



# Open Science from the inside out: concept, challenges and implementation

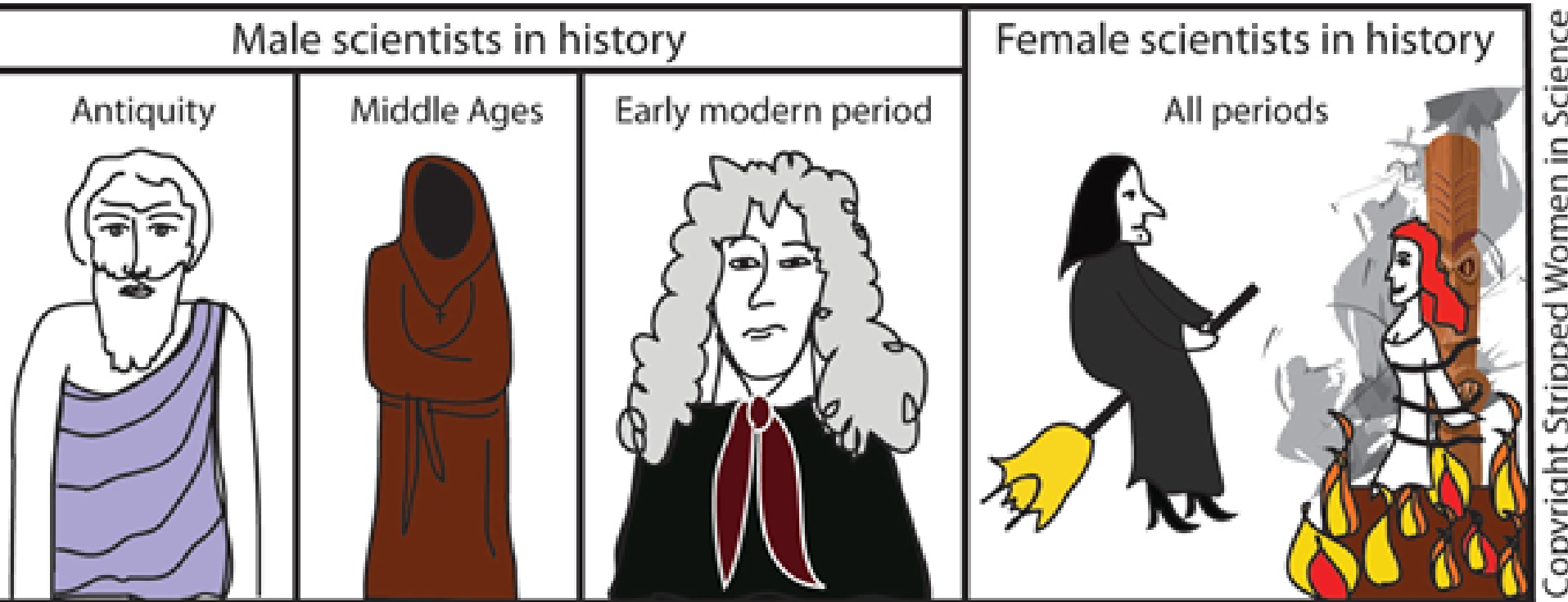
Prof. Dr. Eva Méndez **uc3m**

[emendez@bib.uc3m.es](mailto:emendez@bib.uc3m.es)

@evamen



# Happy #WomenInScience2019!!



Source: <http://strippedwomeninscience.blogspot.com/2011/02/women-in-science-historical-outlook.html>

# Open Science with many hats



EU-OSPP chair



RPO-Universities (YERUN)



Institutional (UC3M)



OS advocate



Librarian



Researcher

## 19th century scientist

I must find the  
explanation for this  
phenomenon in order  
to truly understand  
Nature...



## 21st centurt ~~scientist~~ academic

I must get the  
result that fits my  
narrative so I can  
get my paper into  
Nature..

