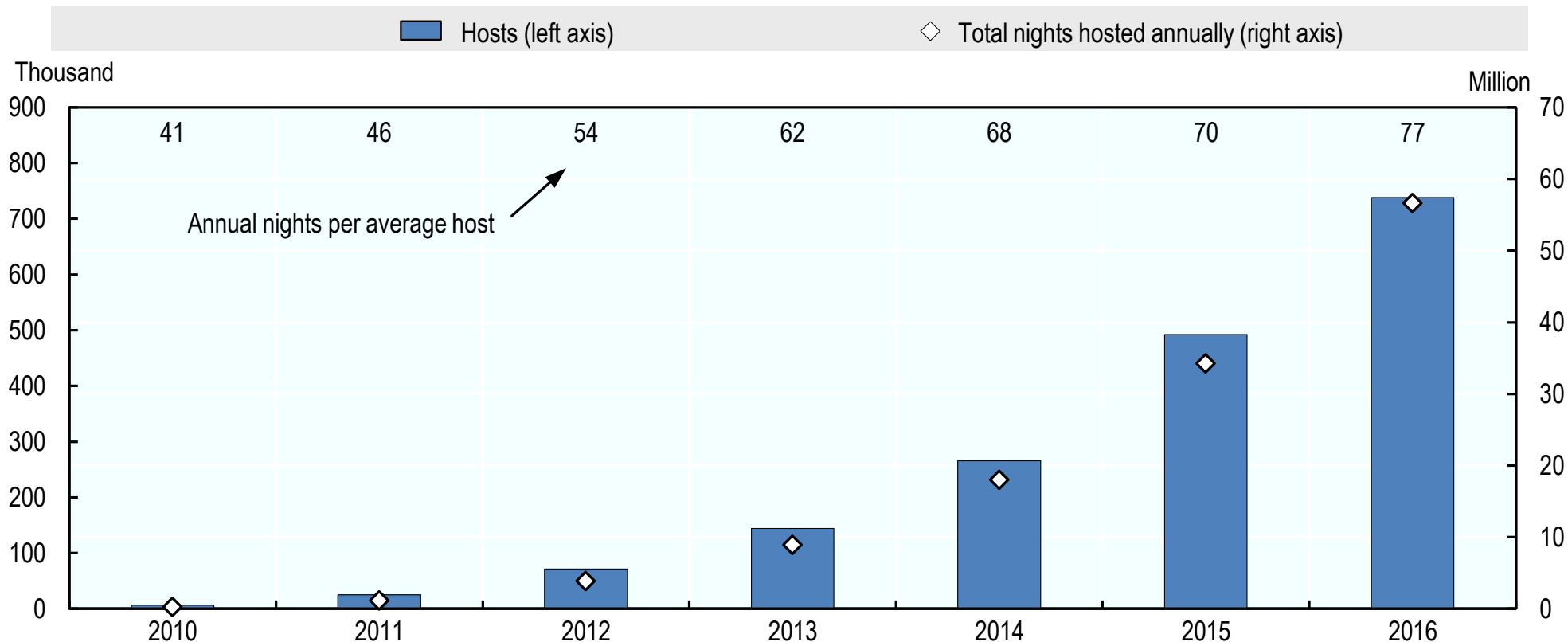
Christian Reimsbach-Kounatze, OECD

**Safe and Ethical Cyberspace, digital assets and risks:**  
*How to assess the intangible impacts of a growing phenomenon?*

**The World Conference on Intellectual Capital for Communities**

UNESCO, June 14&15 2018

# Airbnb hosts and nights hosted in the United States and major European markets

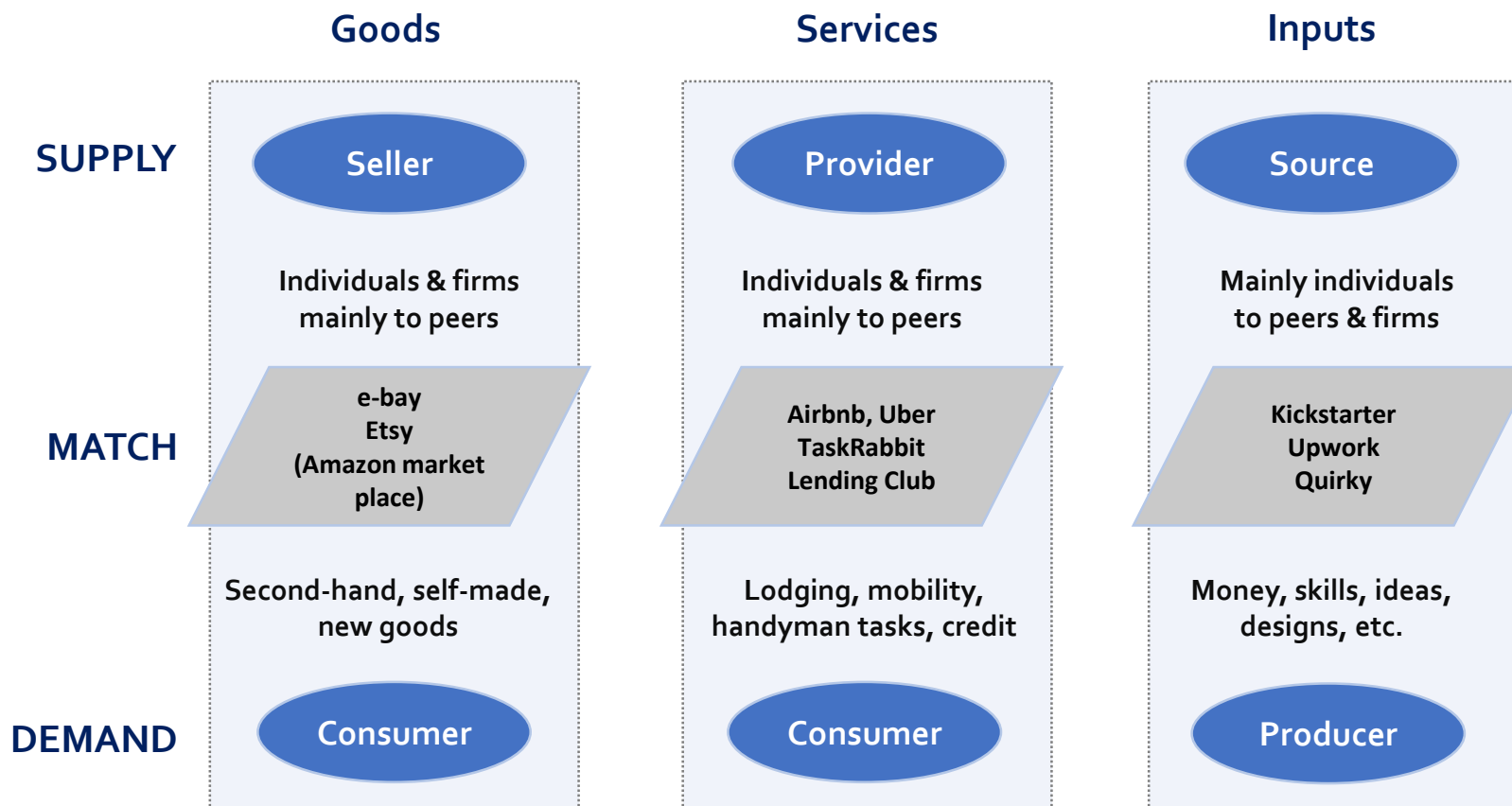


*Note:* European markets include: Germany, Italy, Spain and the United Kingdom. The number of hosts shown in this figure represents only active hosts, or “hosts who hosted”, rather than all registered hosts. *Source:* OECD, 2017 Digital Economy Outlook.

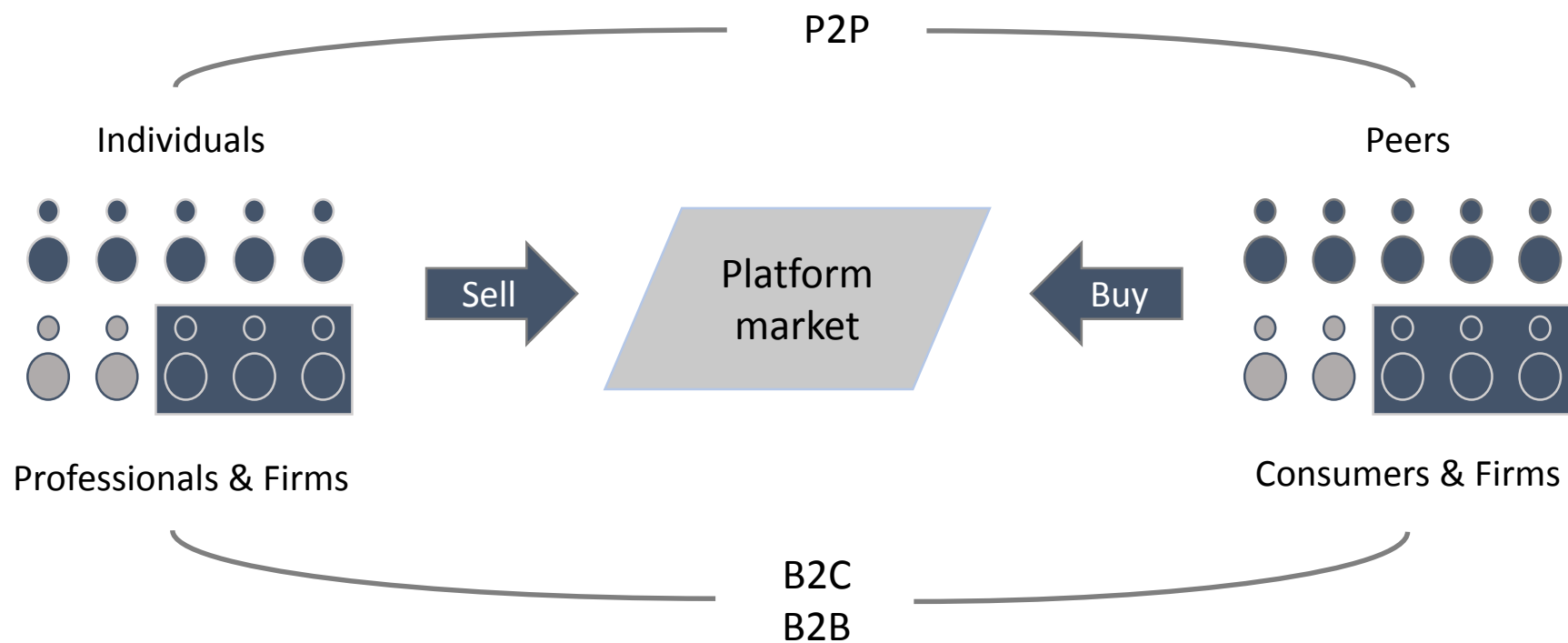
# Platforms operate in many areas ...



