

National Initiatives for Open Science in Europe

Main Concepts of Open Science

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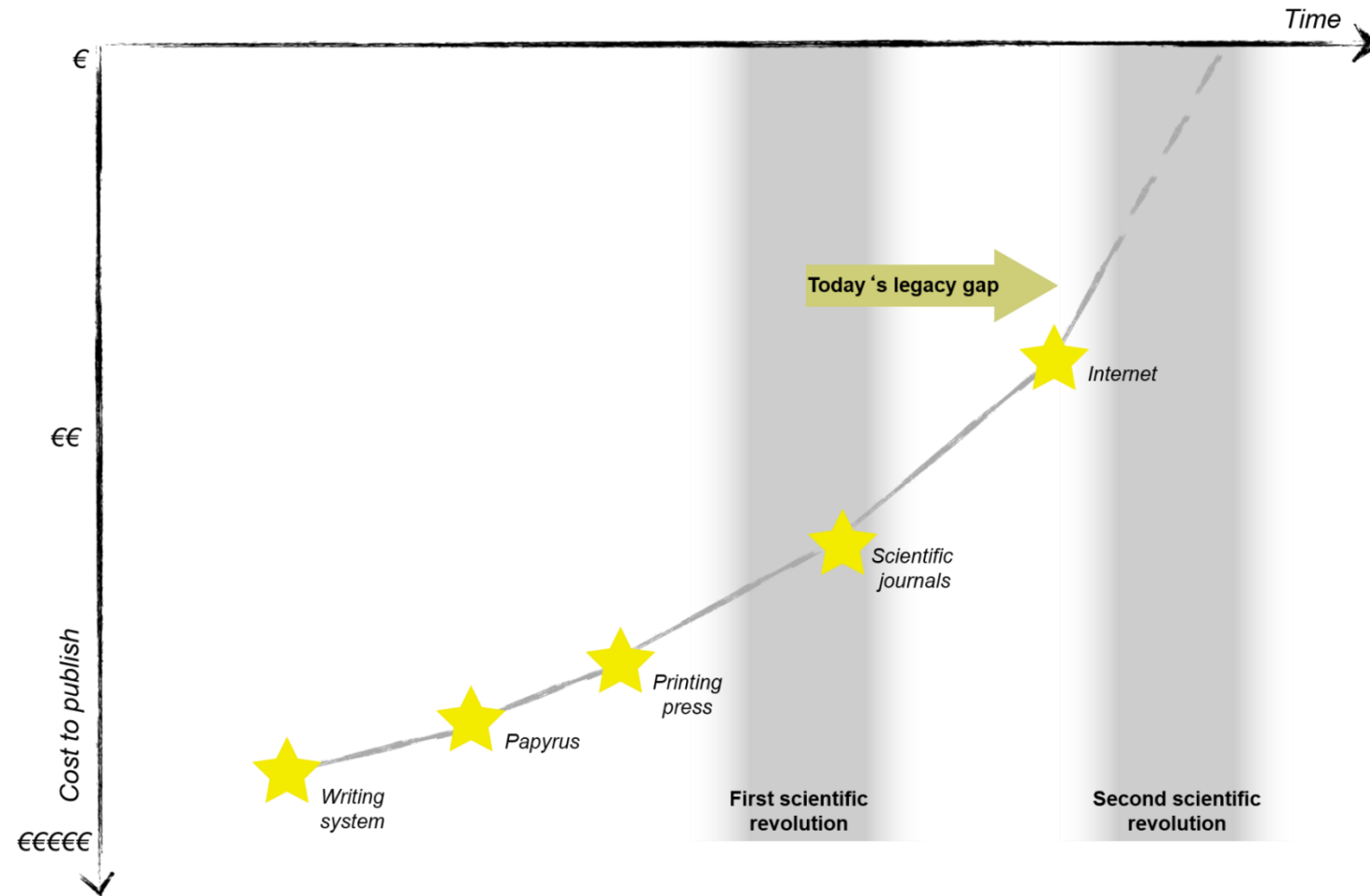
- ❑ The way research is performed, researchers collaborate, knowledge is shared and science is organised is changing rapidly in recent years.
- ❑ This change is enabled by the **availability of digital technologies** and driven by the exponential growth of data and the enlargement of the global scientific population.
- ❑ In the traditional model a discovery not published in a scientific journal/ monograph was not truly complete.

Move away from 300 years old model!



