The future of science is open

Rationale, goals and milestones of the EU policies

10 ans d'ORBi à l'ULiège
Et demain ? Quelle communication savante à l'ère de l'Open Access et de l'Open Science?
Key note ULg

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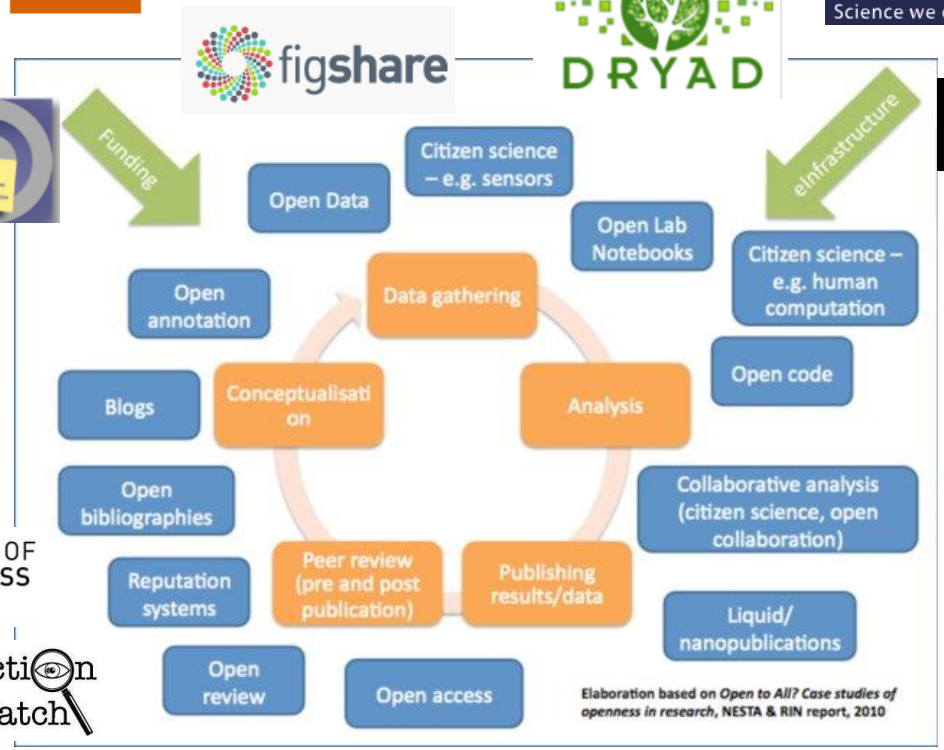
The rationale…

The nature of science (modus operandi) is changing from a closed system to an open and sharing one

European Commission

Open Research Fund: applications submitted

Here you can see a list of eligible applications to the Open Research Fund in 2018, including project proposals.



Opening up the full research cycle

Open Science = Systemic transition of science system which affects the way

- research is performed
- knowledge is shared/diffused/preserved
- research projects/results are evaluated
- research is funded
- researchers are rewarded
- future researchers are trained

<u>Affecting the whole research cycle and all its stakeholders</u>

- ✓ A typical techno-economic paradigm shift a la Perez (technology, market and institutional change go hand in hand)
- ✓ or to put it differently: disruptive and hence disturbing….

It offers great opportunities for science, scientists & society

- **Better ROI of the R&I investments**: self evident: if all the results of our public research are made reusable, it will follow that better use is made
- **Faster circulation of new ideas:** we have 22 million EU SME's that will have access to top notch research without having to significantly pay for it!
- **More transparency of the science system**: the public taxpayer has this right
- **Fit for 21st century science purpose**: all grand societal challenges NEED cross disciplinary research

Top level policy goals

*"As I see it, European success now lies in sharing as soon as possible, (…). The days of **open science** have arrived."*

Speech at "Presidency Conference Open Science", 04 of April, 2016, Amsterdam

Open Innovation
Open Science
Open to the World

2016 - Holistic Policy Agenda: scope & ambitions

… 4 with regard to the use & management of research results and data

- ✓ **Open Data**: FAIR data sharing is the default for funding scientific research
- ✓ **Science cloud**: All EU researchers are able to deposit, access and analyse European scientific data through the open science cloud, without leaving their desk
- ✓ **Altmetrics**: Alternative metrics (next generation metrics) to complement conventional indicators for research quality and impact (e.g. Journal Impact Factors and citations)
- ✓ **Future of scholarly communication**: All peer reviewed scientific publications are freely accessible

Policy Priorities

… 4 with regard to relations with research actors (researchers, institutions and funders)

- ✓ **Rewards**: The European research career evaluation system fully acknowledges Open Science activities
- ✓ **Research Integrity**: All publicly funded research in the EU adheres to commonly agreed Open Science Standards of Research Integrity
- ✓ **Education and skills**: All young scientists in Europe have the necessary skills and support to apply Open Science research routines and practices
- ✓ **Citizen Science**: CS significantly contribute and are recognised as valid knowledge producers of European science

Milestones...