# ... and re-intermediate transactions



# ... enabling P2P, B2C and B2B



# What is a online platform?

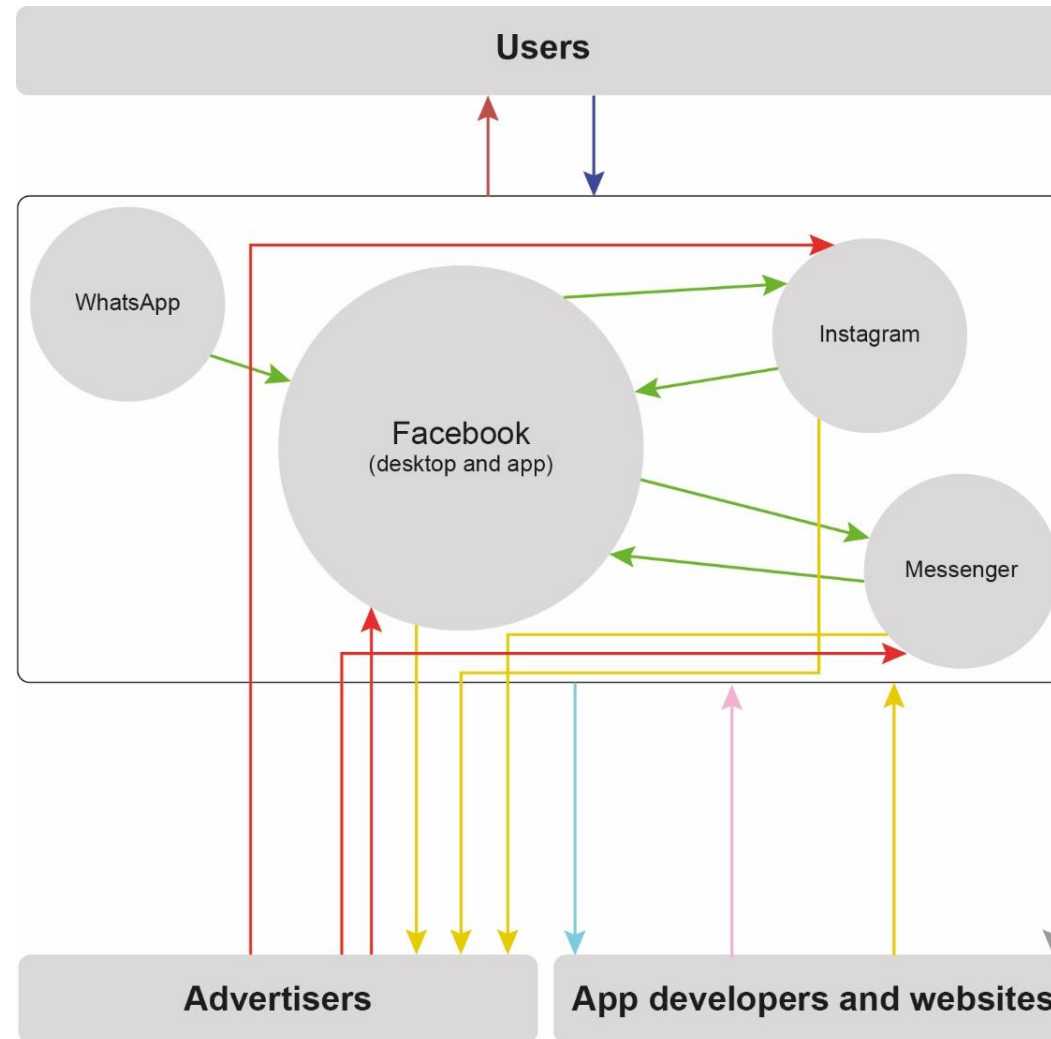
Online platforms are digital services that facilitates interactions between two or more distinct but interdependent sets of users who interact through the service via the Internet.

They are **multi-sided markets** which are **enabled by data** thanks to its economic properties.

# The difference between online platforms and digital ecosystems

- Digital ecosystems consist of combinations of interoperating applications, operating systems, platforms, business models and/or hardware, and not all components of the ecosystem must be owned by the same entity.
- Ecosystems may be more or less open to competitors and third parties, depending on the openness of the ecosystem's APIs.
- Amazon's Kindle Fire tablets, their version of the Android OS, the Kindle app store, the Alexa voice assistant and Echo smart speakers, and interoperable Kindle apps and ebooks are an example of part of a digital ecosystem.

# ic The Facebook Ecosystem



Source: OECD (forthcoming),  
Online platforms: a practical  
approach to their economic  
and social impacts