Work. Finish.
Publish!
(Faraday)

Necessity for change in publishing paradigm



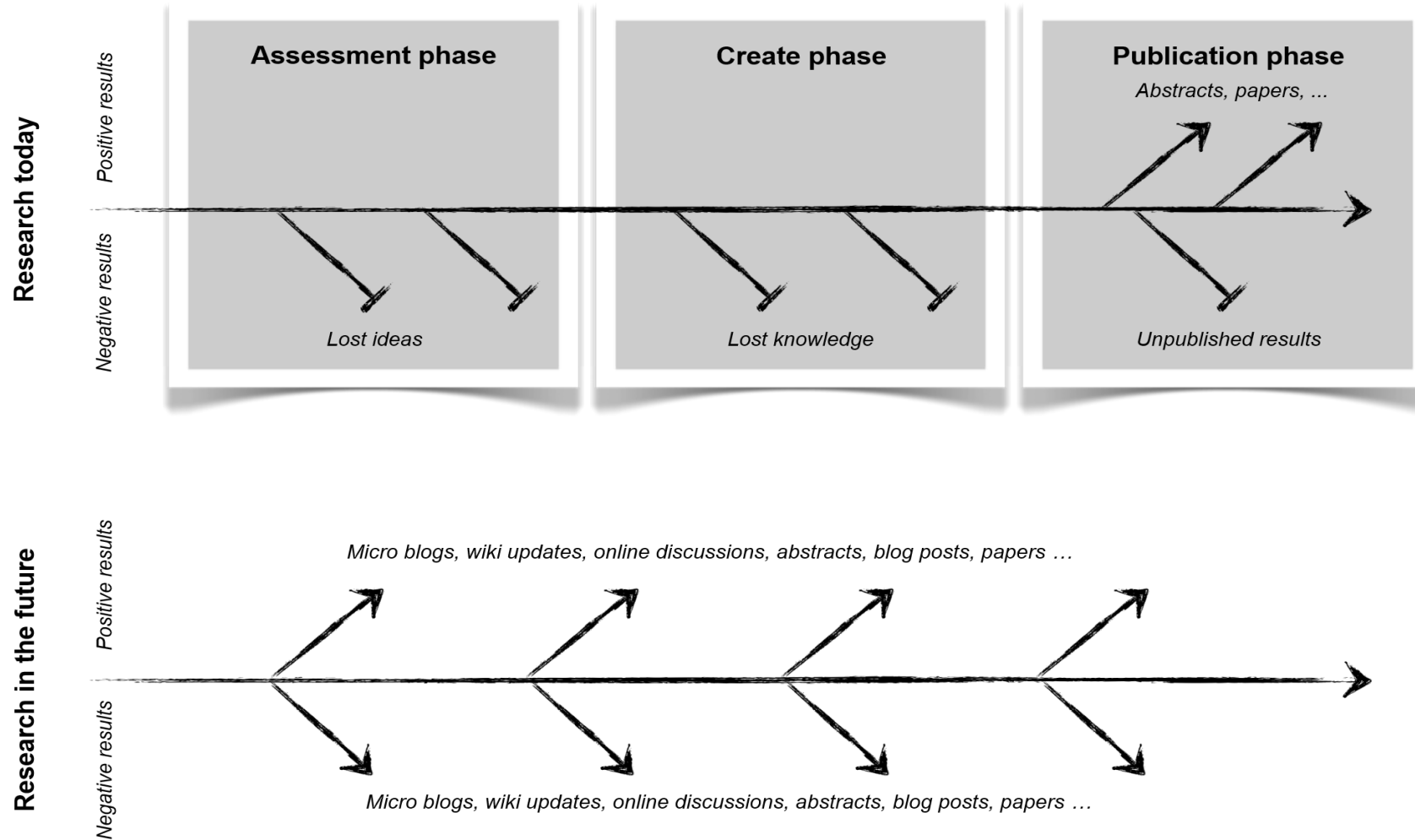
- ❑ The **first scientific revolution** happened when the publishing of scientific papers became the prevailing means of disseminating scientific knowledge.
- ❑ Today, publishers still hold the copyright for most of the published material.
- ❑ **Internet** provides novel means of publishing, which should be integrated into the scientific culture.

Source:

Opening Science - The Evolving Guide on How the Internet is Changing Research, Collaboration and Scholarly Publishing
ISBN: 331900025X



Necessity for change in publishing paradigm



“Dissemination of results of research is an essential, inseparable component of the research process”

Sparc.org

- ❑ Affordable and easy access to the results of **publicly funded research** is important for the scientific community, for innovative businesses and for society.
- ❑ **Open access** to scientific research results and scientific publications, obtained through public funds, has been for the first time considered at EU level at **2002**, when **Budapest Open Access Initiative** is adopted
- ❑ Open access is a major pillar of the **Open Science**, which encompasses a variety of practices besides open access to publications, like are:
 - ❑ open research data, open source software/tools, open workflows, citizen science, open educational resources, alternative methods for research evaluation including open peer review,....