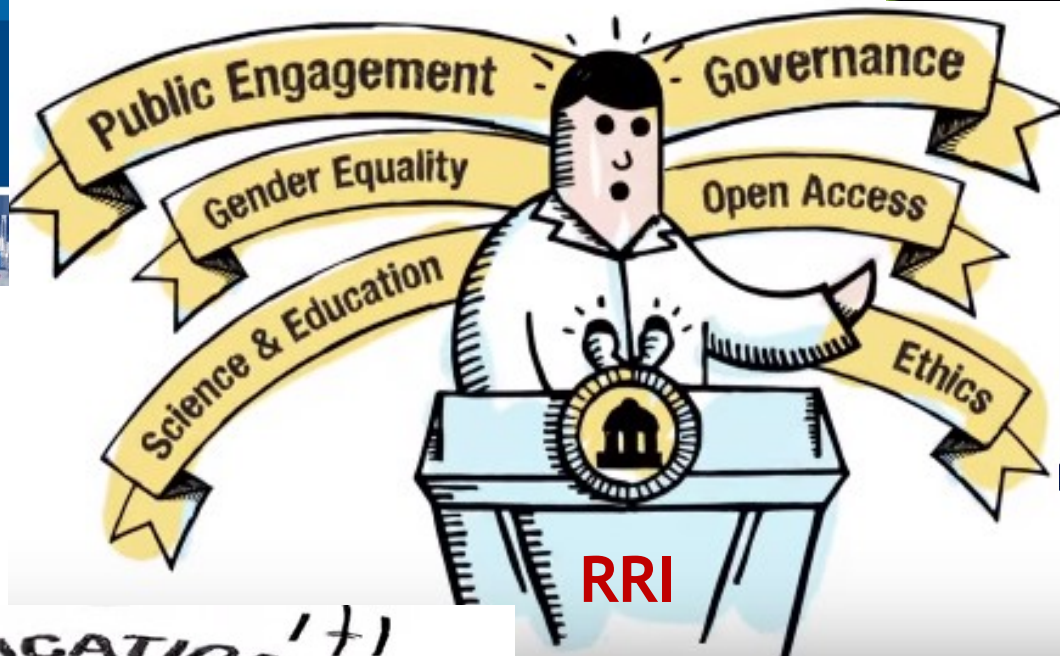
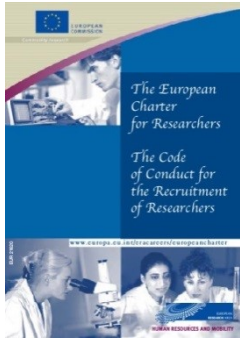
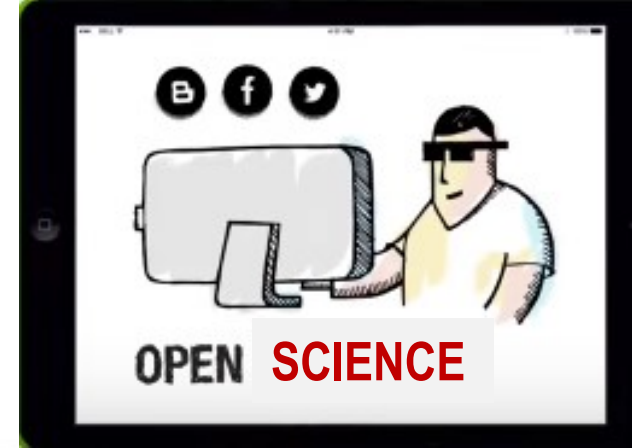


# Outline

- **Concept...**
    - Context (RRI, HRS4R, H2020/Eu...)
    - Open Science WHAT?
    - Open Science WHY?
  - **Challenges...**
    - Cultural Change
    - Rewards and incentives system
    - Motivators of will
  - **Implementation...**
    - Plan S Open Access “otra vez” (again)
    - Infrastructures
    - PCIs: Practical Commitments for Implementation
- ... and you?

Open Science from the inside out





HR EXCELLENCE IN RESEARCH



... Where **openness** and **transparency** are an integral component of the research and innovation process

# Open Science: What and Why?

A vintage-style sign with a light blue background and a white border. The sign is slightly weathered and has a small hole at the top. The text on the sign is arranged in three lines: 'Come in' in a dark blue cursive font, 'WE'RE' in a black sans-serif font, and 'OPEN' in large, bold, orange-red block letters. The sign is hanging from a dark surface by a white rope.

*Come in*  
**WE'RE**  
**OPEN**

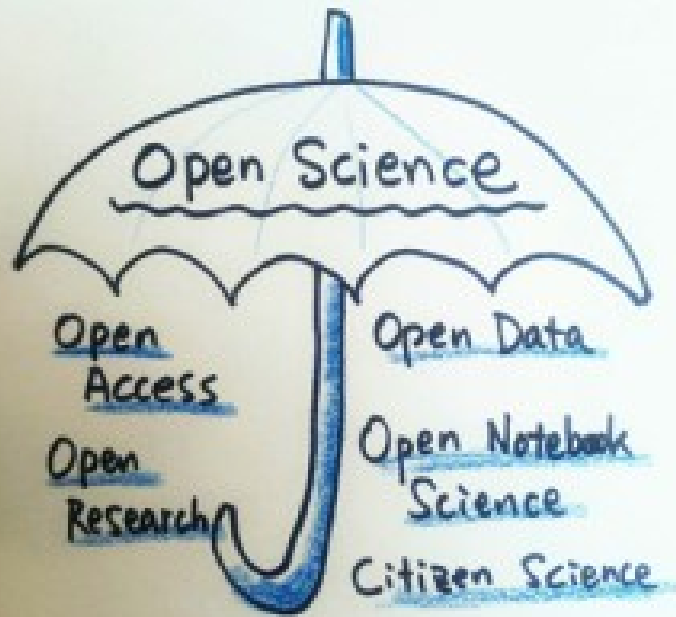
# Open Science: WHAT

- A systemic change in the modus operandi of science and research
- Affecting the whole research cycle and its stakeholders



