
# The EU Open Access Policies in support of Open Science

## Open data in science. Challenges and opportunities for Europe
## ICSU
## Brussels 31-1-2018

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Open Data Policy and Science Cloud

DG RTD

# Obvious benefits

## Structural gnomics consortium



| Public-Private Partnership | Public Domain | Commercial |
|---|---|---|

**Tools & Basic Knowledge**
**NOVEL Proteins only!**

- Structure
- Chemistry
- Antibodies
- Screening
- Cell Assays

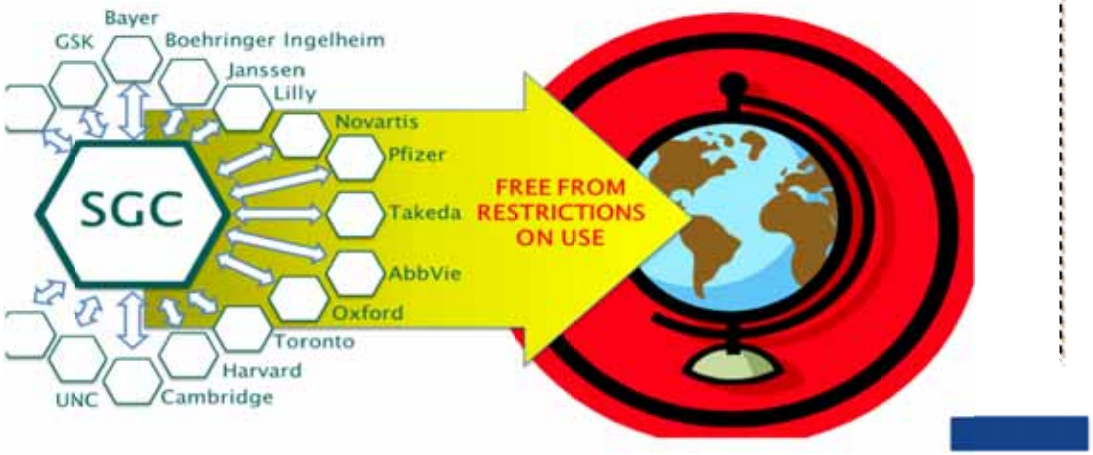
**Discovery and Exploration**

- No patent
- No restriction on use
- Open access to tools and data.
- Target identification & validation