# The Google Ecosystem

Free (except for hardware) products and services /  
access to paid content

Generation and provision of data

Attention, traffic and hardware prices

Payment for content purchased on Google Play

Privileged distribution through / integration into

Fees

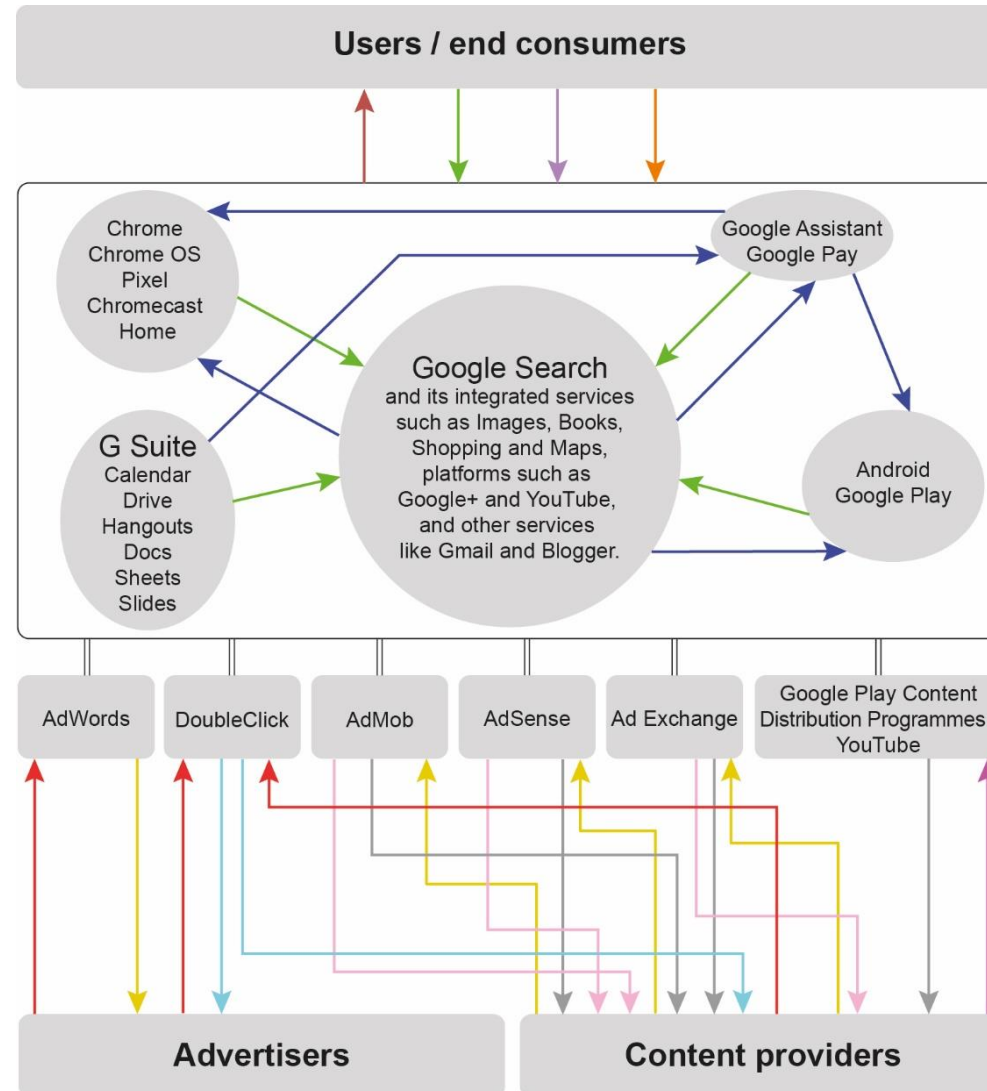
Advertising space

Ad serving tools and functionality

Access to advertisers

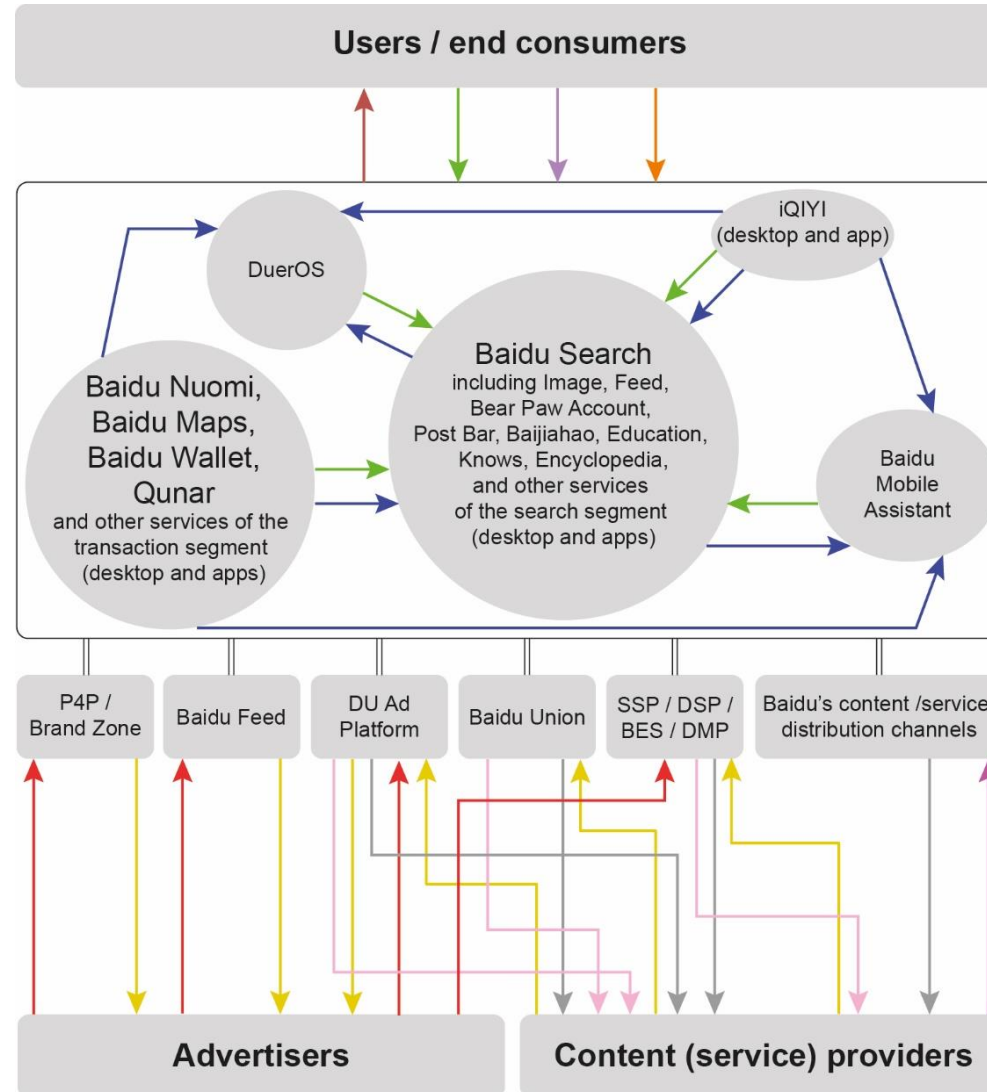
Ad revenue sharing

Content



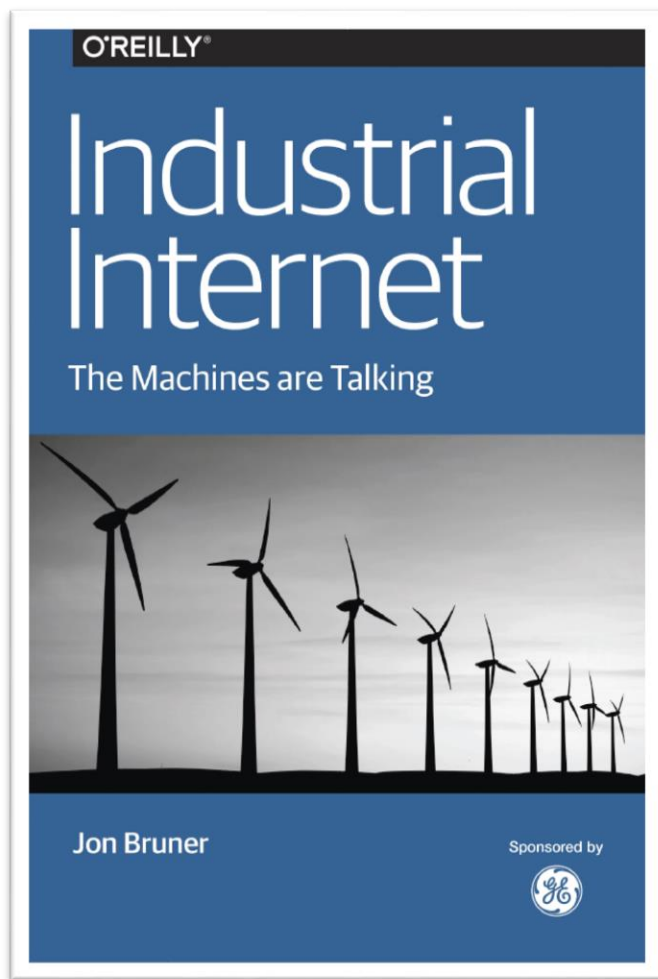
Source: OECD (forthcoming),  
Online platforms: a practical  
approach to their economic  
and social impacts

# The Google Ecosystem

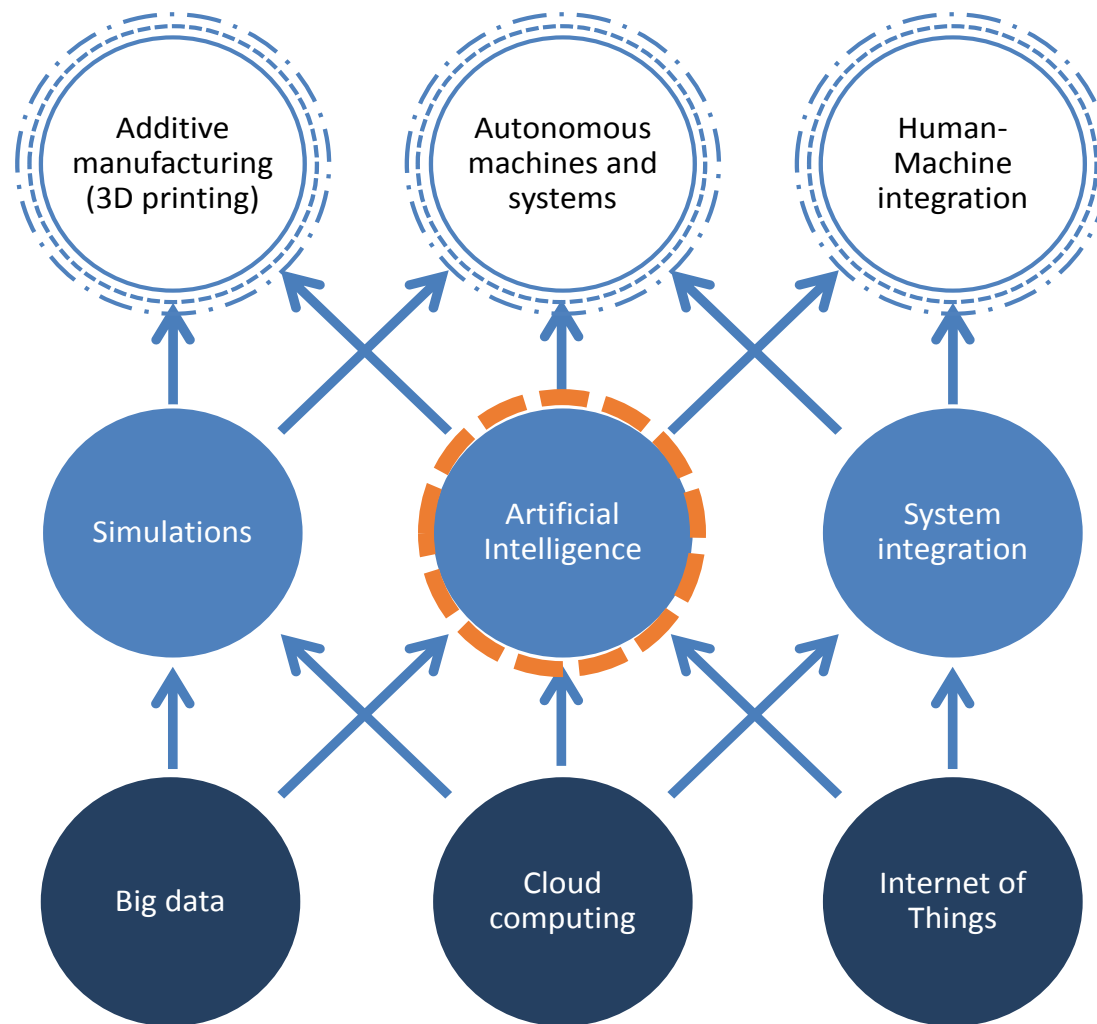


Source: OECD (forthcoming),  
Online platforms: a practical  
approach to their economic  
and social impacts

# Manufacturing could be transformed to platforms with the (next) production revolution (“Industrie 4.0”)

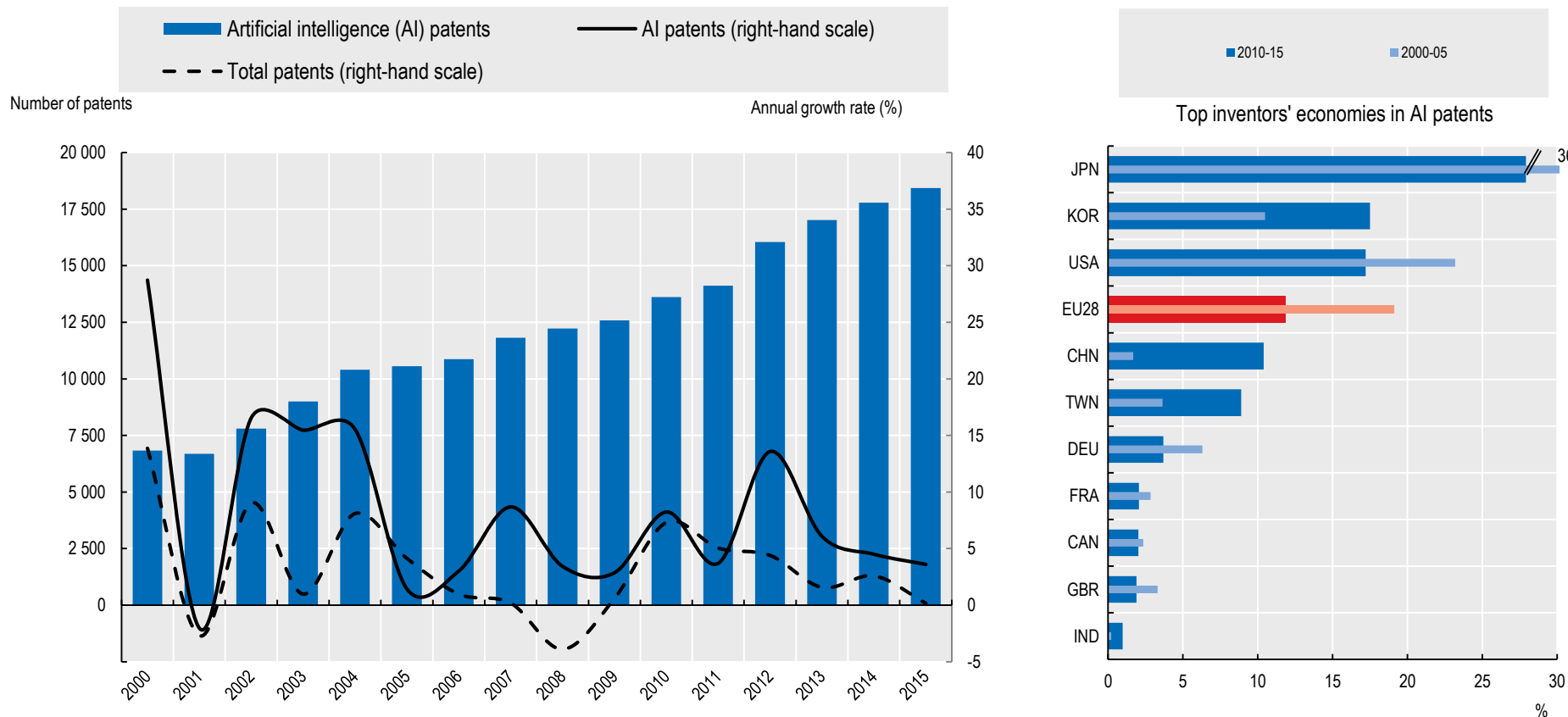


# ... with data, CC and the IoT being the key drivers



# Patents in artificial intelligence technologies, 2000-15

Number of IP5 patent families, annual growth rates and top inventors' economies



OECD, STI Micro-data Lab: Intellectual Property Database, <http://oe.cd/ipstats>, June 2017.