European Commission policies: systematic and growing support

2007	• EC Communication on Scientific Information
2008	• FP7 OA Pilot
2012	• Recommendation on OA to and preservation of scientific information • Communication on European Research Area (ERA)
2014 -	• Horizon 2020 OA and Open Research Data (ORD) policies
2015	• Digital Single Market (DSM) strategy
2016	• European Cloud Initiative Communication (ECI)- The European Open Science Cloud
2018	• Revision of the 2012 Recommendation in conjunction with recast of PSI Directive
2018	• Launch of the first phase of the EOSC
2018-	• Preparing Open Science for Horizon Europe

Open Access in the EU funding programmes for R&I

2008

FP7

OA **Pilot**

Deposit and open access

2014

H2020

OA **Mandatory**

Deposit and open access

& ORD/DMP **Pilot**

2017

H2020

OA **Mandatory**

Deposit and open access

& ORD/DMP **by default (opt-out)**

2020

Horizon Europe

OA **Mandatory**

Deposit and open access

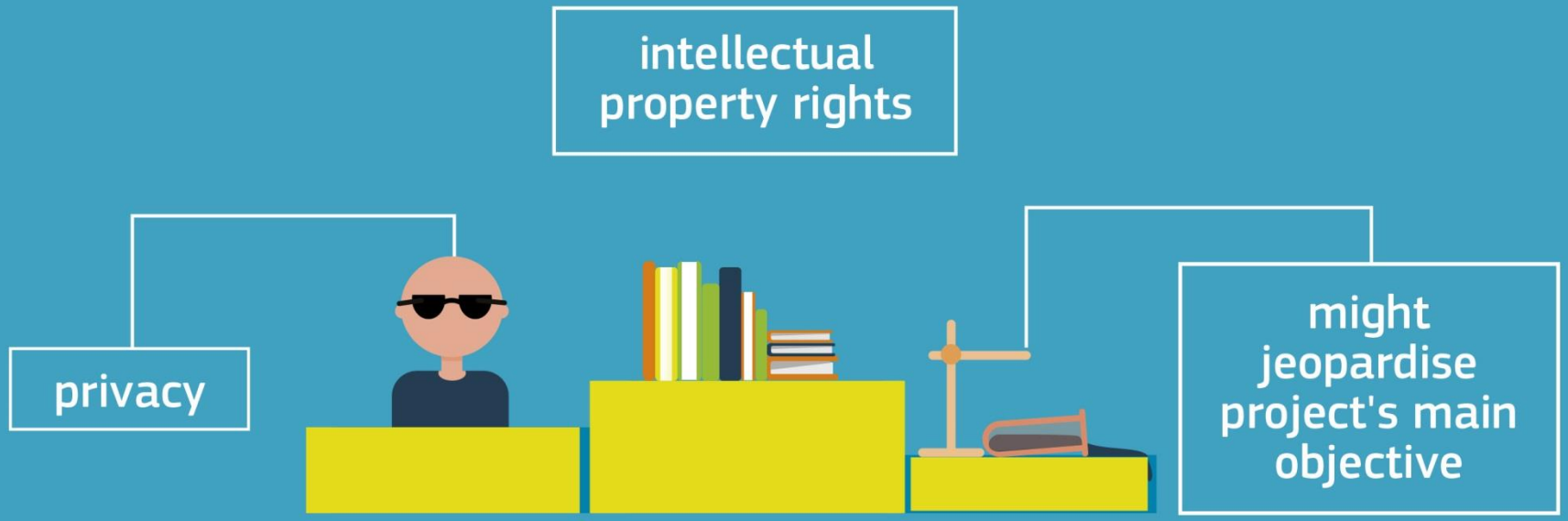
DMP + FAIR data **Mandatory**

OD **by default (opt-out)**

& Open Science **embedded**

AS OPEN AS POSSIBLE, AS CLOSED AS NECESSARY

Top three reasons for **opt-out**:



Many challenges still ahead

Open access to publications

- Increasing uptake to 100%
- Reinforcing monitoring and incentives/'sanctions'
- Plan S

Open access and research data

- The DMPs
- Mainstreaming FAIR data across the FPs
- Stimulating a change in scientific culture

Our ambition for Open Science in FP9

FP9 goes beyond OA (publications & data) to embrace & incentivise Open Science as modus operandi for science