**Drug Discovery and Development**

Facilitated by access to increased amount of information in the public domain

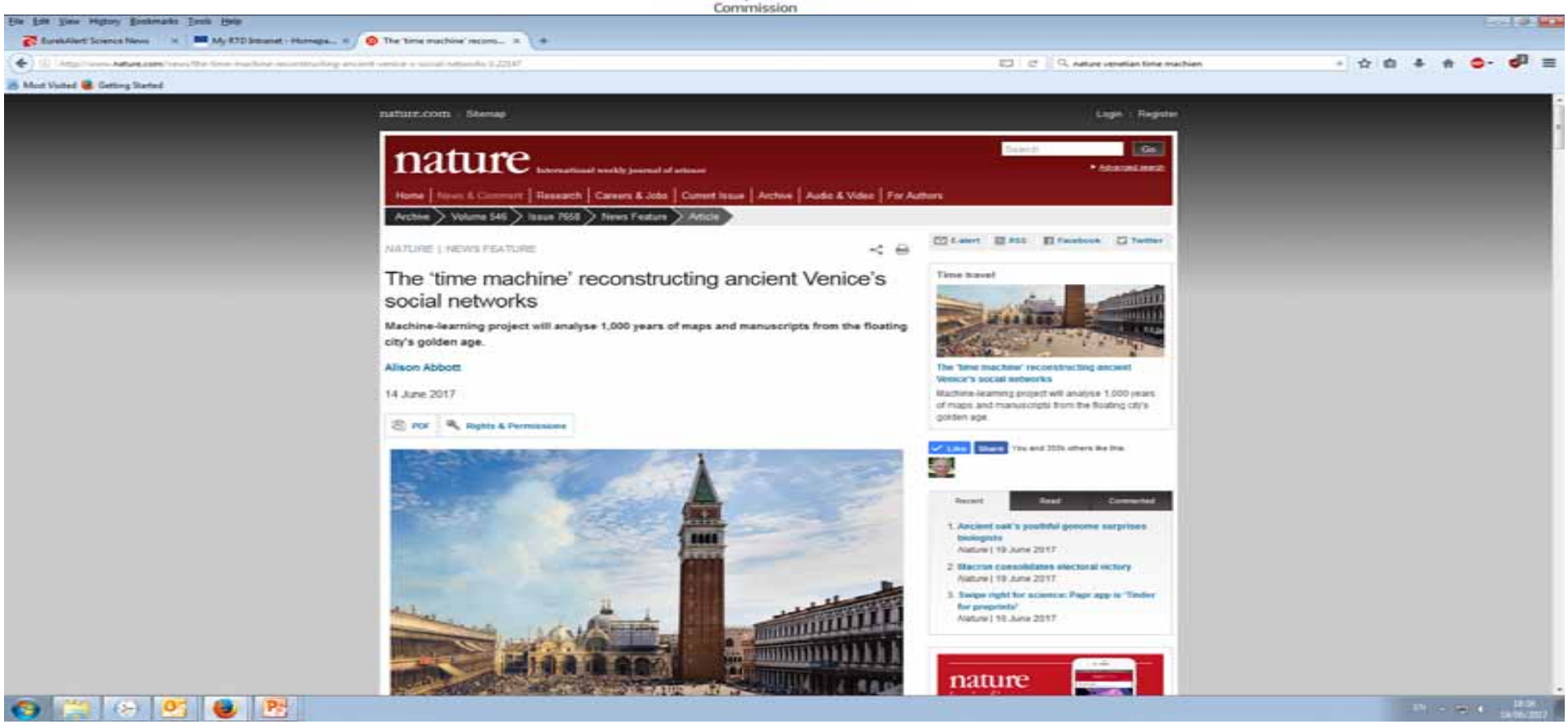
- (re)Screening
- Lead Optimisation
- Pharmacology
- Metabolism
- Pharmacokinetics
- Toxicology
- Chemical development
- Clinical development




Weigelt J. EMBO Reports **10**:941-5 (2009)

# Obvious for ALL sciences

European Commission



## Obvious because we need more

European Commission

Rise of interdisciplinary, highly collaborative international big science projects – open by design

## The context of our OA policies: Open Science.
## OS offers great opportunities for science, scientists & society


- **Better ROI of the R&I investments:** if all the results of our public research are made reusable, more productive use follows by default
- **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 as such: the public taxpayer has this right and it can only enhance the quality of science
- **Fit for 21st century science purpose**: all grand societal challenges need cross disciplinary research

For researchers:

- Wider dissemination and sharing of their results
- More visibility and credit for what happens before an article get published
- New career paths e.g. data scientists, start-ups, science diplomacy

# Therefore: top level policy priority

*"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

# EC OS policy: not invented in Brussels, but bottom up & co-design


Extensive stakeholder consultation

- ✓ Public consultation (July-September 2014)
- ✓ Validation workshops (October-December 2014)
- ✓ Final report (February 2015): http://ec.europa.eu/research/consultations/science-2.0/science_2_0_final_report.pdf