14th & 15th June 2018

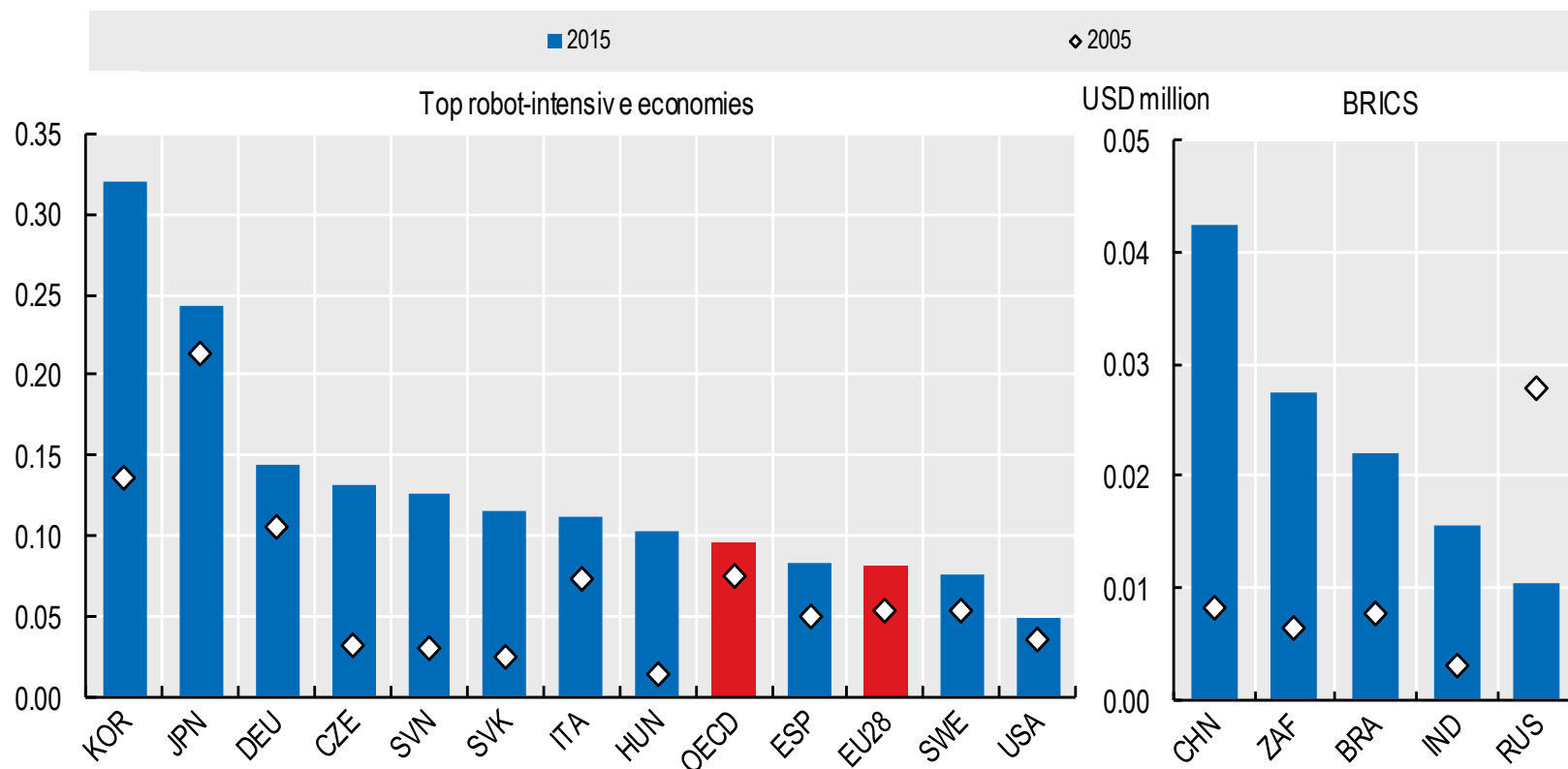
The World Conference on Intellectual Capital for Communities

OECD Science, Technology and Industry Scoreboard 2017 - © OECD 2017

14th Edition

# Top robot-intensive economies and BRICS, 2005 and 2015

Industrial robot stock over manufacturing value added,  
Percentage (left), USD million of current values (right)



OECD calculations based on International Federation of Robotics data, and the World Bank, World Development Indicators Database, September 2017. [OECD Science, Technology and Industry Scoreboard 2017 - © OECD 2017](#)

# The role of data and data-driven innovation (DDI)



# Data is the “new R&D” for innovation

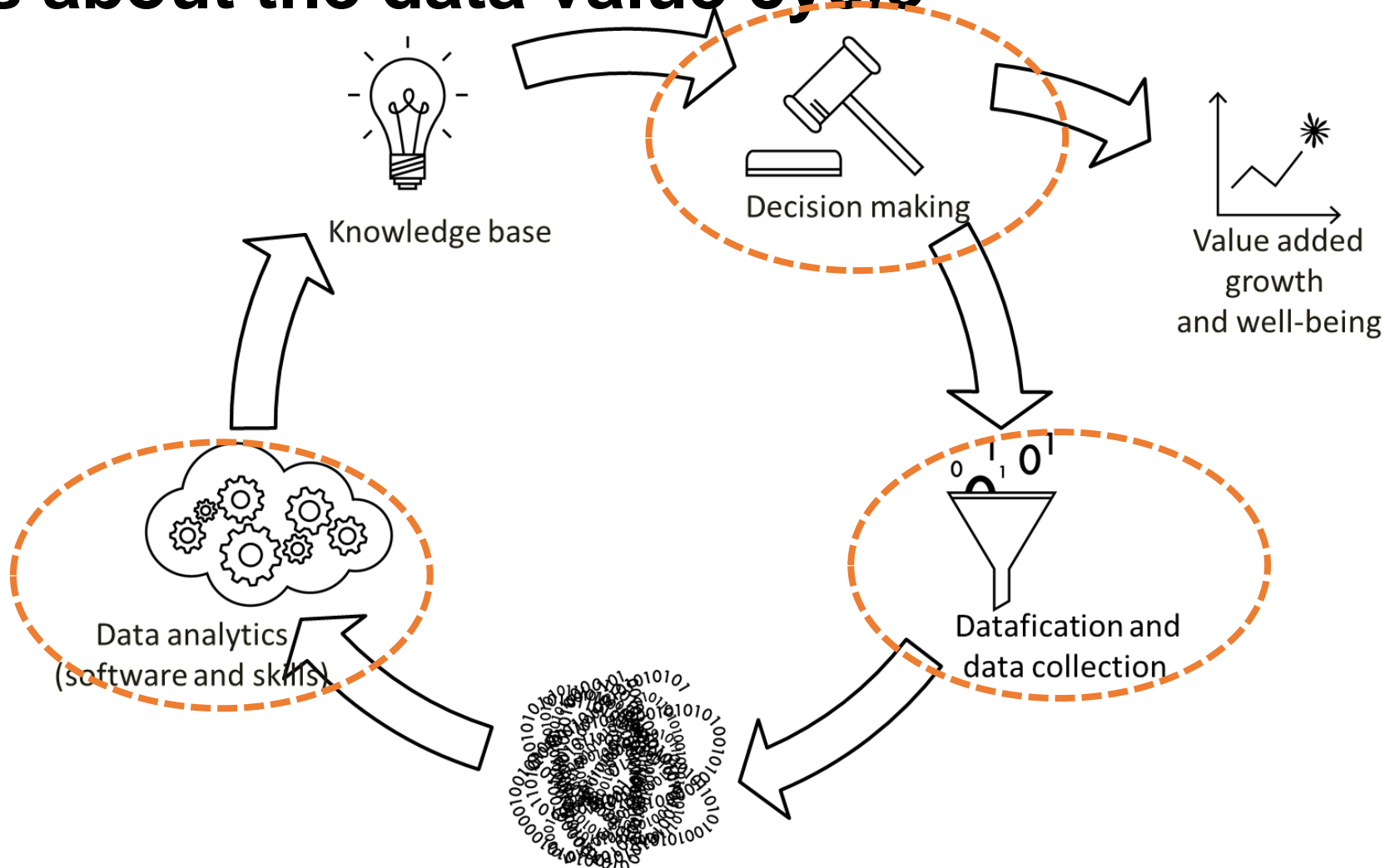




# What is data-driven innovation (DDI)?

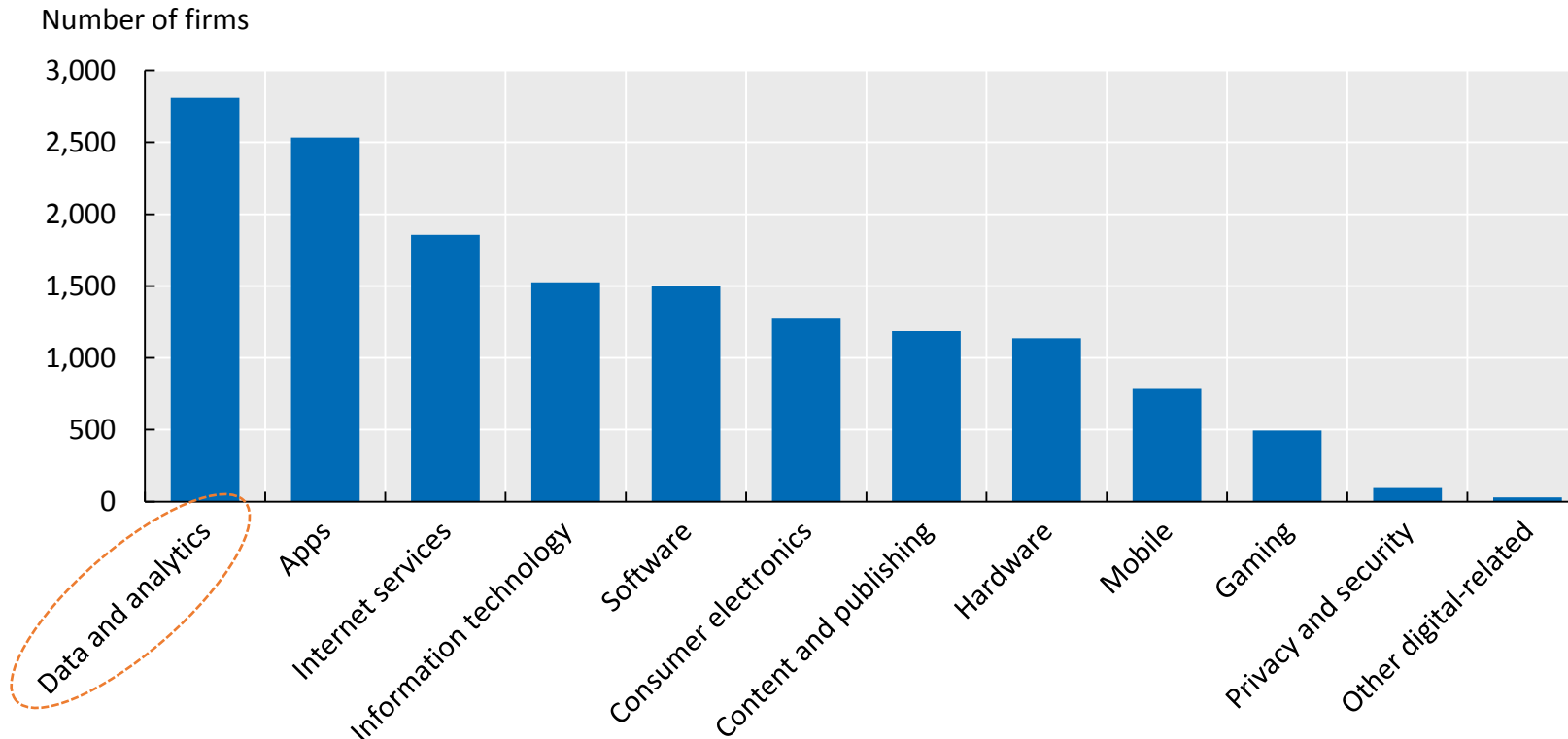
DDI refers to the **use of data and analytics** to improve or foster new products, processes, organisational methods and markets