- ❑ Open Science is the movement to make scientific research, data and dissemination accessible to all levels of an inquiring society, amateur or professional.
- ❑ **Open means anyone can freely access, used, modify, and share for any purpose (subject, at most, to requirements that preserve provenance and openness)**

Sharing ≠ Open

Optimise the impact of publicly-funded scientific research

- At European level (FP7, Horizon 2020, Horizon Europe)
- At Member State level

Expected benefits:

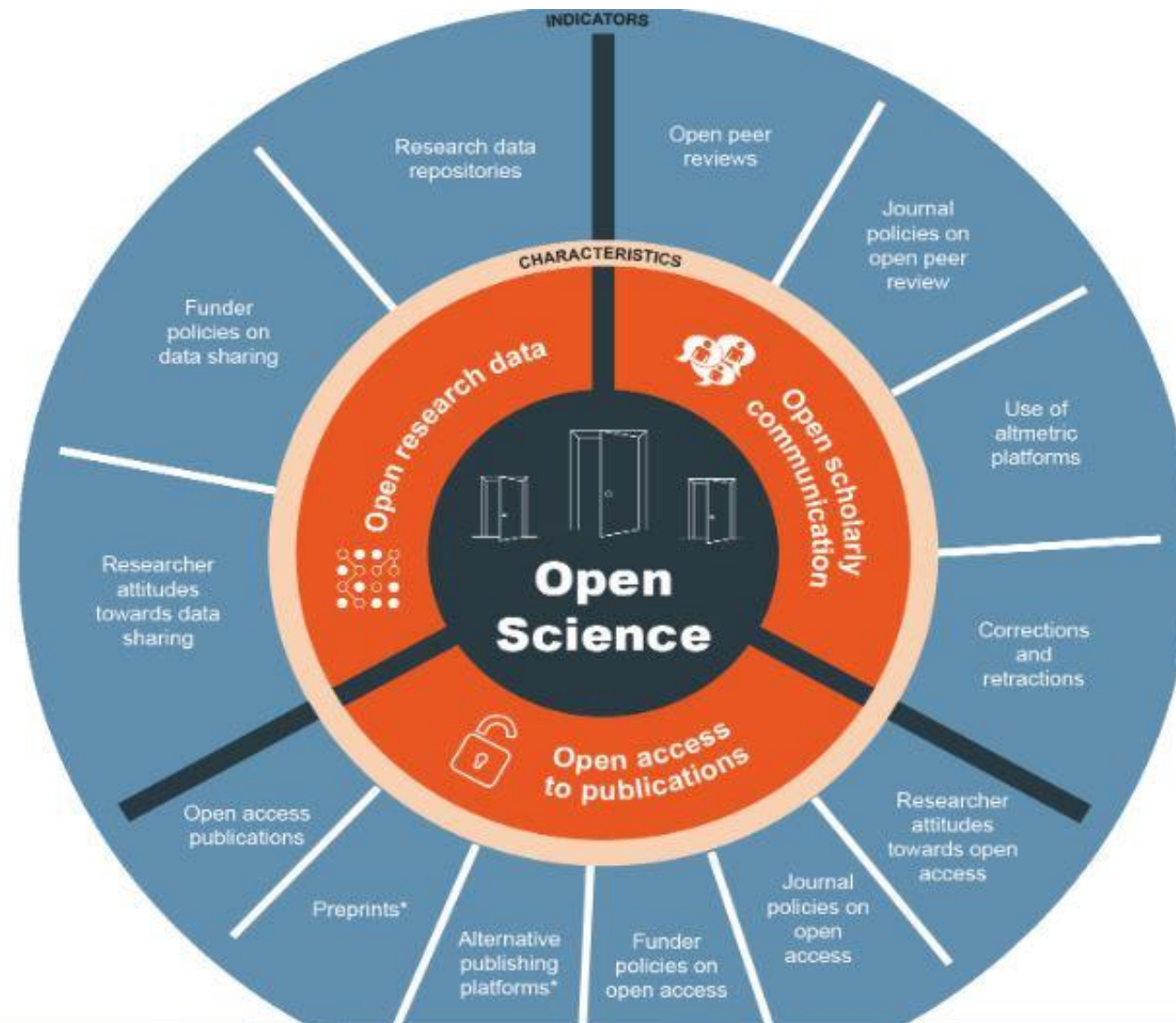
- ❑ accelerate innovation (faster to market = faster growth);
- ❑ foster collaboration and avoid duplication of effort (greater efficiency);
- ❑ build on previous research results (improved quality of results);
- ❑ involve citizens and society (improved transparency of the scientific process).