Strong support by Member States and Competitiveness Council

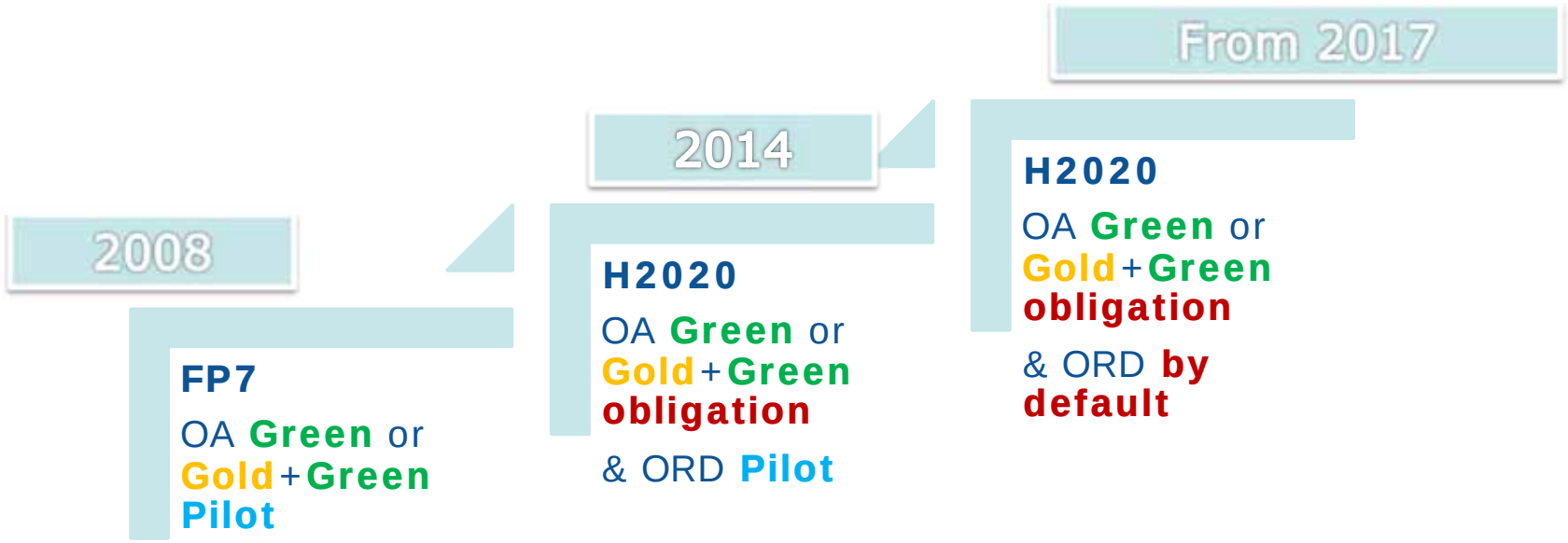
- ✓ Policy debate & Council conclusions 'data-driven economy' May 2015
- ✓ Presidency conference Open Science &
- ✓ Council conclusions 'open science') May 2016

European Open Science Agenda

- ✓ Broad consensus on five policy lines *and* 8 Action
- ✓ Open Science Policy Platform
- ✓ Embedded in the Digital Single Market strategy

# Open Access Policies: Considerable progress made in 10 years

## Then and now



# Open Access policies: focus now

- **Open Access to Publications**:

  2018: launch of **Open Access Publications Platform**:
  (stand-alone peer reviewed scientific articles from H2020 projects)

- **Open Access to research data:**

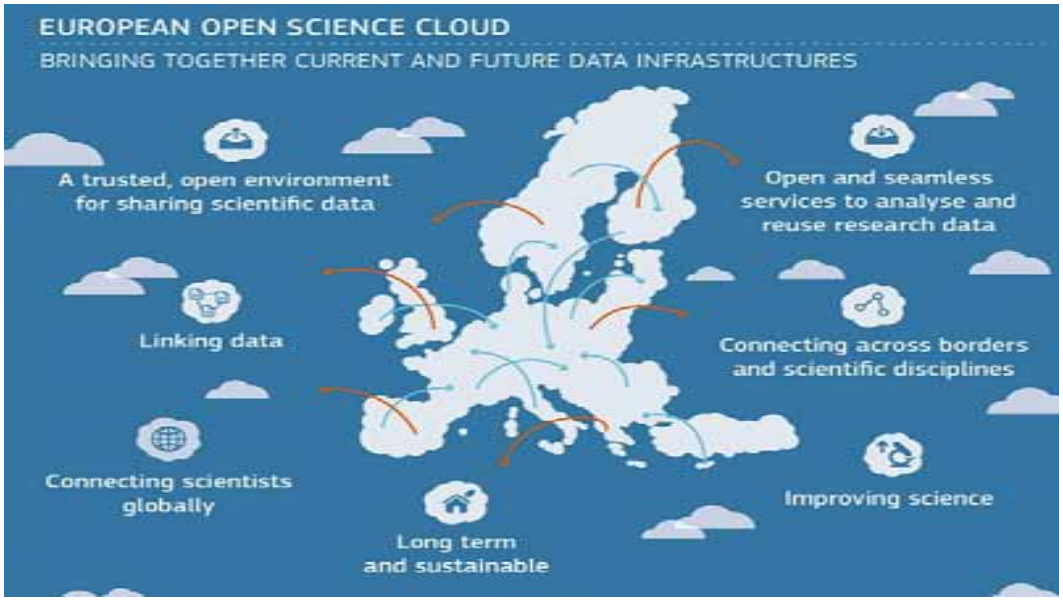
  2017: **Default**, with opt-outs possible at any stage
  2017: **Research Data Management** Plans: mandatory and FAIR
  2018: Mainstreaming in all Member States (co-development)