Commissioner Carlos Moedas  
First meeting of the EU-OSPP. September 2016

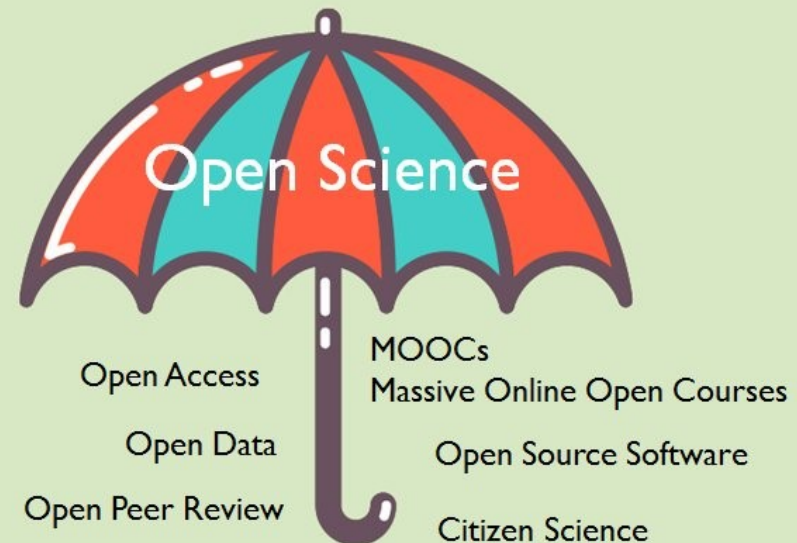


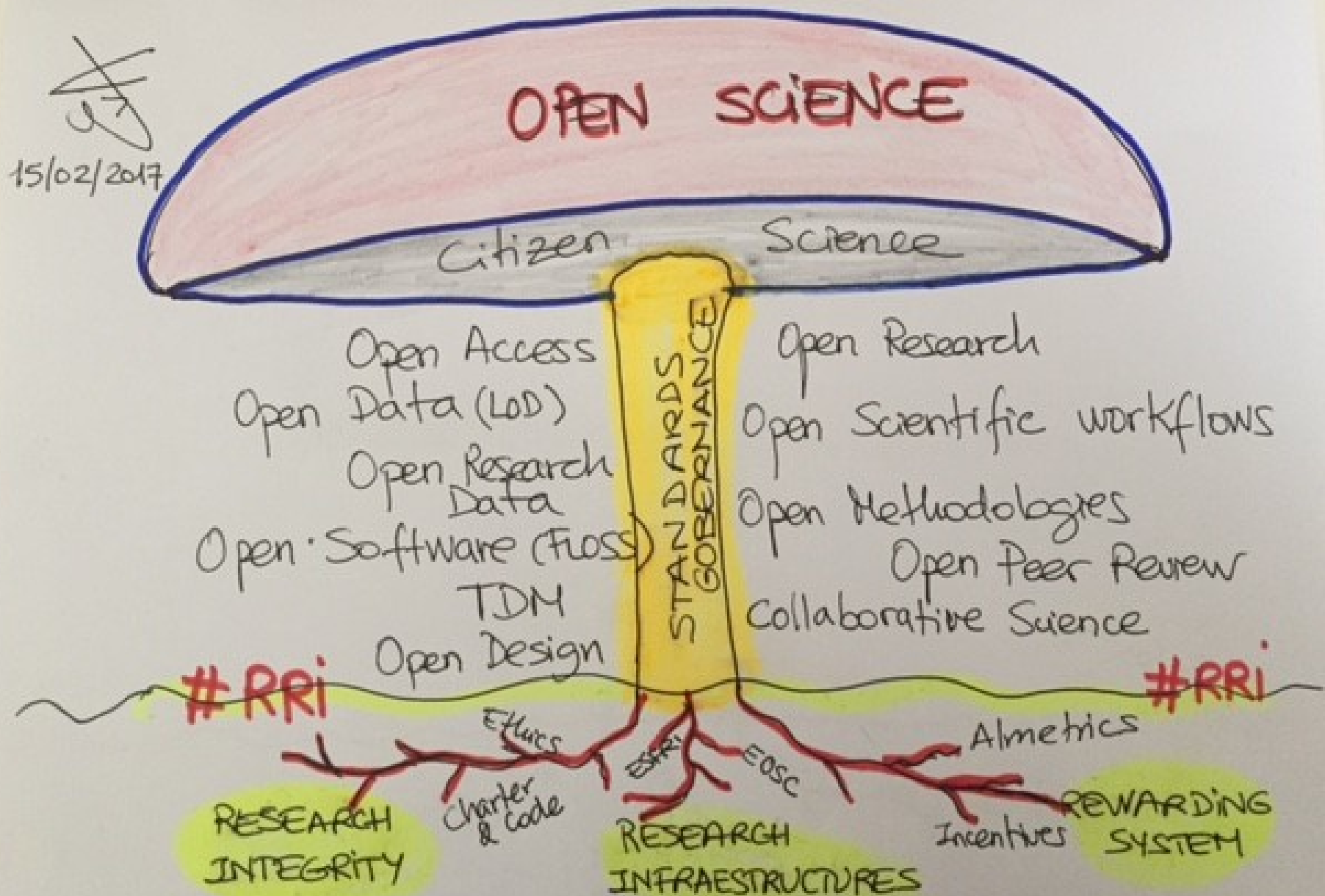


Open science commonly refers to efforts to make the output of publicly funded research more *widely accessible in