... in the European Research Area and beyond

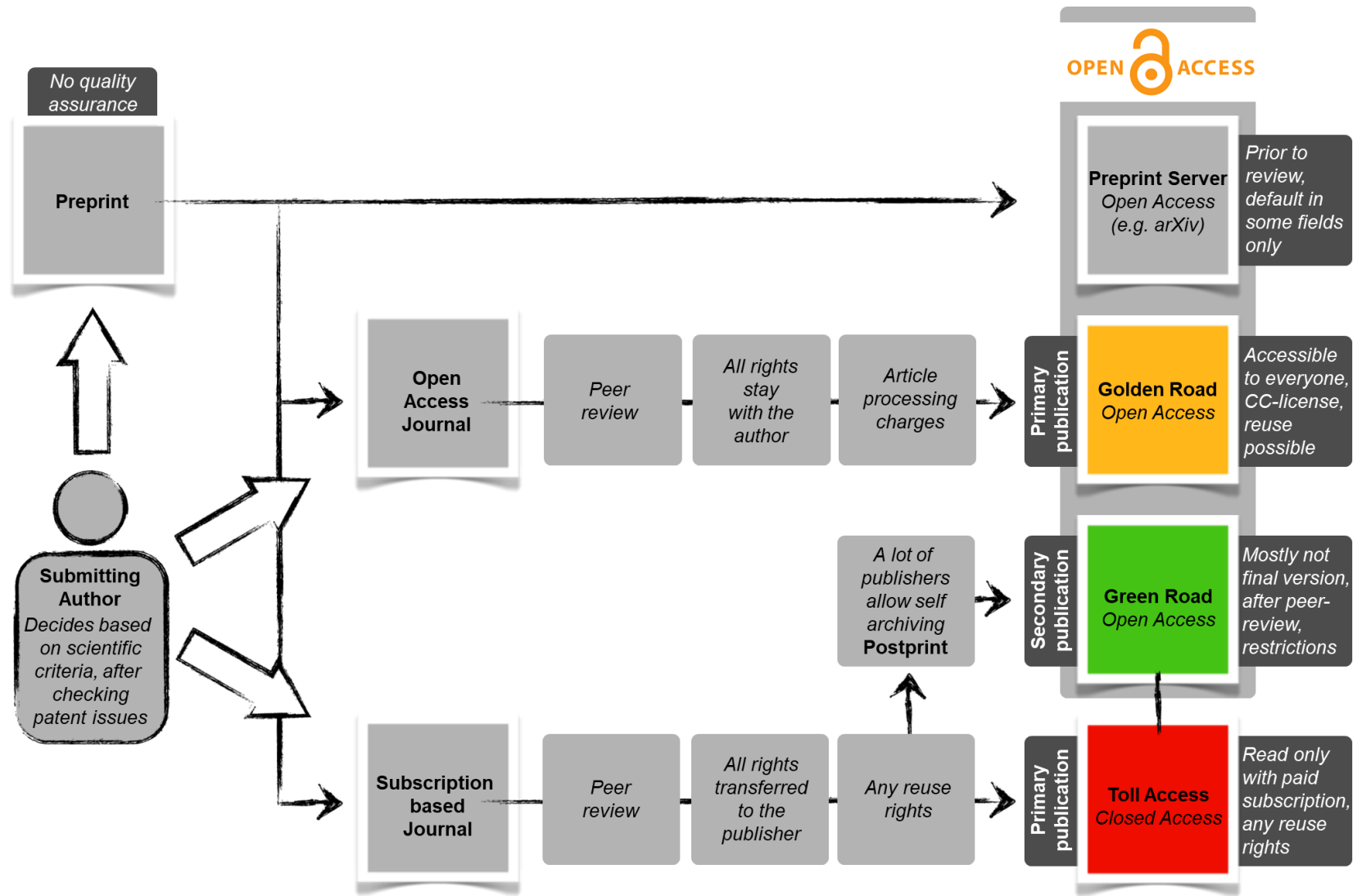
Open circulation of knowledge is one of the five pillars of the ERA.