- **European Open Science Cloud:**

  2018: launch of the 1st phase

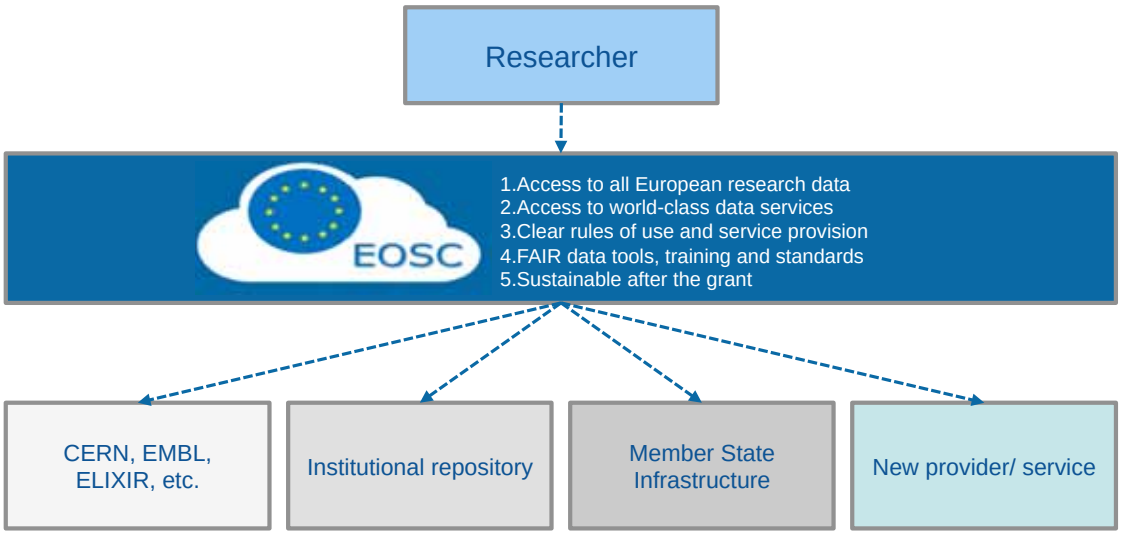
# Open Data

European Open Data (and data driven science) supported by the **European Open Science Cloud**



# EOSC and the researcher

## The 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 summit


- **110** key participants
- **80** from all scientific fields
- **15** national scientific infrastructures
- **13** research funders
- **19** officials from Member States and Associated Countries
- Overall, **23** Member States and Associated Countries represented
- **1800** via web stream and extensive coverage via Twitter

# EOSC Summit Highlights


- The Summit provided **strong support for the implementation of the EOSC** and marked a step change in the initiative
- Ground European science in a **common culture of data stewardship & sharing** throughout research data lifecycle. Only a **considerable cultural change** will enable long-term reuse of research data
- Develop the **EOSC as a commons** of research data, knowledge and infrastructure with different roles and responsibilities by actors at EU and MS level
- Stimulate compliance through **incentives and rewards**

# EOSC Summit Highlights


- Make **FAIR principles pragmatic**, equally encompassing all four dimensions: findability, accessibility, interoperability and reusability
- Apply **FAIR principles to all digital research objects**, incl. data-related algorithms, tools, workflows, protocols & services
- Disciplines must develop their notion of FAIR in a coordinated fashion. **Standards are fundamental** but a one-size-fits-all approach must be avoided

# EOSC Summit Highlights


- Build **trust between all stakeholders**, e.g. scientific communities, e-infrastructures, research infrastructures, funders - “look outside the organisational boxes and work together”
- Set out both **the science case and the financial case** to raise commitments for the EOSC, in particular of MS – “whatever we do needs to be integrated with the national systems”
- Some of the actions identified will require more times than others to implement due to e.g. budget commitments, division of labour, building of trust. **Implementation will need to fast-track some actions over others**, depending on the level of priority, support and maturity
- Develop a **formal framework for governing the EOSC** (open, dynamic, trial-and-error process) to sustain and strengthen related policies & programmes and secure commitment of funders and users - “what needs to be governed and how?”

