



# **Open Science policies 2015-2019**

## **What has been done so far in EU policy and what is left**

**OA Conference  
CERN - UNIGE**

**Open Science – its impact and potential as a driver for radical  
change  
19-21 June  
Geneva**

**JC Burgelman  
& Unit G4  
European Commission, DG RTD**

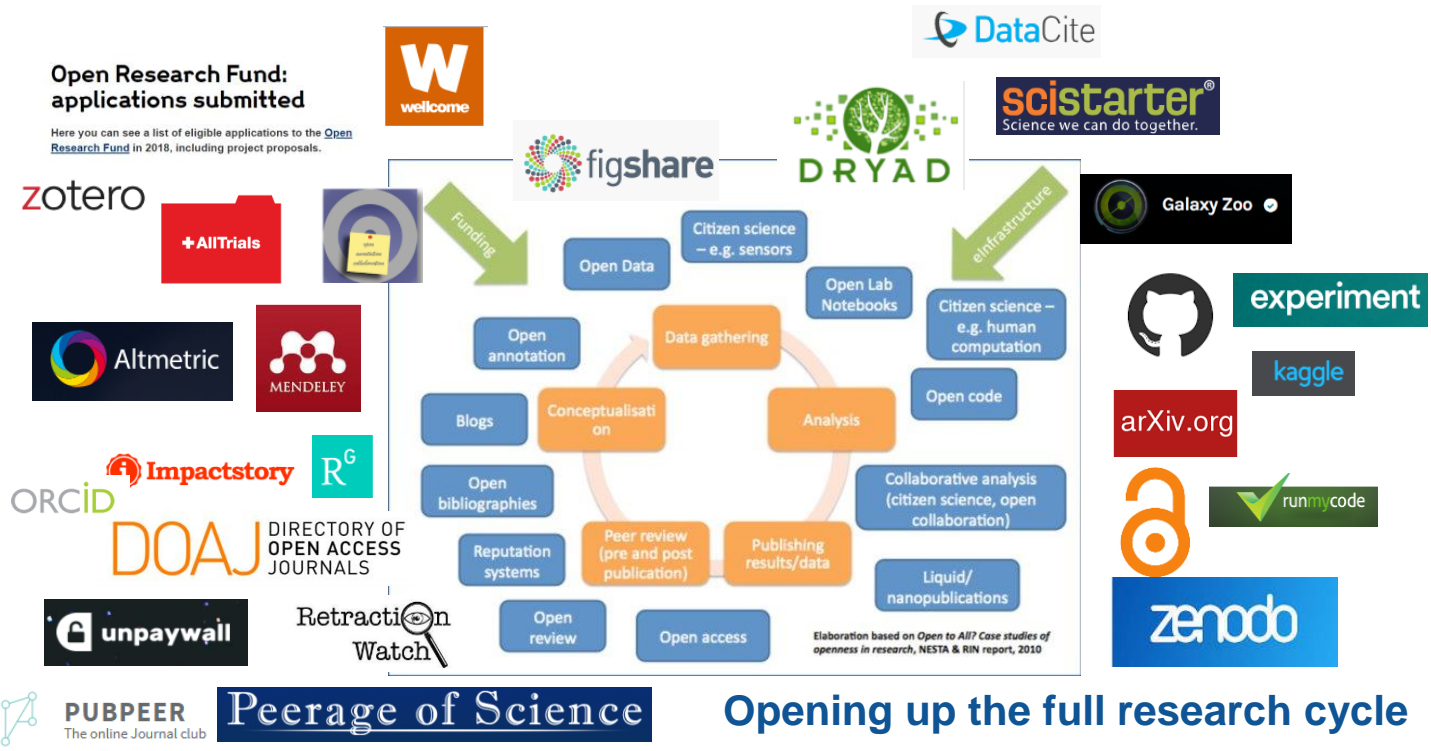


- 1. Why this policy**
- 2. What where the main priorities**
- 3. What was realized**
- 4. What is still missing or incomplete**