Open Science Building blocks



Open access





PUBLICATIONS AND DATA

The potential of data

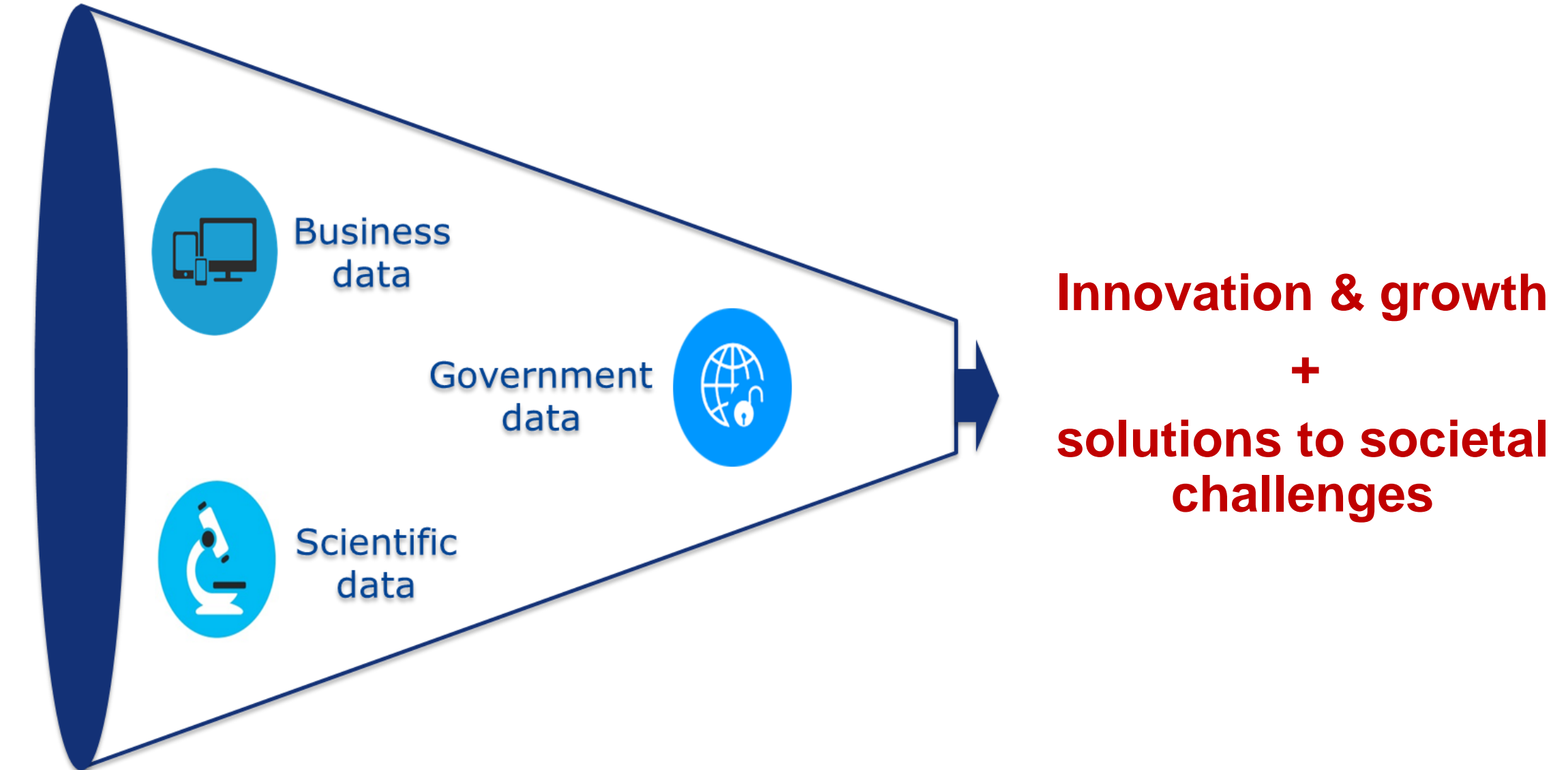
❑ Societal benefits

- ❑ Easier, more efficient lives
- ❑ Better lives for individuals
- ❑ Addressing societal challenges