## EOSC implementation process: complex but


- Hundreds of stakeholders involved (unlike when the internet was created)
- Billions of investment touched: overall annual investment of 10 billion euros in the EU (mainly by MS) on Research Infrastructures and e-Infras
- And much more to come: If all public funders would agree to commit 1% of the overall spending to open data…(approx 2 billion per year)

# EOSC Declaration: key FAIR data commitment


by Stan Gielen (NWO, follow up through Science Europe):

*work towards an agreement with all European Funding Organisations (if possible) and the EU (ERC, framework programmes) about* ***general guidelines and criteria for research data management*** *in applications and funding.*

Aim: set clear guidelines and criteria for our researchers, which are the same throughout Europe.

# EOSC Declaration: key FAIR data commitment

First results show:

- Several organizations already have some kind of RDM policies in place or are currently developing them
- These policies seem to have a high degree of compatibility

So no need to re-invent the wheel:

- Common denominators can be used to develop guidelines

On January 30 Science Europe & NWO organized a workshop to seek agreement on the basic principles and about the roadmap towards implementation of the various aspects.

# EOSC FAIR data tools: potential further follow up actions

- Work towards a FAIR Data Action Plan.
- Propose a European Framework for FAIR Research Data in line with the existing European Interoperability Framework.
- Analyse the legal landscape concerning data reusability.
- Develop a FAIR Data accreditation/certification scheme.
- Establish a cross-disciplinary Persistent Unique Identifier policy.
- Develop a Catalogue of data standards.

*N.B. proposals only, decision pending – will need to be developed with community*

Source: RTD

# Initial DMP experiences in H2020

Source: REA 2016 assessment of H2020 Societal Challenge 6 projects.

- Additional guidance on data management is needed for all groups of actors in research projects (researchers, peer reviewers and funder administrators ('project officers') including roles supporting researchers with data management tasks (data librarians or IT professionals working in data centres).
- Aspects such as data preservation, IPR or standards are too often not well developed in the DMPs that have been submitted so far
- Nevertheless research projects with excellent RDM performance are not rare. Some high quality DMPs from H2020 projects have already been published online, see