# DDI is not only about ~~big~~ data, it is about the data value cycle



# Start-ups in digital-related sectors that attracted equity funding, 2011-16

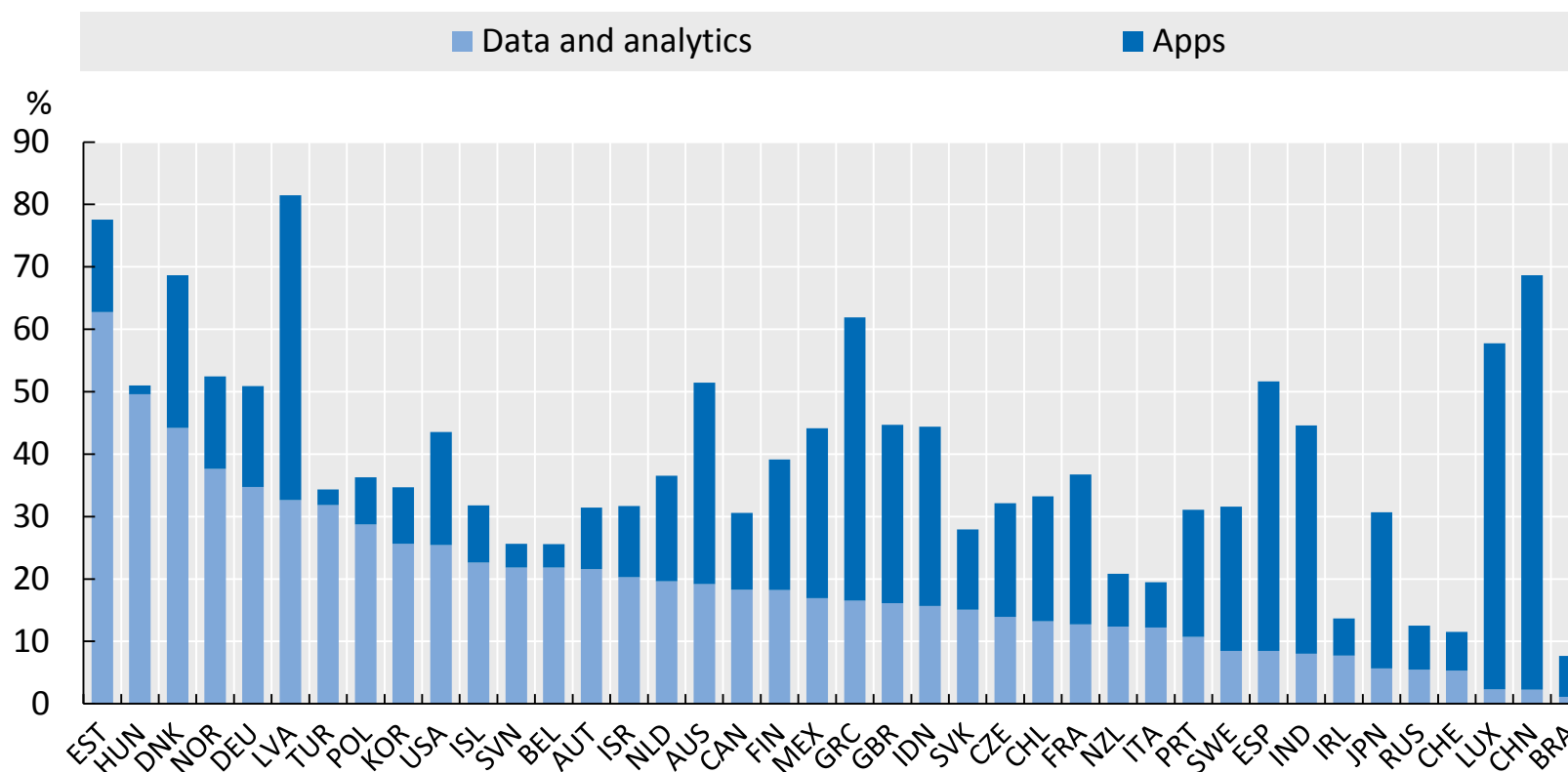
Firms aged five years old or less



The sample is restricted to firms founded after 2010 (i.e. five years old or less in 2016) that attracted equity funding over the 2011-16 period.

# Top digital-related sectors that attracted equity funding, 2011-16

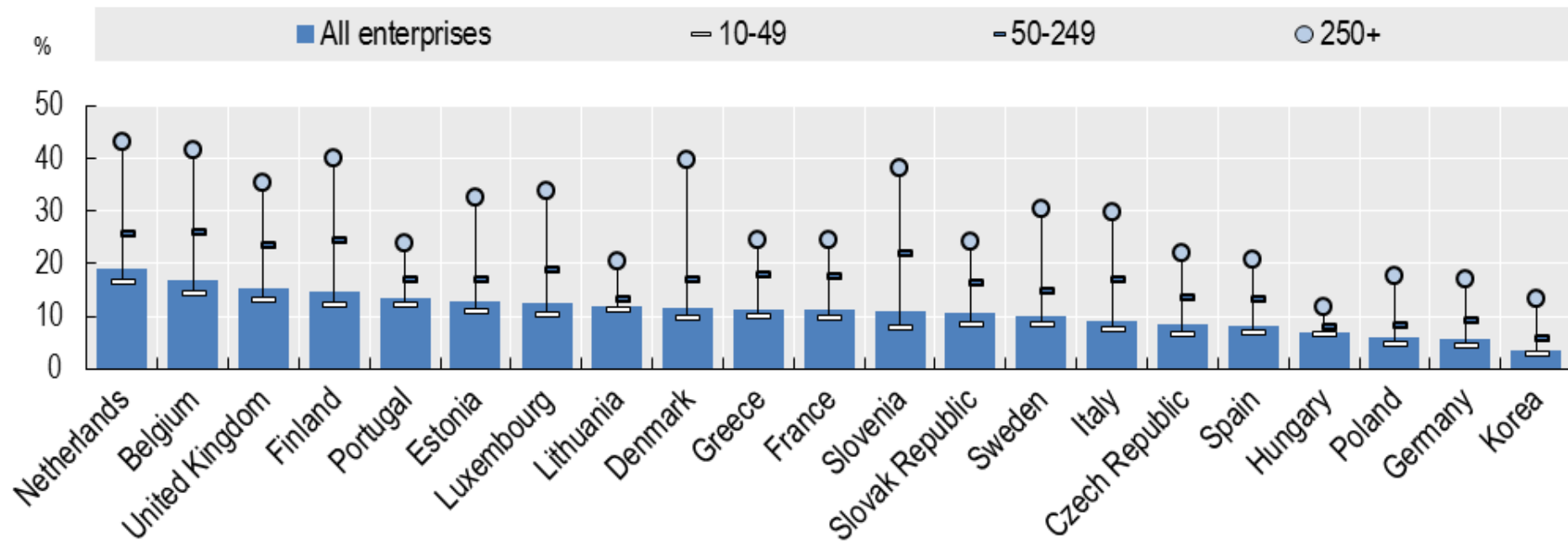
As a percentage of total equity funding in digital-related sectors



The sample is restricted to firms founded after 2010 (i.e. five years old or less in 2016) that attracted equity funding over the 2011-16 period.

# Large firms are more likely to adopt big data ...

Use of big data analytics as a percentage of enterprises, by size, 2016

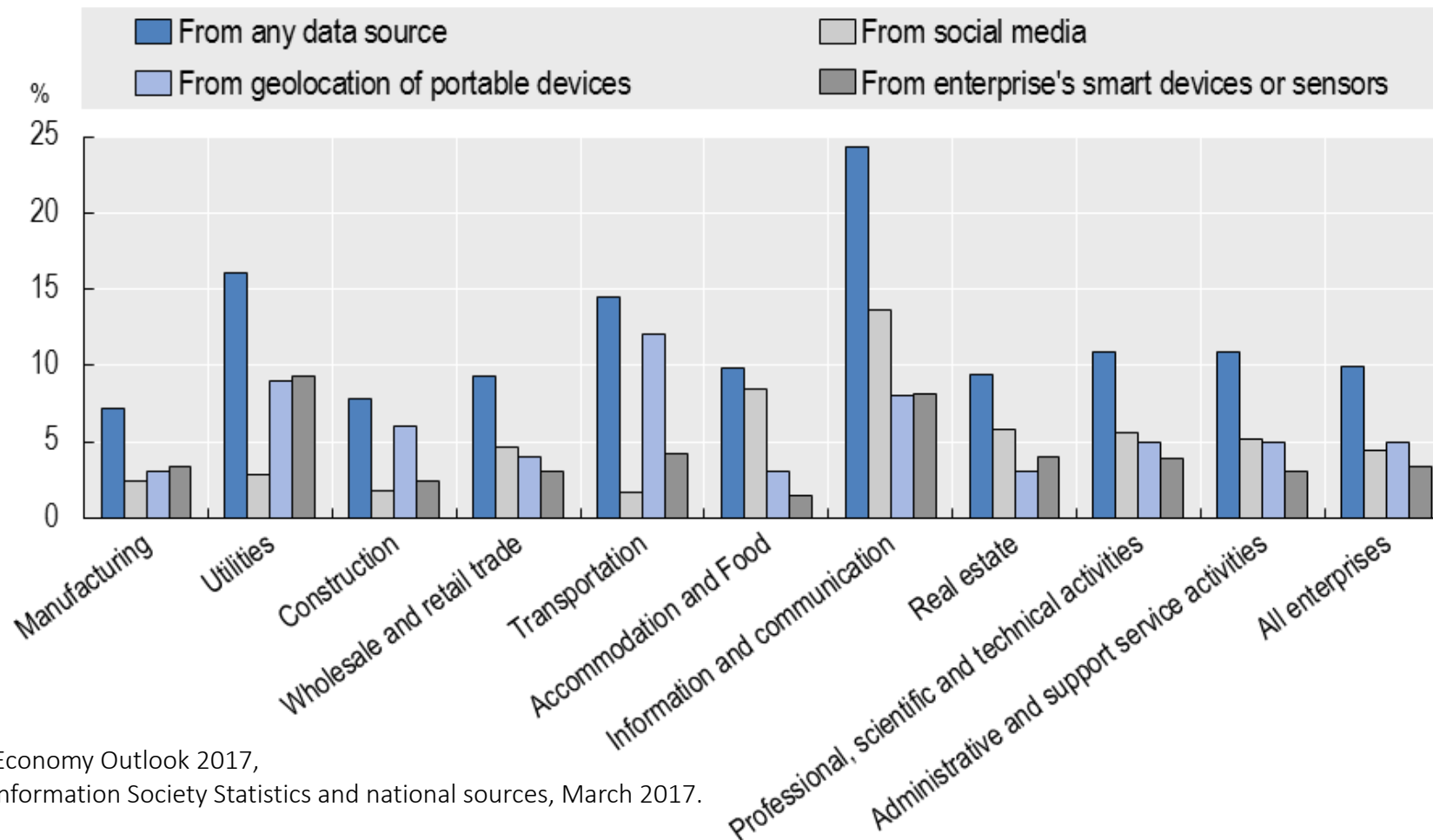


Source: Based on OECD Digital Economy Outlook 2017

OECD, ICT Database; Eurostat, Information Society Statistics and national sources, March 2017.