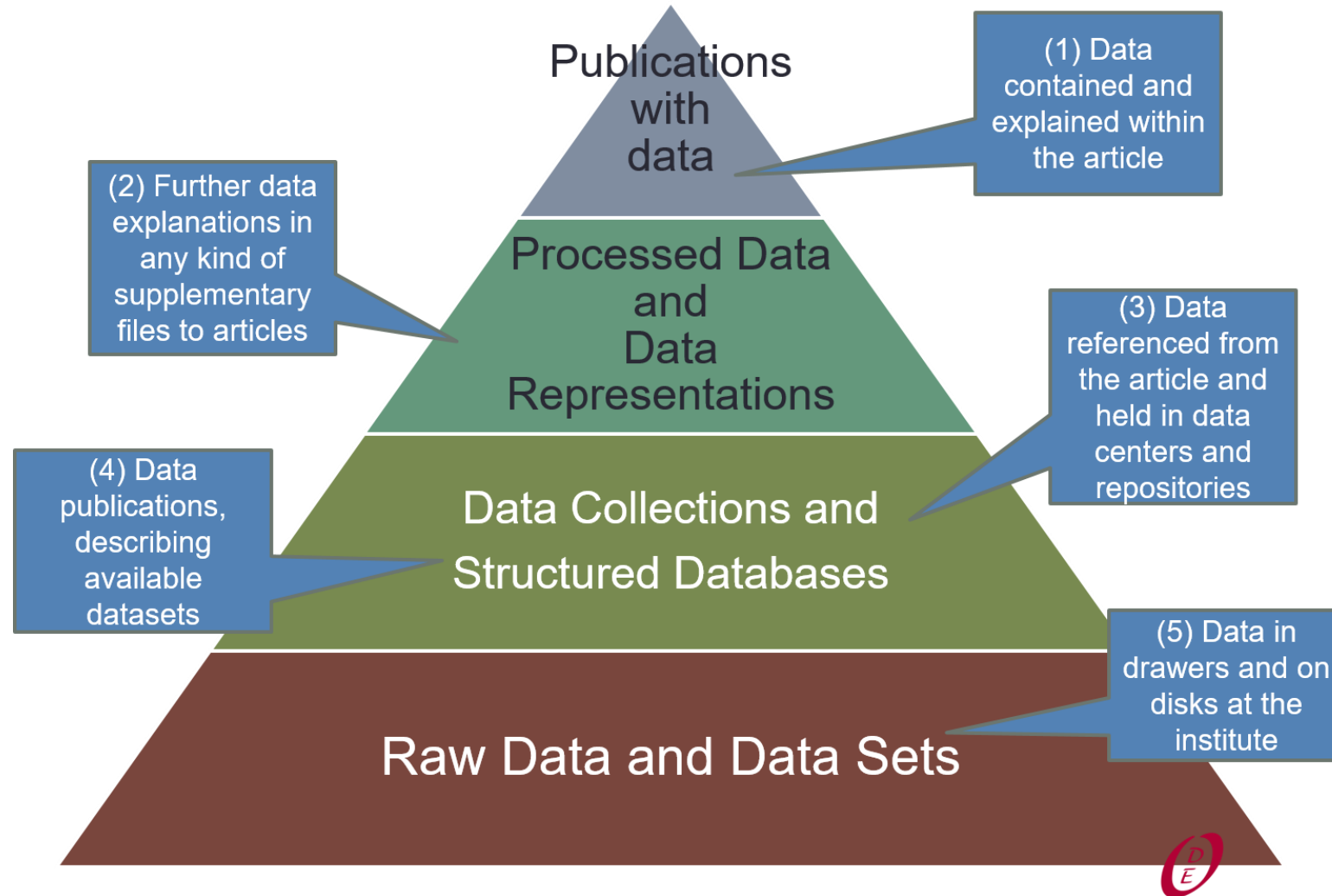
❑ Economic growth ...

Principle of FAIR research data: Findable + Accessible + Interoperable + Re-usable;
Data Management Plan (DMP)

