Open Science and the future of scientific publishing in Europe: EC perspectives and policies.

Keynote
Workshop Portuguese Ministry for Science Policy
"Digital Publishing of Scientific Journals. Paths and Opportunities in Open Science"
Lisbon, September 6th, 2018

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The wider picture:

Open Science

OS PARADIGM

- **Open Science is a paradigm shift in the modus operandi of science, affecting the whole research lifecycle and all stakeholders**
- This is a global and systemic transition to improve accessibility to and reusability of research practices and outputs.

- "Open Science has the potential to increase the quality, impact and benefits of science and to accelerate advancement of knowledge by making it more reliable, more efficient and accurate, better understandable by society and responsive to societal challenges. It has the potential to enable growth and innovation through reuse of scientific results by all stakeholders at all levels of society, and ultimately contribute to growth and competitiveness of Europe" (Council conclusions, May 2016).

It's real!

An emerging ecosystem of services and standards

Sci-starter.com

figshare

Runmycode.org

Data-intensive

Citizens science

Open code

my experiment

Open workflows

Pre-print

arXiv.org

Analysis

Data gathering

Publication

Open data

DRYAD

Open access

eprints

Conceptualisation

Review

Open annotation

Openannotation.org

Impact Story

Alternative Reputation systems

Altmetric

Scientific blogs

ResearchGate

Collaborative bibliographies

MENDELEY

Academia.edu

Why Open Science?

- **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."

"Presidency Conference Open Science", Amsterdam, April 4th, 2016

Policies to make sure Europe leads this paradigm shift

8 policy priorities decided, 2016 (holistic approach)

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

- ✓ **Open Data**: FAIR data sharing default for publicly 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 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

... 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

Implementation

- *EC as a research funder (Horizon 2020/Europe):*
  - Obligations on OA, open data, FAIR and DMPs
  - INFRAEOSC Call in WP 2018-2020
- *EC as a regulator (DSM):*
  - Revised PSI directive (-, 2018)
  - Recommendation on scientific information (-, 2018)
- *EC as policy maker:*
  - Open Science Policy Platform (OSPP) to co-develop the European Agenda with stakeholders
  - European Cloud Initiative (2016)
  - Implementation Roadmap for the EOSC (2018)
  - ORE (2018)

Open science Policy in Horizon Europe

The 'Lamy report' proposes a new FP that fully supports OS at all levels

The EC proposes to name the first pillar ‘Open Science’

Will embraces & incentivise open science as modus operandi for research beyond open access

- **Clarifies and strengthens OA obligations**: mandatory OA to publications and data (data "as open as possible, as closed as necessary'')
- **Empowers authors** of scientific publications to participate in OS
- Is the **home of FAIR data sharing** while complying with IPR rules and exploitation obligations set in the GA
- **Broadens OA** (with opting out options) to other research outputs

- Promotes **compliance with 'Open Science principles'** through a combination of obligations and incentives