# ... in particular if they are ICT firms

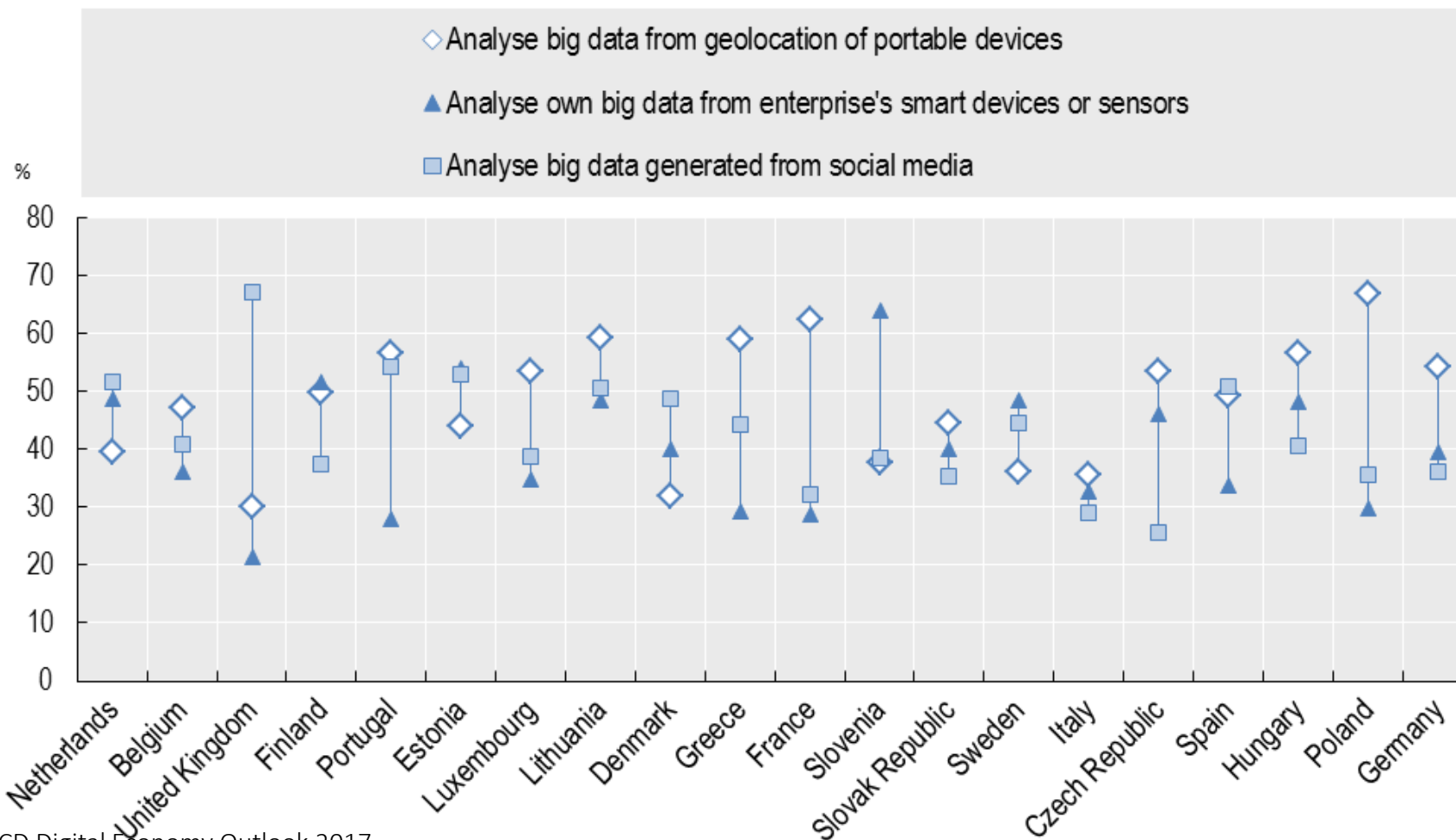
Use of big data analytics by sector as a percentage of enterprises, by size, 2016



Source: Based on OECD Digital Economy Outlook 2017, OECD, ICT Database; Eurostat, Information Society Statistics and national sources, March 2017.

# The source for big data used differs also significantly across countries

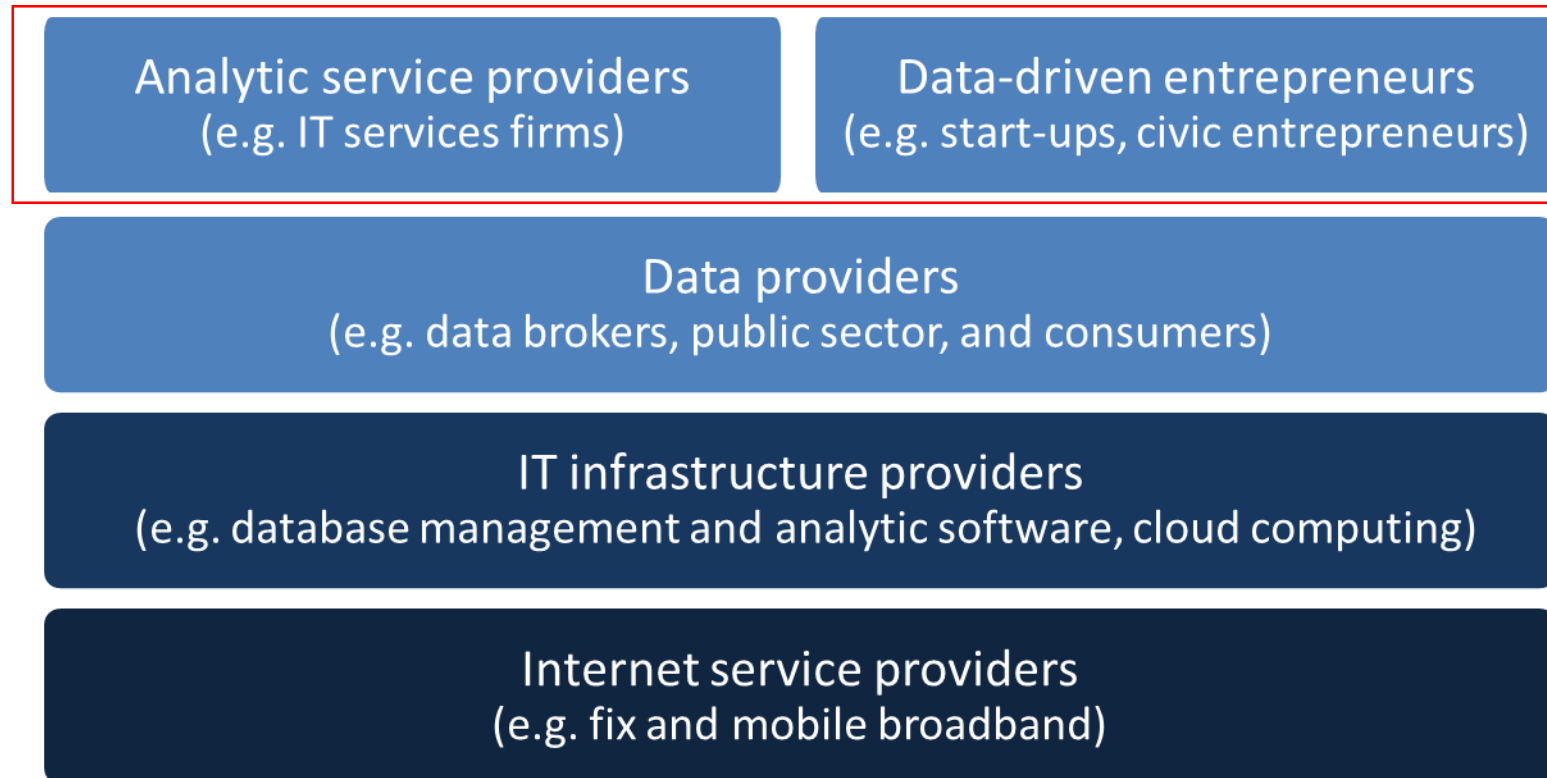
Use of big data source as a percentage of big data using enterprises, 2016



Source: Based on OECD Digital Economy Outlook 2017,  
OECD, ICT Database; Eurostat, Information Society Statistics and national sources, March 2017.

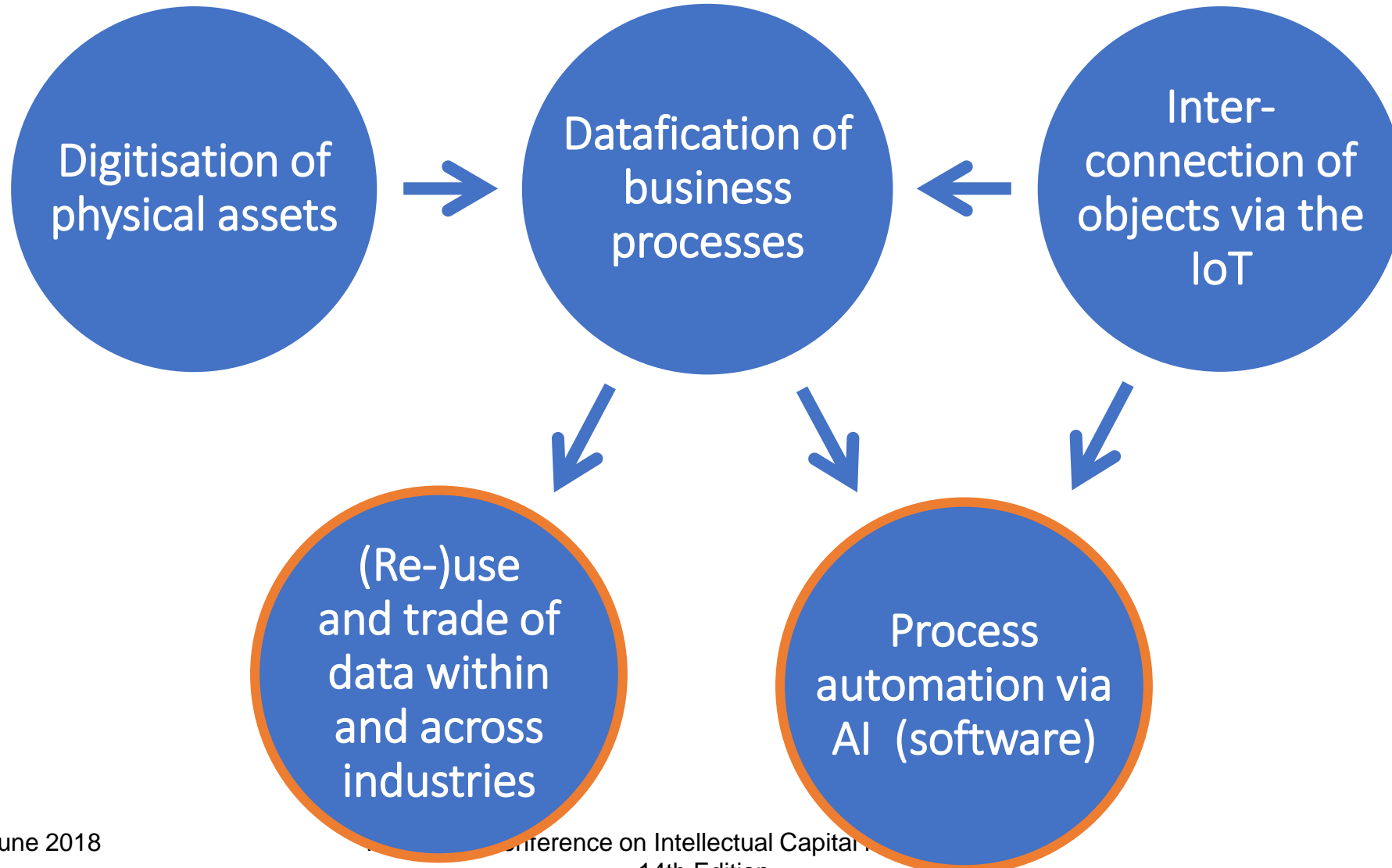
# There are many new business opportunities for data driven businesses and analytic service providers

The data ecosystem as layers of key roles of actors



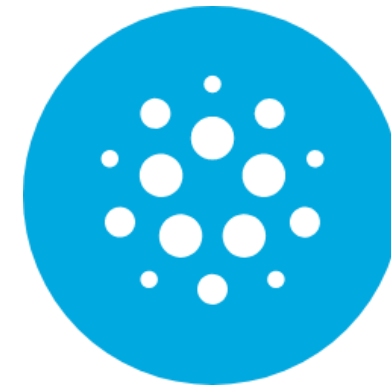


# The use and re-use of data is enabling new business models



# Commercialising data and analytics: The case of Telefónica

- Telefónica NEXT provides data analytics services based on its anonymised mobile data to help optimise traffic and public transportation.
- For its personalised AI enabled service Aura, Telefónica is collaborating with organisations such as Facebook and Microsoft to exchange data on common customers.