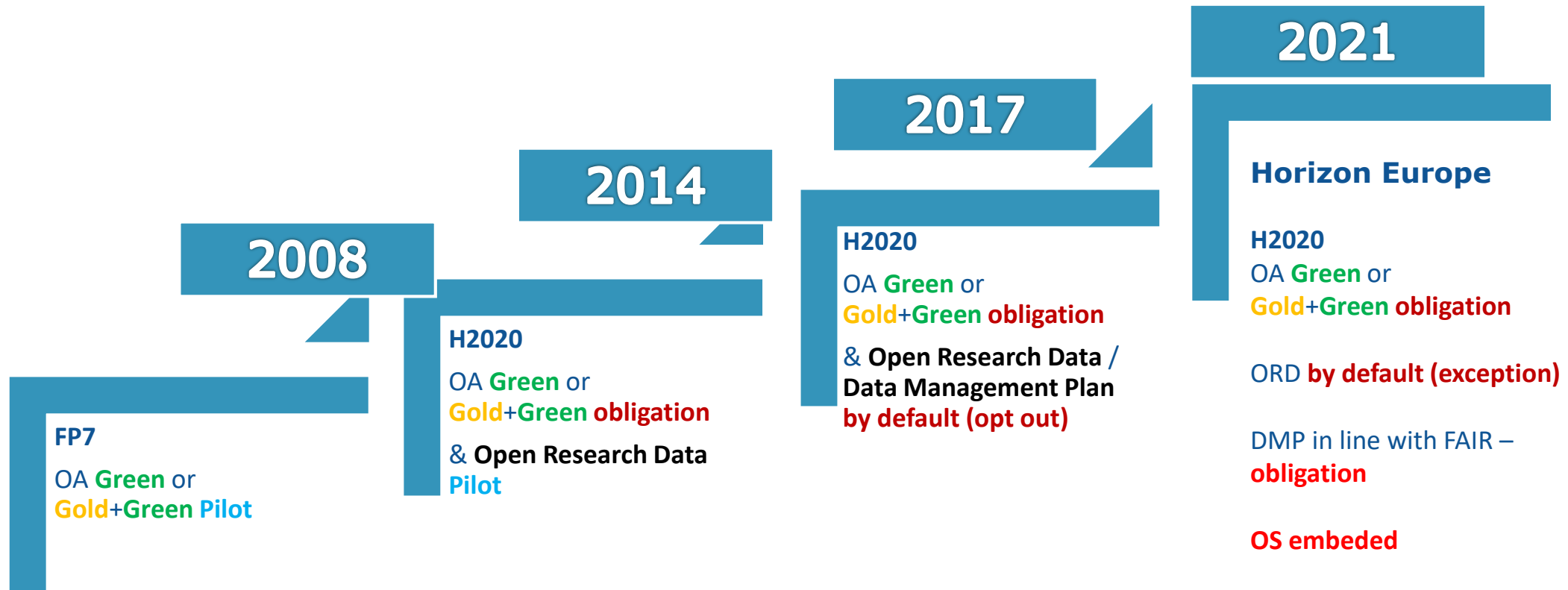
Combining government, business and scientific data



Data publication pyramid



Open science through framework programmes



- ***EC Recommendation C(2012) 4890 of 17.7.2012. - Member states on access to & preservation of scientific information***
- Part of package that contained measures to improve and harmonize access to scientific information produced in Europe (incl. Horizon 2020)
- **Key principle: bring coherence between the national environment of researchers 'at home' and the EU Framework Programme(s)**
- Creation of the European Commission Expert Group on National Points of Reference on Scientific Information and relevant reports
 - Premise: scientific information resulting from public funding should be accessible and re-usable with as few restrictions as possible
 - Aim: Member States put in place policies with respect to scientific publications in journal, research data, preservation and infrastructure & **they** report through NPRs

- *Open access to scientific publications*
- *Management of research data including open access (2012: open access to research data)*
- *Preservation and re-use of scientific information*
- *Infrastructures for open science (2012: e-infrastructures)*
- *Skills and competences* *new***
- *Incentives and rewards* *new***

Article 10: Open access and open data

- *Open access to scientific publications resulting from research funded under the Programme shall be ensured in accordance with **Article 35(3)**. Open access to research data shall be ensured in line with the principle 'as open as possible, as closed as necessary'. Open access to other research outputs shall be encouraged.*
- *Responsible management of research data shall be ensured in line with the principles 'Findability', 'Accessibility', 'Interoperability' and 'Reusability' (FAIR).*
- *Open science practices beyond open access to research outputs and responsible management of research data shall be promoted*

Article 35: Exploitation and dissemination

*3. Beneficiaries shall ensure that open access applies to scientific publications under the **terms and conditions laid down in the grant agreement**. In particular, the beneficiaries shall ensure that **they or the authors retain sufficient intellectual property rights** to comply with their open access requirements.*

*Open access to research data shall be the general rule under the **terms and conditions laid down in the grant agreement**, but **exceptions** shall apply if justified, taking into consideration the legitimate interests of the beneficiaries and any other constraints, such as data protection rules, security rules or intellectual property rights.*

*The work programme **may provide for additional obligations to adhere to open science practices**.*

*4. Beneficiaries shall manage all research data in accordance with the **terms and conditions laid down in the grant agreement** and shall establish a **Data Management Plan (DMP)**.*

*The work programme **may provide for additional obligations to use the European Open Science Cloud** for storing and giving access to research data.*



Former European Commission President
Jean-Claude Juncker

Digital Single Market (DSM)