- Clarifies and strengthens the **OA obligations**;
- **Empowers the authors** of scientific publications;
- Is home of **FAIR data sharing** while complying with IPR rules and exploitation obligations set in the GA;
- **Broadens Open Access** (with opting out options) to other research output;
- Promotes compliance with **'Open Science principles'** through a combination of obligations and incentives;
- Implements **sanctions** for those beneficiaries that repeatedly and consistently fail to provide the required open access, requiring institutions to assume responsibility for their intellectual output;
- Introduces the use of **'new generation' metrics** for better assessing the impact of research output and the engagement in Open Science**.**

So that the norm is/will become

- **Publications - immediate OA**: quicker and cheaper
- **Data – mandatory OD**: public funded research is a reproducible public good. Both already mandatory in EC. Increasingly other funders (SE) in particular the big private ones (Wellcome trust, Gates, etc)
- **FAIR** will be the standard
- **DMP** universally required
- **Next Generation Metrics** (see the Metrics Toolkit)
- **MORF** (massive online open research flows)
- **All science will be data driven → Data science literacy** (and potentially new career paths e.g. data scientists, start-ups, science diplomacy)

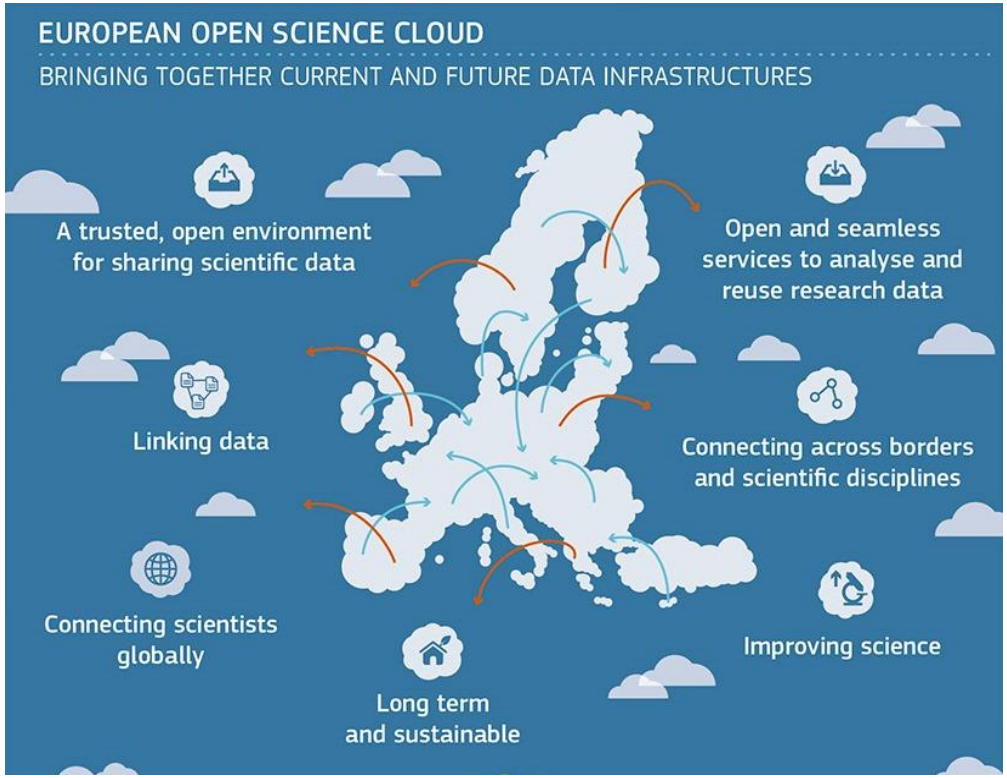
It will allow :

- **Faster & better publication**
- **Richer publication opportunities: the whole research value chain (not only HI pub)**
- **Return to some basics. E.g. open peer review is nothing more than peer review as it used to be**
- **Richer measurement of scientific activity (see the Metrics Toolkit)**
- **Different career paths**
- **More research potential in the disciplines**

EOSC: a bottom up project

European Commission

Federating existing initiatives to create a trusted virtual environment for enabling data driven science across boundaries and disciplines in Europe