# Opening automobile data to competitors: The case of Scania

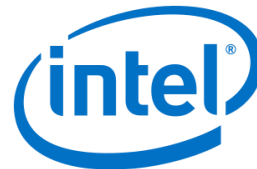
- Digitalisation makes business processes more open and interoperable
- Third parties competing on higher value added “over the top” services



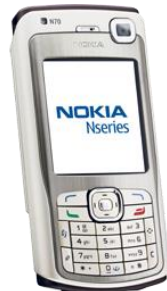
**SCANIA**'s revenues via its fleet management service are falling as third parties use data on Scania's vehicles

# Co-opetition may be a “necessary evil”

- Due to their lack of know-how, traditional firms need to partner with ICT firms



- These partners however may take over the higher end of the value chain (see software, AI and UX)

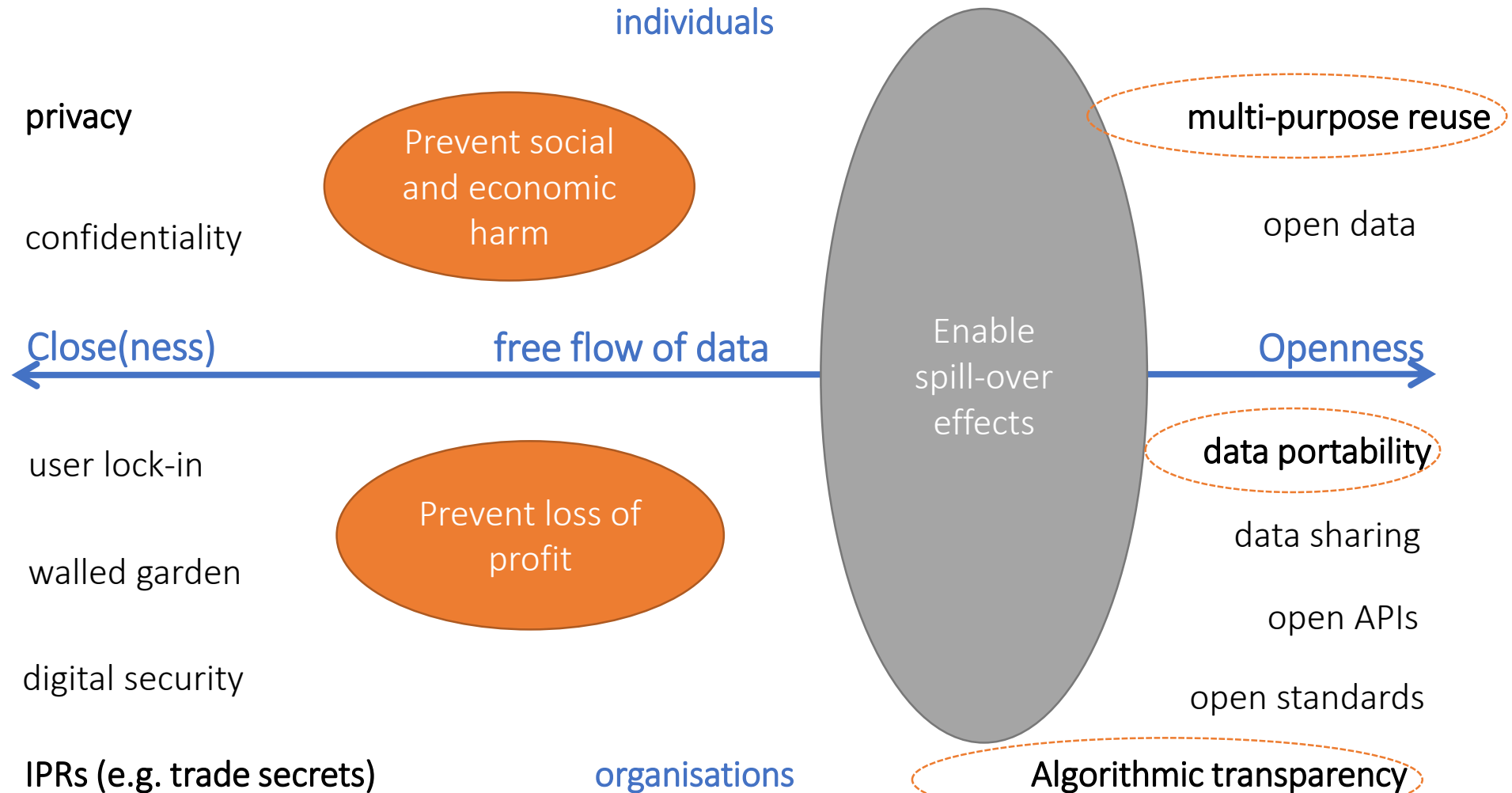


# Major policy issues that need to be addressed

# Data is not oil, but an infrastructural resource with large spill-overs

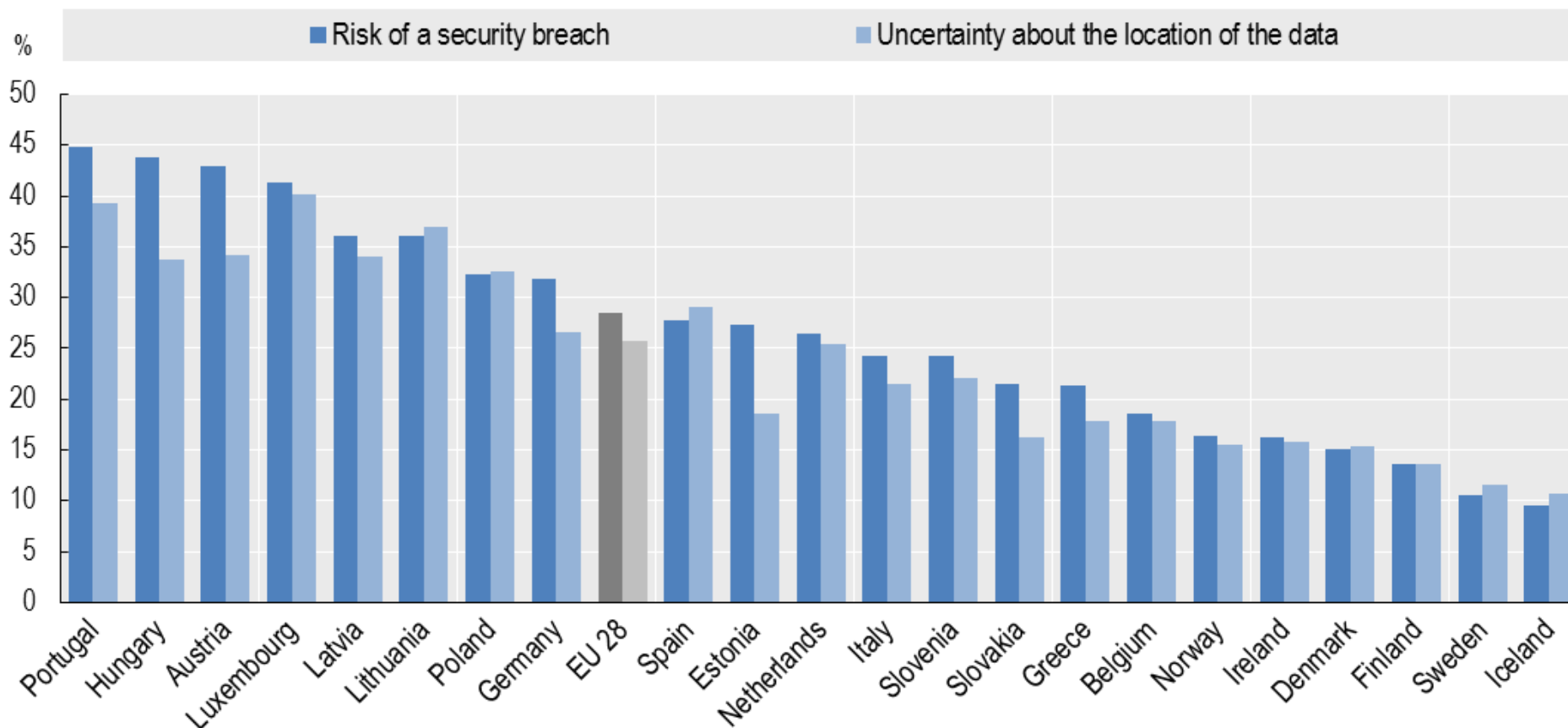
- **Data is non-rivalrous (but excludable)**
  - Data re-use and non-discriminatory access can maximize its value
  - Data enables multi-sided markets
- **Data is a capital with increasing returns**
  - Data can be re-used as input for further production
  - Data linkage is a key source for super-additive insights
- **Data is a general purpose input with no intrinsic value**
  - Data are an input for multiple purposes
  - Its value depends on complementary factors related to the capacity to extract information (e.g. skills, software)