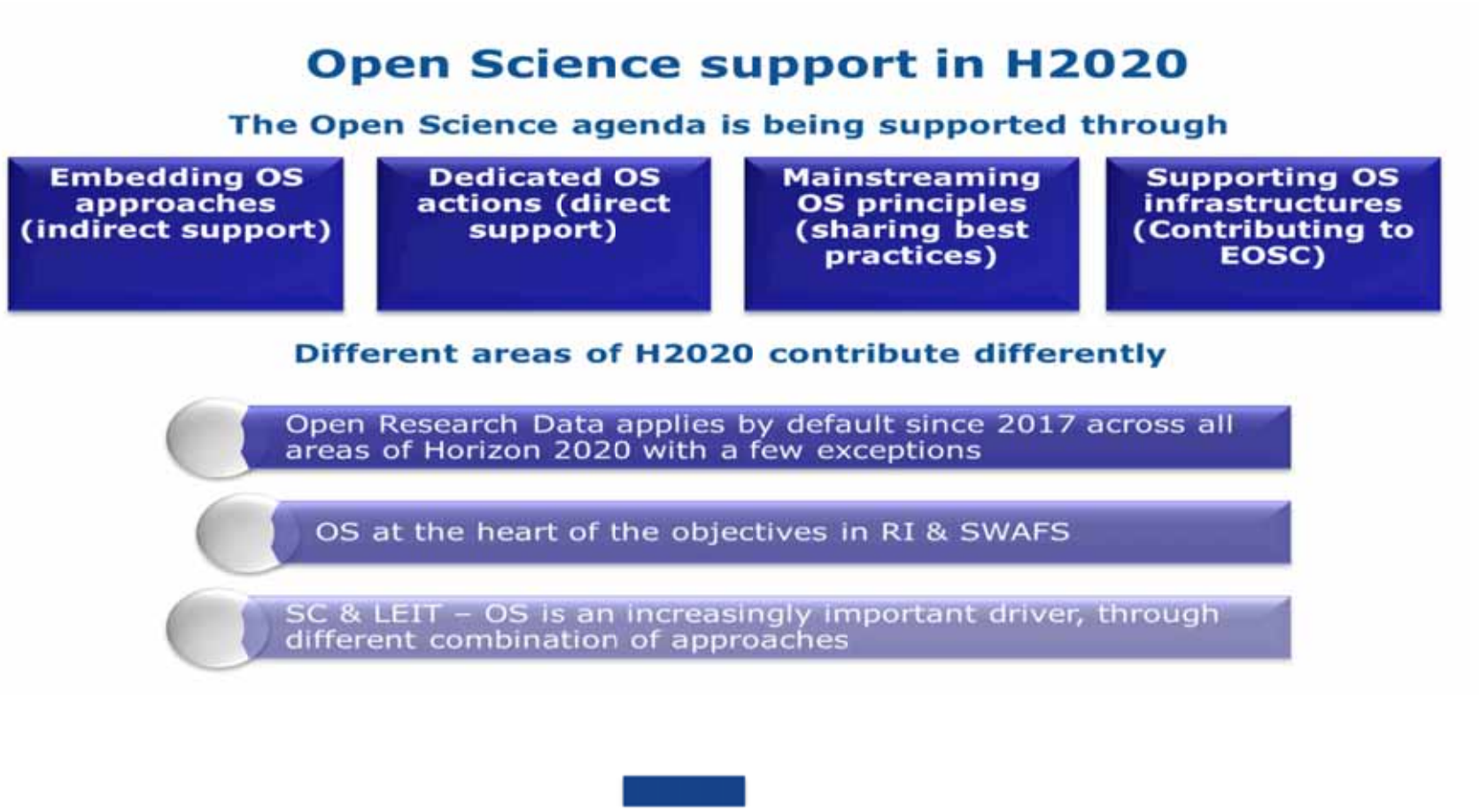
  http://www.dcc.ac.uk/resources/data-management-plans/guidance-examples

# Open Science in FP9

## FP9 goes beyond OA (publications and 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.

# Mainstreaming Open Science as a funder in H2020



# To conclude

OA and OS is here to stay:

If you want to go fast, go alone.
If you want to go far, go together
(African saying)

But also

Such a long journey ahead of us
(South African writer, A. Brink)

# OA / D of articles the final frontier?


- When launching the Chan Zuckerberg Foundation (goal: eliminate all diseases by 2100), its Director Cori Bargmann stated (1-2018):

  ''Finally, on openness. We believe that research advances when people build on each others' work. So our principles include making data, protocols, reagents and code freely available for other scientists to use''
  (my underlining) https://www.nature.com/articles/d41586-017-08966-z