digital format to the scientific community, the business sector, or society more generally ... to promote long-term research as well as innovation.*

[OECD Sept 2015](#)

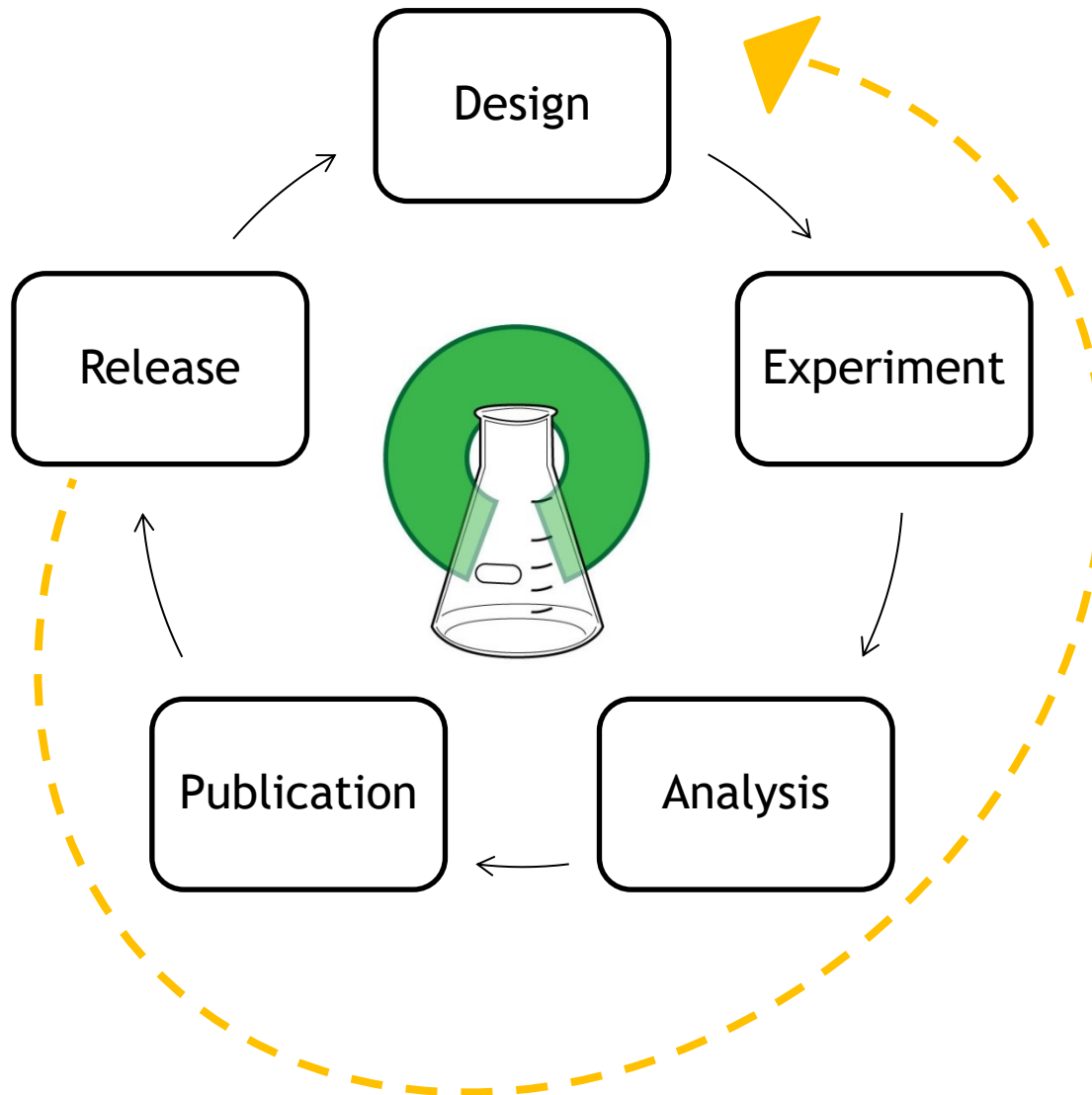
Open Science Umbrella. Image credit: Flickr user 지우 황 CC BY 2.0