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



European Commission



# Why?

## Multiple benefits



- 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. (Norori: Eco impact Human Gnom sequencing: 1 billion eco output, 4 million jobs, 30% more genetic testing, innovative new methods, cures etc )
- 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 & and it helps the self correcting of the system
- Fit for 21<sup>st</sup> century science purpose: all grand societal challenges NEED cross disciplinary research

# Which priorities 2016, -



## Use and management of research results

- 1. FAIR data:** FAIR data sharing is the default for funding scientific research
- 2. European Open Science Cloud:** all EU researchers are able to deposit, access and analyse European scientific data through EOSC, without leaving their desk
- 3. Indicators:** alternative metrics (next generation metrics) complement conventional indicators for research quality and impact (e.g. JIF and citations)
- 4. Future of scholarly communication:** all peer reviewed scientific publications are freely accessible and early sharing of different kinds of research outputs is encouraged

## Alignment of research partners

- 5. Rewards and incentives:** the European research career evaluation system fully acknowledges Open Science activities
- 6. Research Integrity:** all publicly funded research in the EU adheres to commonly agreed Open Science standards of research integrity
- 7. Skills and education:** all scientists in Europe have the necessary skills and support to apply Open Science research routines and practices
- 8. Citizen Science:** citizens significantly contribute and are recognised as valid knowledge producers of science

# What was achieved

## Open access



### Key objective

- Work with all stakeholders and EU Member States for the alignment of OA policies and support implementation in H2020

### Main achievements

- Revision of the [Recommendation](#) on Scientific Information, Public Sector Initiative [Directive](#) and EU Copyright [Directive](#) (2018)
- EC Expert Group on the future of scholarly communication [report](#) (January 2019)

### Next

- Follow-up on legal and regulatory aspects (incl. Plan S)
- Second [tender](#) on open access publishing platform (spring 2019)
- Procurements (monitoring of and support to H2020) and reports

# What was achieved FAIR (open) data



## Key objective

- Implement FAIR data in EOSC, and beyond

## Main achievements

- FAIR embedded in several 'EOSC documents': [Communication](#) (2016), [Declaration](#) (2017), Council [Conclusions](#) (2018)
- Study (June 2018) with cost-benefit analysis
- EC FAIR data Expert Group report (November 2018)

## Next

- Collaboration with EOSC Working Groups
- FAIR-compliant certification scheme for data infrastructures and policy on Persistent Unique Identifiers in EOSC (end 2019)
- Horizon 2020 project-funding



## Directive on open data and the re-use of public sector information (adopted 6-2019)

- (Article 1) Research data falls now within the scope of the Public Sector Information Directive
- (Article 10) MS shall adopt national policies & relevant actions to make publicly funded research data openly available by default, in line with FAIR principles & “as open as possible, as closed as necessary”
- (Article 10 + Recital 28) **Research data which are already publicly available through repositories shall be re-usable** (but no extra cost for the retrieval of the datasets should be imposed, no additional curation of data should be required to comply with this obligation )
- (Recital 28) **MS may extend the application of this Directive to research data made publicly available** through other data infrastructures than repositories, through OA publications.



# What was achieved European Open Science Cloud



## Key objective

- Adapt research infrastructures for Open Science and develop a common, federated, European framework (ecosystem) for publicly-funded research data

## Main achievements

- Implementation roadmap and launch (March & November 2018)
- Two Expert Group reports ([FAIR](#) & [EOSC in practice](#))

## Next

- Implementation including FAIR certification schemes for repositories, [FAIRsFAIR project](#) etc.
- Mapping of EOSC-relevant national initiatives (end 2019)
- Evaluation by EC and EU Member States (end 2020)

# What was achieved Indicators



## Key objective

- Develop and employ, for the development of Open Science, non-traditional metrics that cover not just citation of articles (i.e. what was initially named 'Altmetrics')

## Main achievements

- Report from the first Expert Group on Altmetrics (2017)
- Second Expert Group on indicators for researcher's engagement with Open science and its impacts (2019)