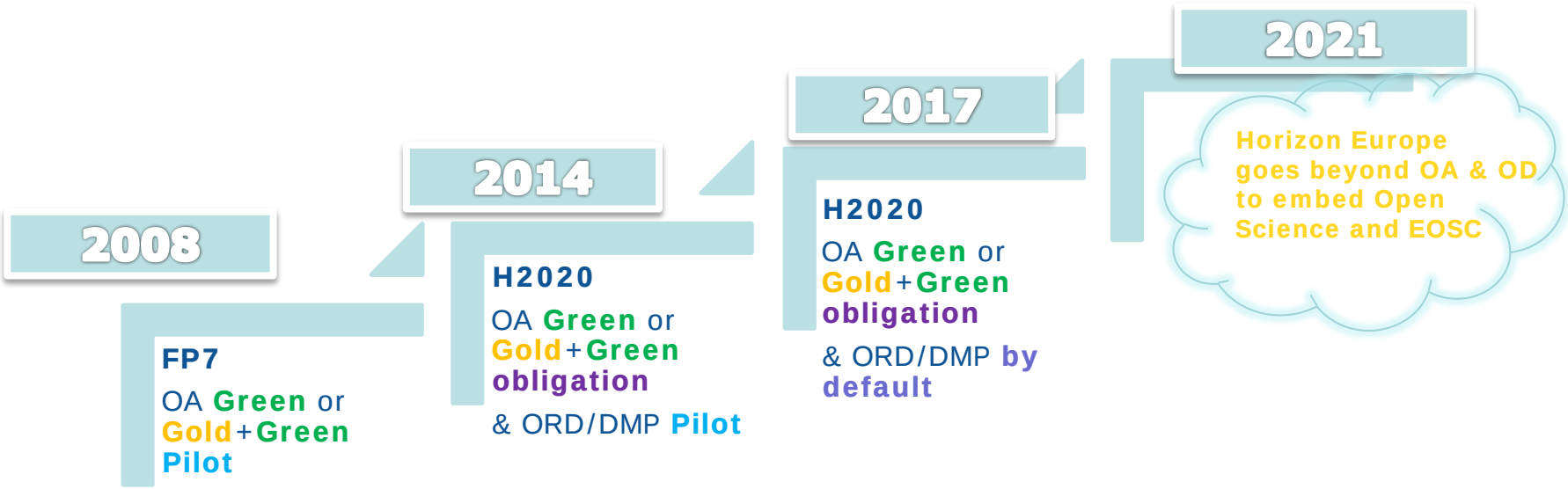
- Further **implements sanctions** for those beneficiaries significantly failing to provide open access, requiring institutions to assume responsibility for their intellectual output

- **Introduces the use of 'next generation' metrics** for better assessing the systemic impact of research output and the engagement in Open Science by researchers and their institutions

Open Access policies

EVOLUTION

OA in EU framework programmes for R&I



Open Access policies: current focus

- **Open Access to Publications**:

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

- **Open Access to research data:**

  2018: mainstreaming ORD in all Member States

  Launch of EOSC (23-11-2018)

EXPERT GROUP

Expert Group on the Future of Scholarly Publishing and Scholarly Communication

Expert group to "assess emerging and alternative open access business models with the aim of establishing how an economically viable transition towards open access can be achieved"