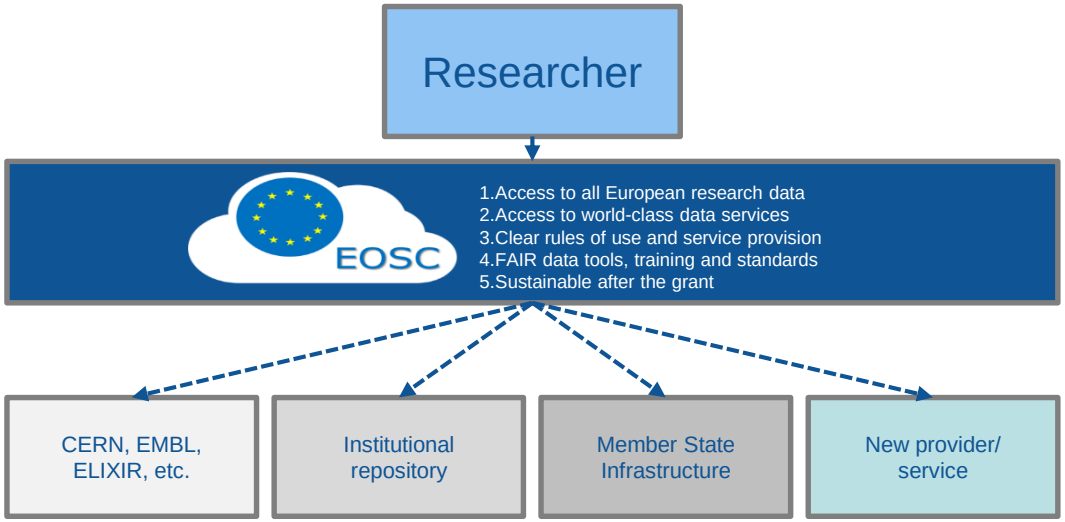
Answering to European-wide issues

- ✓ **Low** awareness of the value of **data sharing**.
- ✓ Need to translate recent changes in **privacy, data protection and copyright rules** to the research data domain.
- ✓ **Lack of data interoperability** (e.g. via common standards).
- ✓ **Fragmentation** and **lack of coordination** over different scientific communities and countries.
- ✓ **Not enough hardware capacity** for scientific computing, storage, connectivity.

EOSC: a researcher-centric project

European Commission

EOSC will allow for universal access to open research data and create a new level playing field for EU researchers



- Easy access through a universal access point for ALL European researchers
- Cross-disciplinary access to data unleashes potential of interdisciplinary research
- Services and data are interoperable (FAIR data)
- Data funded with public money is in principle open (as open as possible, as closed as necessary)

Seamless environment and enabling interdisciplinary research

Source: RTD

EOSC policy milestones

June 2017	❑ **EOSC Summit forming the coalition of the willing**
Oct 2017	❑ **EOSC Declaration published for endorsements and to seek commitments**
March 2018	❑ **EOSC Roadmap presented for consultation to Council RWP**
May 2018	❑ **Council conclusions endorsing the EOSC Roadmap**
Fall 2018	❑ **Establishment of the Governance structure; MS designate representatives to the EOSC board. Selection of members to the governance structure**
Nov 2018	❑ **Launch of the EOSC governance structure (Austrian Presidency event in Vienna)**
End 2020	❑ **MS+ EC agreement on the future strategic orientation and financing scheme for the EOSC**

Data package

Adopted

25/4/2018

Public sector and publicly funded data

Private sector data

Research data

Proposal for a revision of the Directive on the reuse of public sector information

Draft Guidance on private sector data sharing in B2B and B2G contexts

Update 2012 Recommendation on access to and preservation of scientific information

2018 DATA PACKAGE

Different policy instruments for different types of data

#dataeconomy #opendata

Commission Recommendation on access to and preservation of scientific information

A revised soft law measure

The original Recommendation of 2012

- Part of package that contained measures to improve and harmonize access to scientific information produced in Europe (incl. Horizon 2020)

The revision in 2018 C(2018) 2375 final

- A valuable and impactful instrument for policy making
- Technical update required to fit today's standard research practices bases on Open Science (OS), and to reflect the most recent developments in EU policies
- Announced in European Cloud Initiative (COM(2016) 178 final)
- Discussion at the 5th meeting of the EC Expert Group on National Points of Reference (NPRs) in December 2017

Commission Recommendation on access to and preservation of scientific information

A stronger instrument

The main changes

- Research data management (incl. FAIR data)
- Incentives schemes and reward systems for researchers to share data and commit to other Open Science practices
- Skills and competences regarding scientific information
- Text and Data Mining (TDM) and technical standards that enable re-use
- Infrastructures for OS (incl. European Open Science Cloud)

The expected impact

- An even more powerful policy instrument that is fit for purpose

The next steps

- A new compass for Member States

Other initiatives

The Open Research Europe publishing platform

- Help H2020 beneficiaries and their researchers comply with the open access mandate without paying APCs during and after the grant
- Improve uptake of OA in H2020
- Promote OA as THE mode for publishing from now on
- Support open science and lead by example
  - ✓ Early sharing of research (pre-prints + peer-reviewed articles)
  - ✓ Open peer-review+ post publication commenting
  - ✓ New generation metrics
- Explore business models in OA publishing and sustainability

- Tenders are under evaluation

Open Science Monitor

http://ec.europa.eu/research/openscience/monitor/

Thank you!

More information at

http://ec.europa.eu/research/openscience