# Open ASAP

Open science image CC BY-SA 3.0 by Greg Emmerich [www.flickr.com/photos/gemmerich/6365692655](http://www.flickr.com/photos/gemmerich/6365692655)



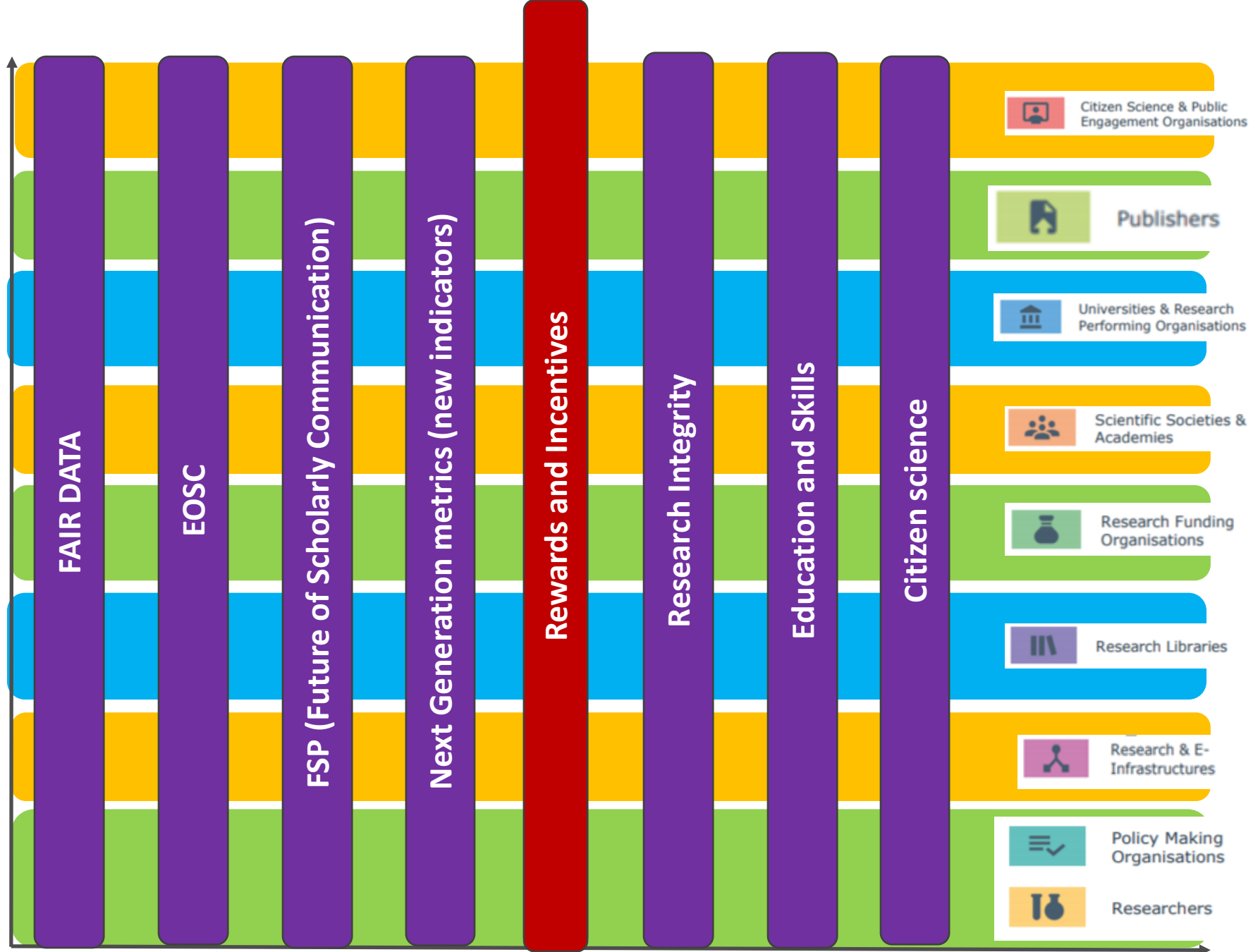
Change the  
typical lifecycle

Publish earlier  
and release more

Papers + Data +  
Methods + Code...