Report to be published by the end of 2018

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**

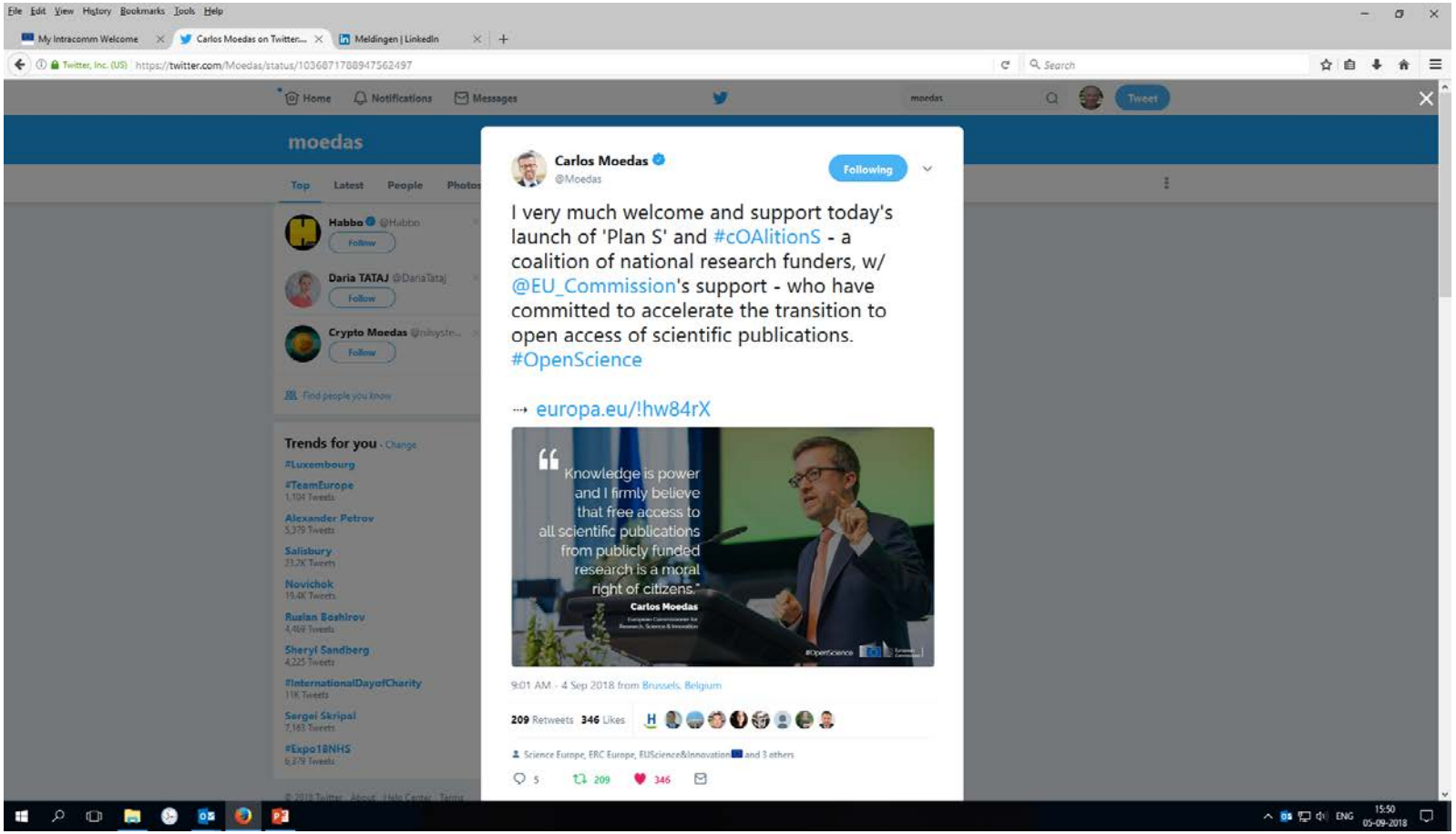
Actions

- Introducing requirements for beneficiaries to **maintain enough rights to fulfil their open access obligations** in HE (not handing over as such to premium practices)
- Crafting mandatory technical standards for the **persistent identification** of digital objects and publication repositories
- **Fully reimbursing APCs** for OA publications in journals and books listed in the Directory of Open Access Journals (DOAJ) and Directory of Open Access Books (DOAB), but **no reimbursement vis-à-vis hybrid journals**
- Supporting activities that promote a **sustainable and innovative scholarly communications ecosystem** (e.g. ORE platform)

EVEN MORE RADICAL PROPOSAL

European Commission

“PLAN S TOWARDS FULL OPEN ACCESS”



More to come than open access?

MORE TO COME

We can forecast how science will evolve in mid to long term:

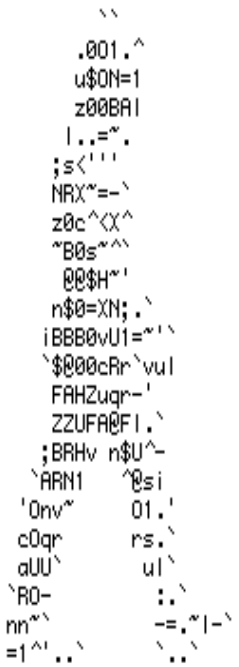
The **science system** will be characterised by

- **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**
- Multiple ways to measure and reward **scientific productivity**
- **“liquid’’ science (like in SW development)**

Allowing:

- **Reproducible science** - better science
- **Cross disciplinarity** - relevant/pertinent science

And we also forecast what a scientist will need to do too:



Thinking & raising the right questions should take most of our time...

And yes, we will have perverse effects of an open science system

Just like we had pervert effects of Facebooks, the internet as such, the mobile phone, the computer, the printed press ….

In fact **anything men ever made**

We know that Europe leads this movement…for the moment

- **We have a history of leading with ICT, but losing out in the end**
- The powers that 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)

We know we tend to underestimate mid to long term disruption

- How **AI** will <u>also</u> change science is most likely to be **the new disruption**
- It will **deeply affect research, education and management of science performers and institutions**
  (D. Gann, Imperial College)
- AI **will automate what it can** … a lot of science practices are automatable
- **Policy lesson**: open environments, support disruption and risk taking

Lets be prepared for much more disruption beyond green or gold open access!

Thank you!

More information at

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