# Key Dilemma: Striking the right balance between “openness” and “closeness”



# Digital security risks could be a major barrier to big data adoption

Reasons of businesses for not using cloud computing, 2014

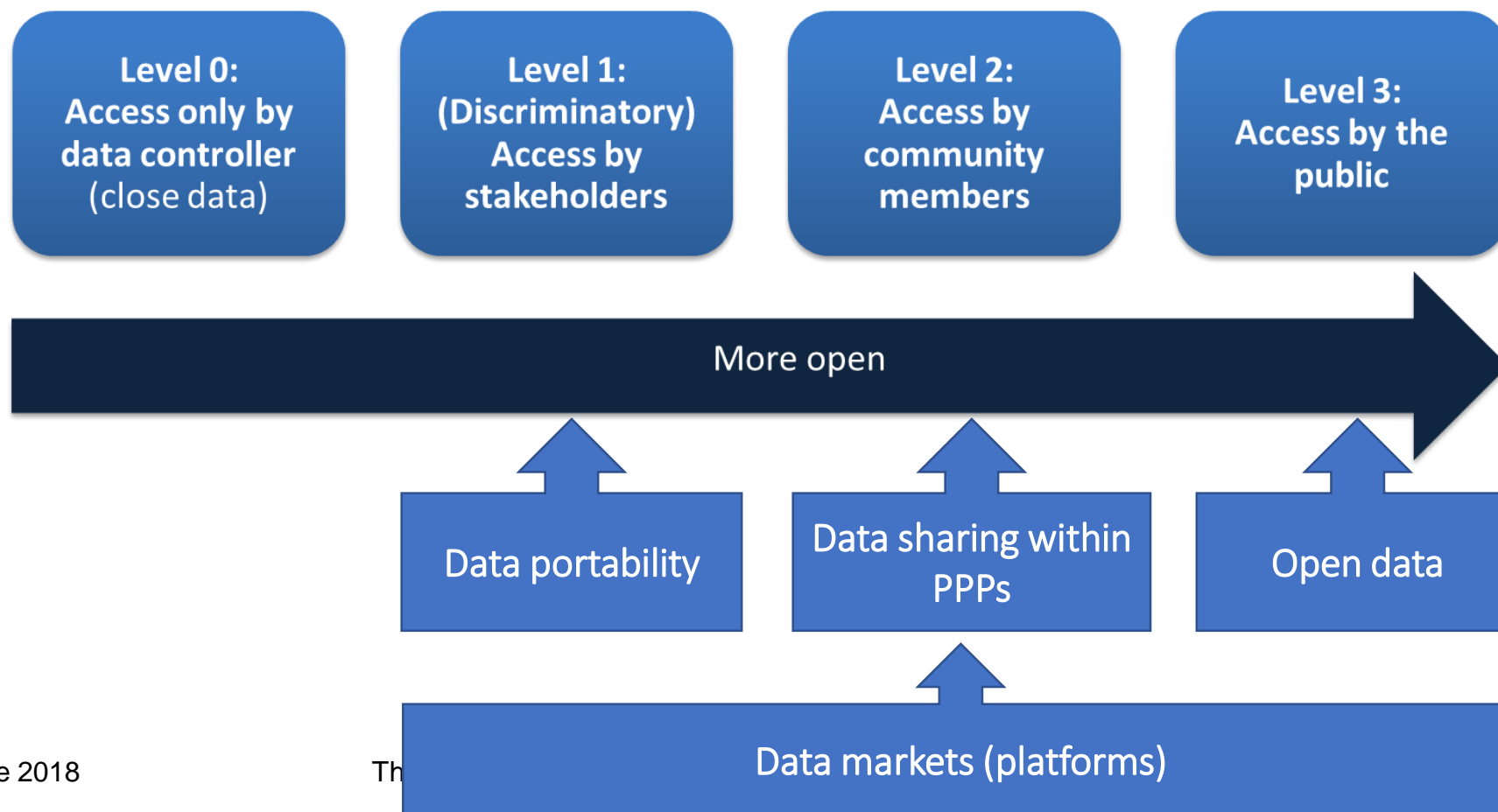


Source: Based on OECD Digital Economy Outlook 2017 (forthcoming),  
OECD ICT Database; Eurostat, Information Society Statistics and national sources, March 2017.



# Good news: Data openness is not a binary concept, but spans a continuum

## Degrees of data openness



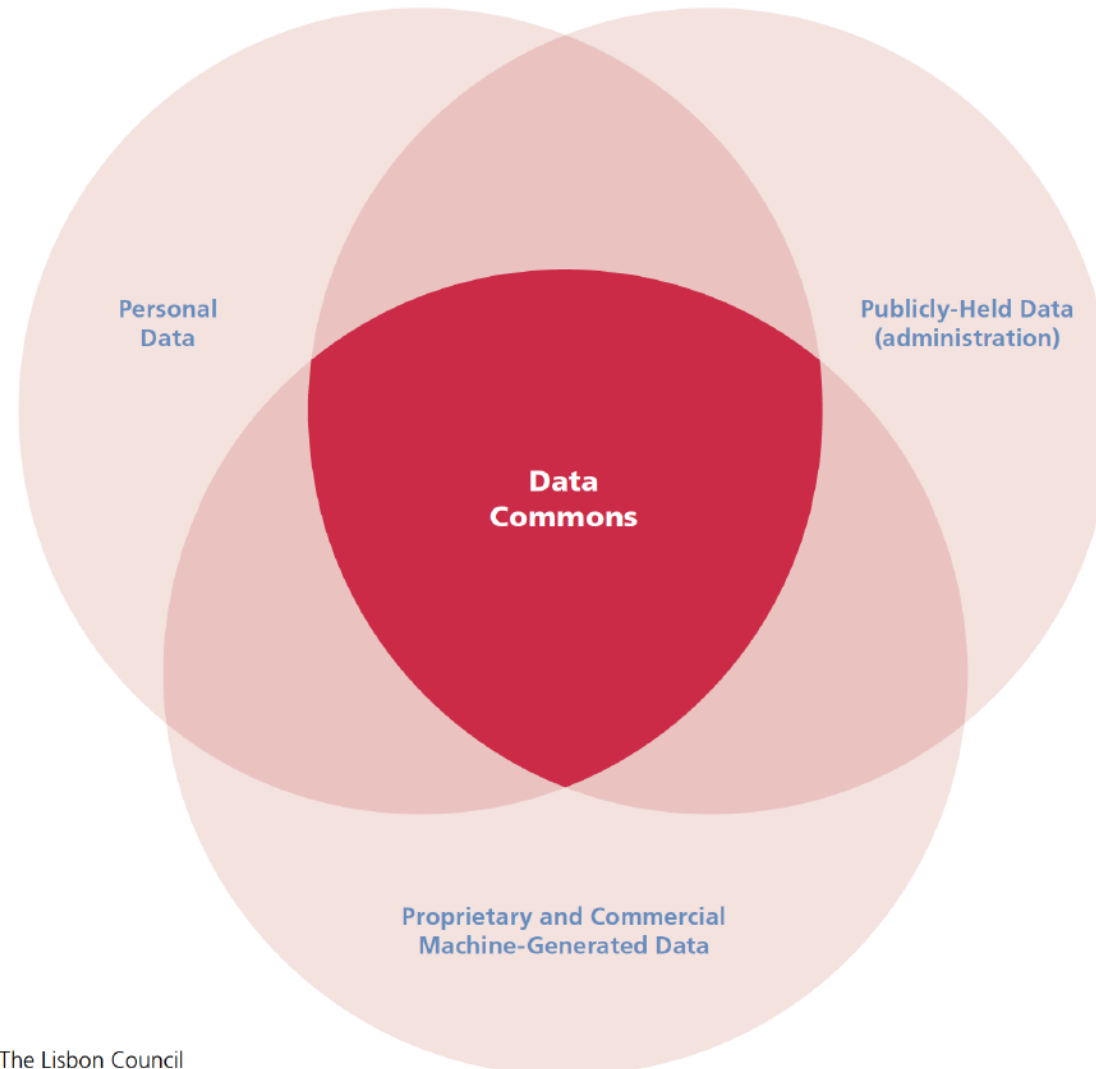
# Bad news: Data “ownership” is a fuzzy and therefore unpractical concept

- “Data ownership” means different things, it is often used as synonym for “data stewardship”;
- Current IPR regimes are only to a limited extent applicable to data (e.g. EU Database Directive);
- In cases of “personal data”, data control rights of the data subject cannot be waived;
- Data often involve multiple stakeholders (co-) creating and (co-) using the data;
- It is mainly about **data control** (usage rights).

# Current IPR regimes are only to a limited extent applicable to data

- Algorithms (software):
  - Copyright
  - Patents (application and granting may vary significantly between countries however)
- Data:
  - Copyright (Text, Video, APIs, Databases)
  - Trade secret (e.g. confidentiality agreements)
  - Single data points (and non-substantial parts of databases) are not protected by copyright
  - No exclusive control rights on personal data for data controllers

# Data involve multiple stakeholders (co-)creating and (co-)using the data



# A long dispute about data ownership between farmers and PFT providers came to an end

## Privacy and Security Principles for Farm Data

- **Portability:** “Within the context of the agreement and retention policy, farmers should be able to retrieve their data for storage or use in other systems, with the exception of the data that has been made anonymous or aggregated and is no longer specifically identifiable. [...]”
- **Ownership:** “We believe farmers own information generated on their farming operations. However, it is the responsibility of the farmer to agree upon data use and sharing with the other stakeholders with an economic interest [...]”.
- **Collection, Access and Control:** “An ATP’s collection, access and use of farm data should be granted only with the affirmative and explicit consent of the farmer. This will be by contract agreements, whether signed or digital.”
- **Notice:** “Farmers must be notified that their data is being collected and about how the farm data will be disclosed and used. This notice must be provided in an easily located and readily accessible format.”

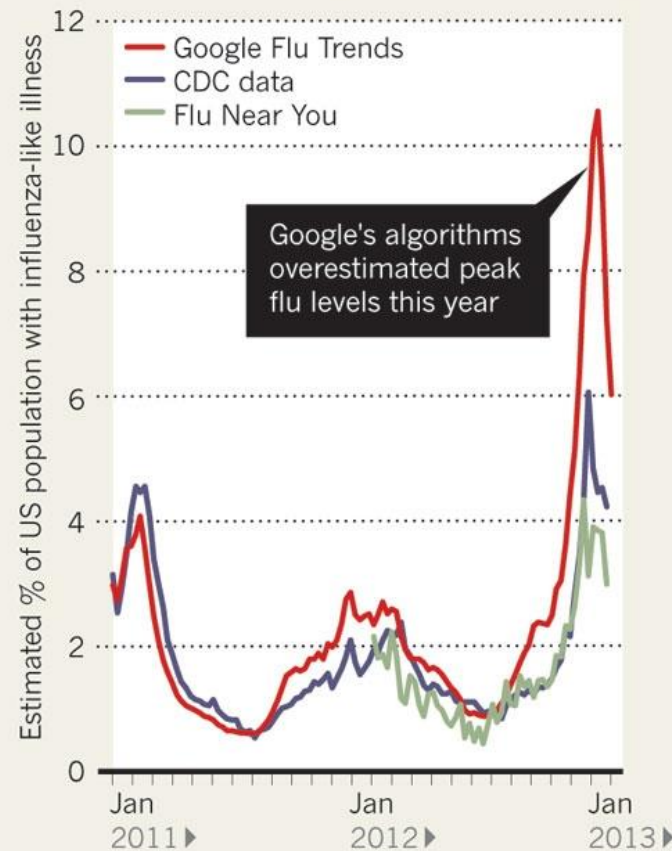
# Further challenges: uncertainties and risks related to the use of algorithms

- The quality of data-driven (automated) decision-making depends on the quality of the data and the algorithms used for data analysis
- Risk of a “dictatorship of data”, where less educated/concerned decision makers automatically follow the decisions of machines
- Where a machine contradicts the opinion of the human decision maker, will [s]he be **willing and able to take over the responsibility when overriding the machine’s suggested decision?**

# Algorithmic transparency to clarify accountability assignments?

## FEVER PEAKS

A comparison of three different methods of measuring the proportion of the US population with an influenza-like illness.



The New York Times

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Volkswagen's record settlement

01:15



# Thank you for your attention!



The OECD's Going Digital project will give policy-makers the tools they need to help their economies and societies prosper in a world that is increasingly digital and data-driven.

Find out more about our work at <http://oe.cd/bigdata> and <http://www.oecd.org/going-digital> #GoingDigital

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