Support  
reproducibility

# Stakeholders / Actors of Open Science



Open Science challenges / pillars in EUROPE

# Open Research Data: PSI

(24/04/18)

# Open Access

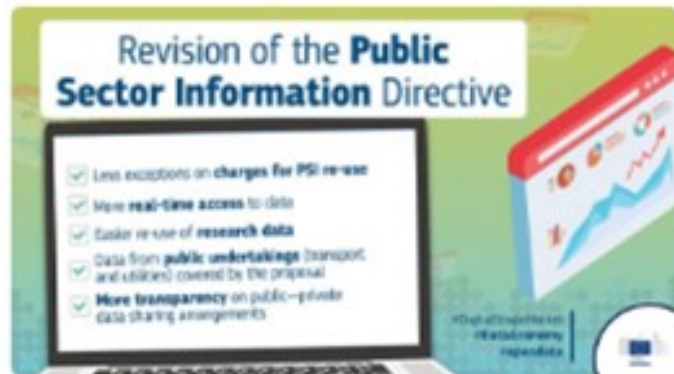


**Carlos Moedas**  @Moedas

6h

The revised PSI Directive will put an obligation on EU Member States to develop policies for [#openaccess](#) to research data resulting from publicly funded research, but leave flexibility on how to do it.

→ [europa.eu/!dm86vT](http://europa.eu/!dm86vT)  
[#DataEconomy](#) [#opendata](#)



Show this thread



**Carlos Moedas**  @Moedas

6h

Open access to scientific information is a cornerstone of an [#OpenScience](#) system. Today's revised Recommendation gives powerful guidance to Member States so they can reach their goal of transition to immediate [#OpenAccess](#) as default by 2020 [europa.eu/!dm86vT](http://europa.eu/!dm86vT) [#DataEconomy](#)







European Council  
Council of the European Union

# Competitiveness Council (May 2018)

## OSPP-REC

### 2.2. Prioritised recommendations for the eight ambitions of Open Science

Below are a set of actionable recommendations from the OSPP to be taken as the next step towards the longer-term vision articulated by Open Science consultations and expert groups set up by the EC and other organisations in Europe and worldwide. The recommendations have been split up into the eight priorities identified from the 5 areas of the European Open Science Agenda<sup>6</sup>, namely:

- Rewards and Incentives
- Research Indicators and Next-Generation Metrics
- Future of Scholarly Communication
- European Open Science Cloud
- FAIR Data
- Research Integrity
- Skills and Education
- Citizen Science

The major stakeholder groups (as listed in the key below) who have the main responsibility to drive the actions stated in the recommendations have been listed alongside each one.



Research & E-Infrastructures



Research Libraries



Universities & Research Performing Organisations



Policy Making Organisations



Research Funding Organisations



Publishers



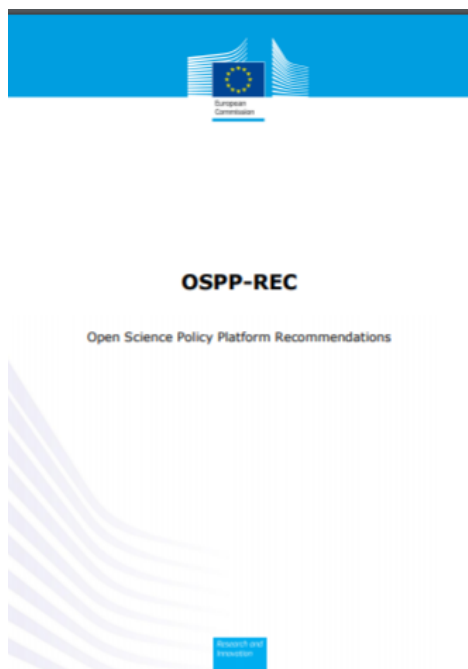
Researchers



Scientific Societies & Academies



Citizen Science & Public Engagement Organisations



<https://www.nature.com/articles/d41586-018-06178-7>



**cOAlition S**

# Making Open Access a reality by 2020

A DECLARATION OF COMMITMENT  
BY PUBLIC RESEARCH FUNDERS

<http://scieur.org/coalition-s>

# Open Science: WHY



DATA SHARING

Cartoon by Auke Herrema



Magazine

*“...Open access to **scientific results and data** is a **great way** to boost science, boost the economy, and enable new techniques and collaborations between disciplines.*

*Really it's quite simple: it's about ensuring you can see the **results** you've **already paid** for through your **taxes**....”*

*([Nelle Kroes](#))*

# Open Science: WHY

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- ✓ Greater visibility and impact for authors & projects
- ✓ Makes research networked & interconnected
- ✓ Networked research generates serendipity by default
- ✓ Speeds up innovation & discovery, takes ideas to the market & solutions to societal challenges
- ✓ You can access relevant literature - not behind pay walls
- ✓ Ensures research is transparent and reproducible
- ✓ New collaborations and research partnerships
- ✓ Ensure long-term access to your outputs
- ✓ Help increase the efficiency of research
- ✓ Directly contributes to ECONOMIC GROWTH !!!