## Next

- Report on concrete and implementable indicators to be released in June 2019 and discussed with OSPP in October 2019

# What was achieved Open Science Monitor



## Key objective

- Get some quantitative and qualitative insights on the ongoing development of open science practices (this is not an assessment tool)

## Main achievement

- Two public procurement contracts launched and implemented in a sequential way, with a web-based demonstration in place

## Next

- Monthly updates till the end of 2019
- Improvement of the Monitor once the EU has a more open and transparent data infrastructure for publicly funded research (notably with a full implementation of the EOSC)

# What was achieved Citizen Science



## Key objective

- Citizens significantly contribute and are recognised as valid knowledge producers of European science (part of dimensions supported by Responsible Research and Innovation)

## Main achievement

- OSPP [report](#) on citizen science (incl. recommendations)
- Horizon 2020 project-funding

## Next

- Reports on good practices in citizen science to be produced in 2019 to inform development of two citizen science toolkits
- Conference on citizen science towards the sustainable development goals (Berlin, second half of 2019)
- Systemic approach in Horizon Europe

# What was achieved

## Research integrity



### Key objectives

- Set European standards to foster research integrity in the development of Open Science, in particular having in mind the relation between science and society

### Main achievement

- Mutual learning exercise on research integrity (led by EU MS)
- Support to the European Network on Ethics and Research Integrity, and European Network of Research Integrity Officers
- Horizon 2020 project-funding

### Next

- Fully address Open Science in the European Code of Conduct with the aim of a full implementation in the Framework Programmes

# What was achieved

## Rewards and skills



### Key objectives

- Encourage, support and incentivise researchers to practice Open Science, with a focus on both research performing and research funding organisations