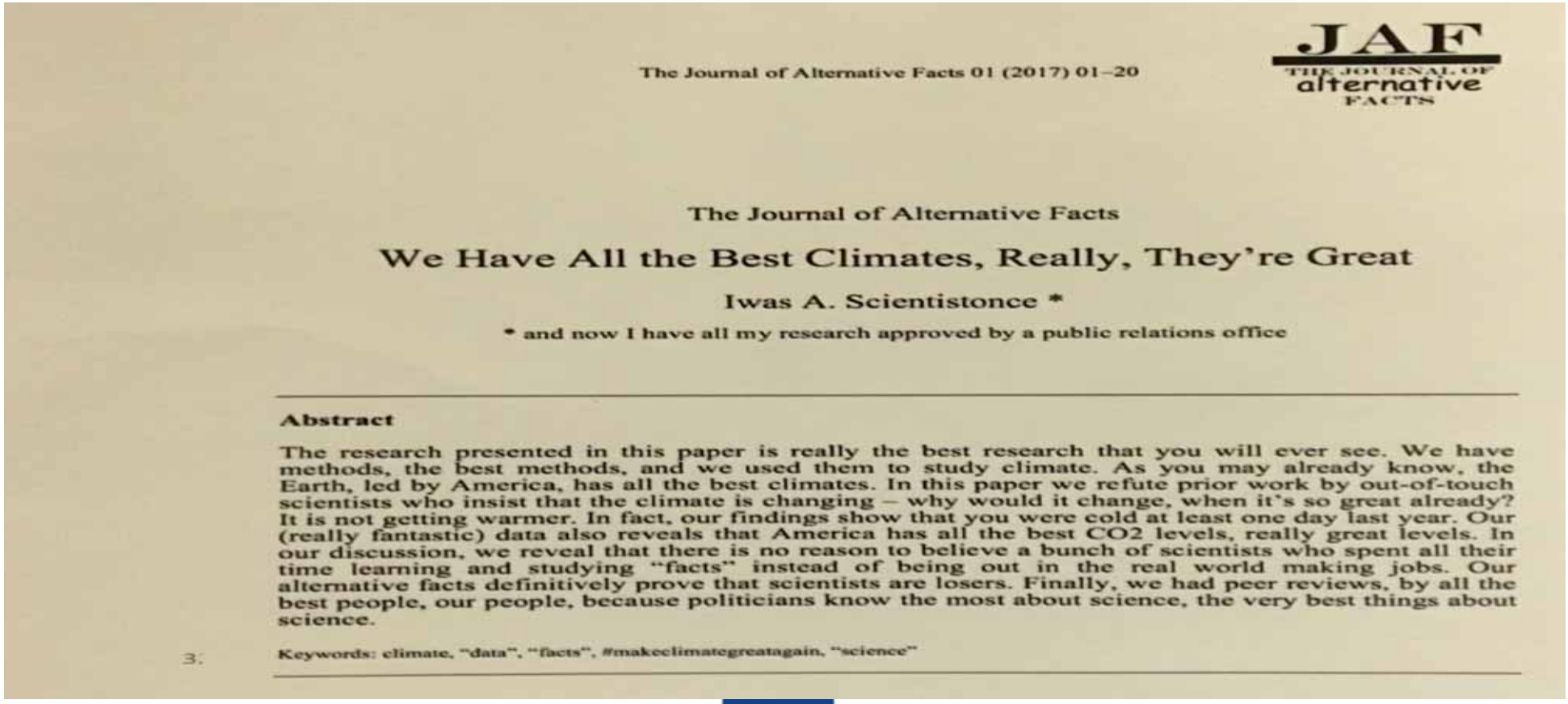
- Due to the power of cyber science tools, it is quite realistically to assume that we will evolve from peer reviewed open access publications to:
  **peer reviewed open access research workflows**

- Implying that scientific publishers become **open science platforms** in which an article is ONE of the many products (and not even not per se)

# No one foresaw this growth either

**We learned in Europe, the hard way, that we tend to underplay the deep impact of disruptions**

## This is an irreversible fact too: Independent Quality assurance will always be the core of the scientific pratice



The Journal of Alternative Facts 01 (2017) 01–20

JAF
THE JOURNAL OF alternative FACTS

The Journal of Alternative Facts

# We Have All the Best Climates, Really, They're Great

Iwas A. Scientistonce *

* and now I have all my research approved by a public relations office

**Abstract**

The research presented in this paper is really the best research that you will ever see. We have methods, the best methods, and we used them to study climate. As you may already know, the Earth, led by America, has all the best climates. In this paper we refute prior work by out-of-touch scientists who insist that the climate is changing – why would it change, when it's so great already? It is not getting warmer. In fact, our findings show that you were cold at least one day last year. Our (really fantastic) data also reveals that America has all the best CO2 levels, really great levels. In our discussion, we reveal that there is no reason to believe a bunch of scientists who spent all their time learning and studying "facts" instead of being out in the real world making jobs. Our alternative facts definitively prove that scientists are losers. Finally, we had peer reviews, by all the best people, our people, because politicians know the most about science, the very best things about science.

Keywords: climate, "data", "facts", #makeclimategreatagain, "science"

Thank you

More information at
http://ec.europa.eu/research/openscience