**REPRODUCIBILITY !!!**

# Open Science: WHY, but HOW



- How to incentivize the systemic change?
- How does it affect our researchers? → Promotion, research assessment...
- How does it affect our research infrastructures? → New ones?
- How does it affect our T&Learning? → Data literacies?
- New scientific behavior (research integrity)  
→ Public Institutions + **Transparency**



# Open Science: Challenges

A vintage-style sign with a light blue background and a white border. The sign is slightly weathered and has a small hole at the top. The text on the sign is arranged in three lines: 'Come in' in a dark blue cursive font, 'WE'RE' in a black sans-serif font, and 'OPEN' in large, bold, orange-red block letters. The sign is hanging from a white rope against a dark, textured background.

*Come in*  
**WE'RE**  
**OPEN**

# GREEN LIGHT FOR OPEN ACCESS

17-18 MAY 2016 AMSTERDAM

#1

## WELCOME & OUTCOMES

"give us the wings and we're ready to fly"



PROCESS OF CULTURAL CHANGE

### TIME FOR ACTION!

What are you going to do tomorrow??

EXCHANGE OF BEST PRACTICES!

FIND NEW PUBLIC

TRAIN THE TRAINERS

OPEN PLATFORMS!

'INCLUDED MODEL' (INCL PUBLISHERS & SCIENTISTS) IS NEEDED!

economic innovation

social innovation

## OPEN SCIENCE

LEGAL COPYRIGHT ISSUES

"making research more transparent"

SCI HUB

EASY TO USE 😊  
NOT SUSTAINABLE 😞  
NOT LEGAL 😞

### OPEN ACCESS

PASTEUR → engage POLICY MAKERS

partner network →

REBUILDING ROAR MAP

OPEN TOOLS

### POLICIES

DUTCH UNIVERSITIES:

GOAL:

### ONE BIG DEAL

WITH PUBLISHERS

"political support!"

"we formed one block with all universities"

"keep your own researchers on board!"

"stick to your principles!"

"OPEN KNOWLEDGE"

CHANGE THE SYSTEM!

PASTEUR4OA

HORIZON 2020

POLICY ALIGNMENT

KNOWLEDGE NETWORK

# Challenges = building blocks

---

1. Removing barriers and **creating incentives** (alternative/next generation metrics, research integrity, TDM (Text and Data Mining)).
2. Developing **infrastructures** for Open Science (e.g. European Open Science Cloud, EOSC).
3. Embedding Open **Science in Society** (citizen science, knowledge coalitions to address societal challenges).