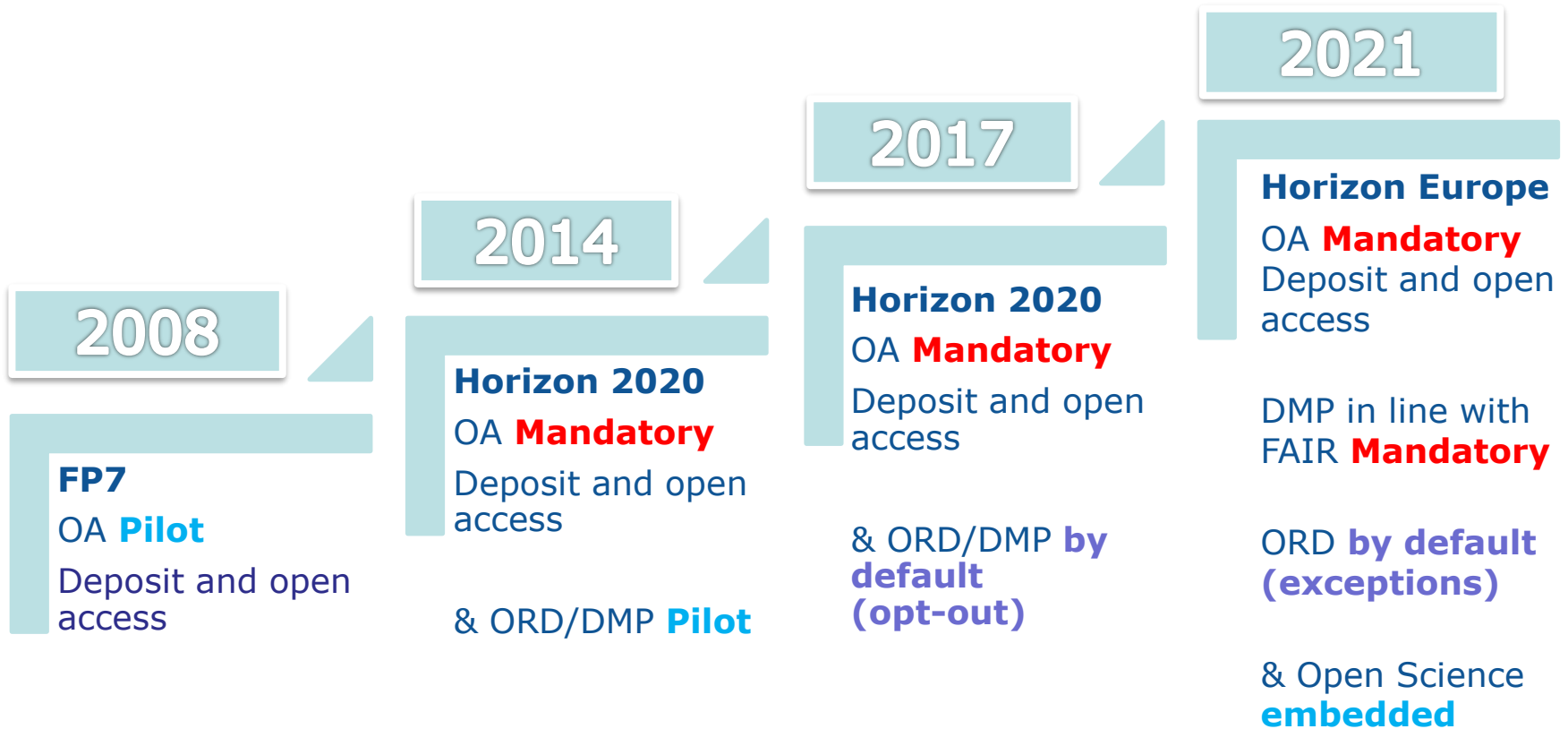
### Main achievement

- Final reports of Expert Groups on [Rewards](#) and [Skills](#)
- OSPP makes rewards for Open Science a priority

### Next

- Follow-up, in particular embed rewards for Open Science in the modernisation of European universities

# OS in the evolution R&I funding programmes



# Open Science in Horizon Europe



**Horizon Europe goes beyond open access (publications & data) to embrace and incentivize open science as *modus operandi***

1. Clarifies and strengthens the **open access obligations** while **empowering authors** of scientific publications
2. Sets obligations towards **FAIR and open data sharing**, and **data management**, while complying with IPR rules and exploitation obligations
3. Promotes compliance with **open science principles** through a combination of obligations and incentives
4. 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
5. Introduces the use of **new generation metrics** for better assessing the impact of research output and the engagement in open science



# Possible scenario for incorporation of Plan S principles in Horizon Europe

European  
Commission

## Open access via repositories kept but made immediate

- Embargoes not accepted any longer

## Copyright retention and open license asked for

- Copyright retention already in the HE Regulation
- Open license to be required (in line with [new standard licence](#) adopted by the EC for its own information production)

## Publication in hybrid journals allowed

- However, costs not to be eligible

# Research data in Horizon Europe



## **Mandatory Data Management Plan**

- When there is research data generated, collected, re-used...

## **Open by default**

- Unless it cannot be (exceptions will apply- we will not use the term 'opt-out' any more)

## **Open access/data management disambiguated**

- Different from current situation

## **Use of European Open Science Cloud required**

- In some Work Programmes

# The system change is not over Still a long way to go



By 2030 the science system will be characterised by

- Open research data as a renewable resource for research and innovation (via EOSC)
- Full & immediate open access to the whole life cycle of a research process
- A system of peer reviewed open access research workflows
- Multiple ways to measure and reward scientific productivity
- "liquid" science (like in SW development)

## What's left?

We know that Europe leads this OS movement...for the moment



- We have a history of leading with ICT, but losing out in the end
- The powers that be are astonishingly strong ... even in the good world of science
- **Scientists like intellectual disruptions, not institutional ones.... need a big cultural change** (Leru 2018 paper)



# **I wish I could start my research career now**

1. Never were the exogenous factors so good for science (budgets, trajectories, support, etc)
2. Never was there so much need for good science (see Harari 21 lessons if you don't know where to start research on)
3. AND: Never were the endogenous factors so favourable to do good science (open science is making your scientific life easier & richer)



# Thank you

<http://ec.europa.eu/research/open-science/index.cfm>