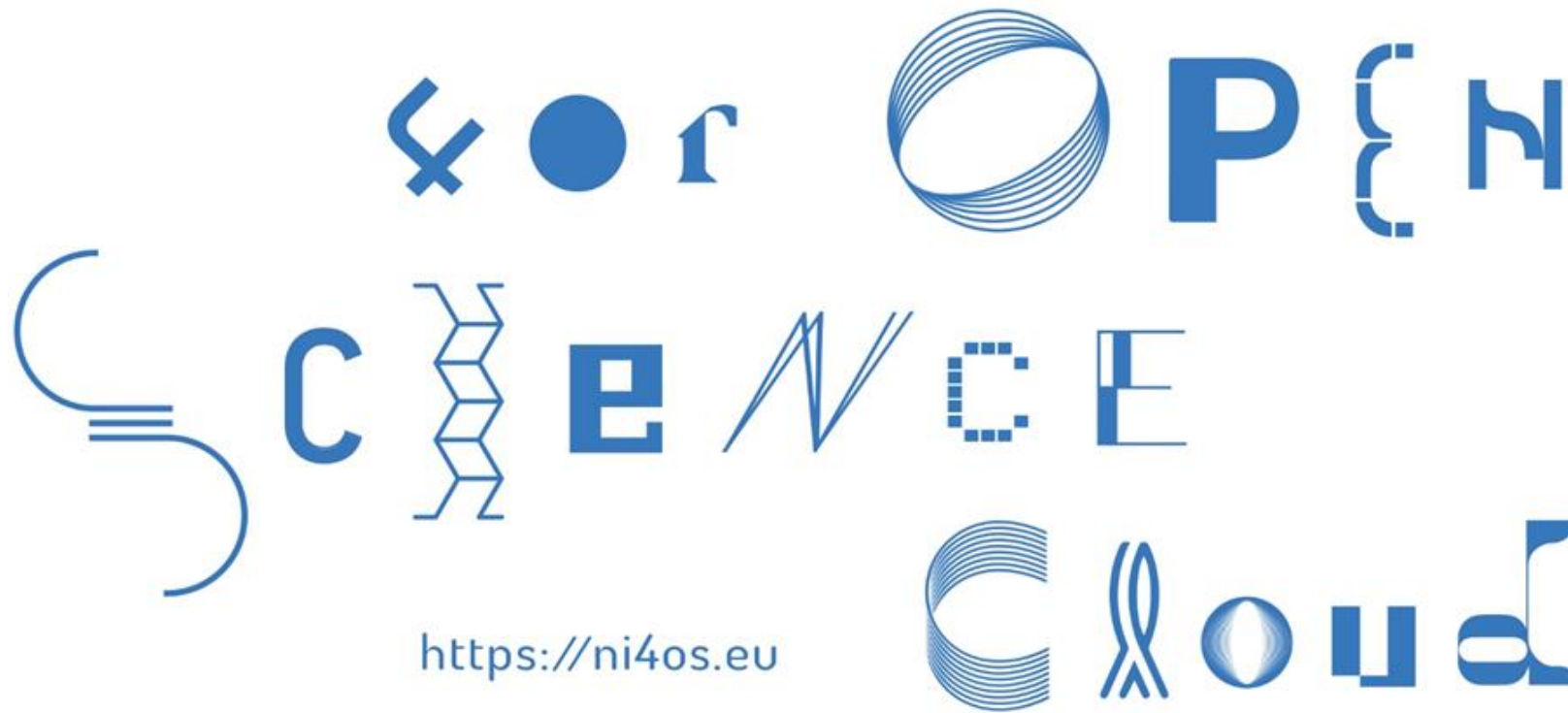


**April 2016: European Cloud Initiative COM(2016) 178
as part of the 'Digitizing Industry' package**

- European Open Science Cloud (EOSC)**
- European Data Infrastructure (EDI)**
- Widening access and building trust**

- ❑ The Hague Declaration: <http://thehaguedeclaration.com/the-hague-declaration-on-knowledge-discovery-in-the-digital-age/>
- ❑ Berlin declaration: <https://openaccess.mpg.de/Berlin-Declaration>
- ❑ San Francisco Declaration: <http://www.ascb.org/dora-old/files/SFDeclarationFINAL.pdf>
- ❑ <https://ec.europa.eu/research/openscience>
- ❑ OpenAire <https://www.openaire.eu/>
- ❑ Research Data Alliance <https://rd-alliance.org/>
- ❑ LIBER 10 Recommendation on Getting Started in RDM
<http://libereurope.eu/wp-content/uploads/The%20research%20data%20group%202012%20v7%20final.pdf>

Thanks!



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