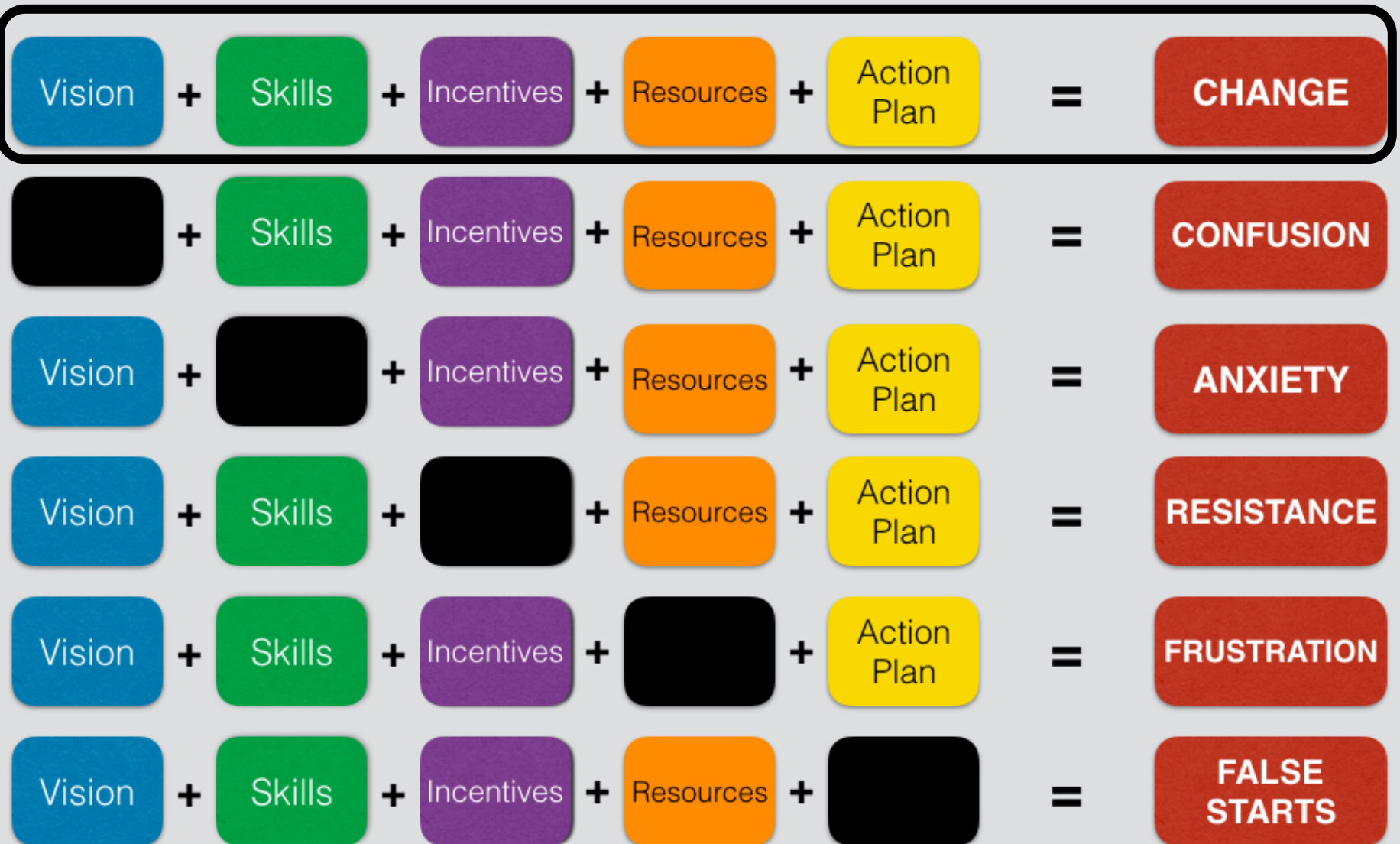
# Challenges

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- **Cultural change** (researchers mindset)  
*[Darling, we need to talk!!]*
- **Education (Skills)** → training ECR but also senior researchers
- **Attitude CC: Conviction & Confidence** → Demonstrate the impact of **Open Knowledge**
- **Strategic alignment** internal policies  
→ Then... **the easy part will be** to create the Open Science policy.

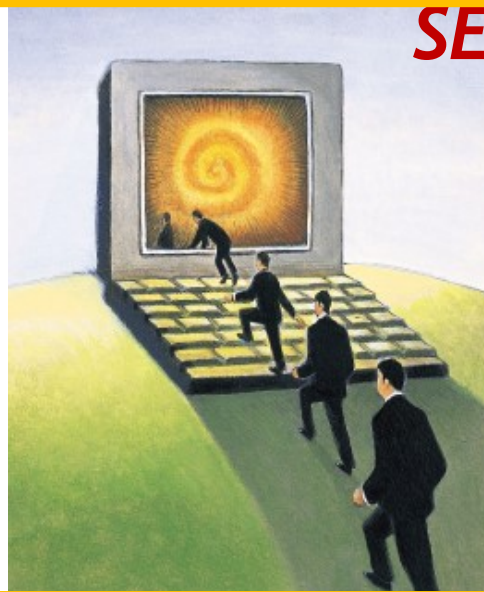


# Managing Complex Change





# Motivators of will... (for academics)



***SEDUCTION***

Make it very easy...  
Motivate...  
Help...

# Open Science: Implementation

Infrastructures

Policies

PCIs



*Come in*  
**WE'RE**  
**OPEN**

# Infrastructures for publications:

<http://openaire.eu>



Search in 22,036,305 publications 571,373 datasets

PARTICIPATE

SEARCH

MONITOR

Deposit Publications & Data

Link Research Results

Validate / Register Repository

Content policy

4 journals

## G7 Science Ministers endorse Open Science



G7 ministers endorse FAIR data practices and Open Science metrics, encouraging aligned efforts to support the advancement of the global scientific community.

[READ MORE](#)

## RESEARCHERS

Why Open Access. How to comply. What services to use.

## DATA PROVIDERS

How to make your content more visible. What to do to increase quality. How to join.

## RESEARCH ADMINS

How to monitor research results. What services to use for your needs.

## FUNDERS

Why align policies and practices. How to monitor and analyze results.

# Policies for publications: <https://www.coalition-s.org>

"After 1 January 2020 scientific publications on the results from research funded by public grants provided by national and European research councils and funding bodies, must be published in compliant Open Access Journals or on compliant Open Access Platforms."



Why Plan S 10 Principles Funders & support Implementation & Feedback About Contact



## National funders



## Charitable foundations

## Supported by



1. **Authors** retain copyright of their publication with no restrictions. Open license, preferably **CC BY**. In all cases, the license applied should fulfil the requirements defined by the Berlin Declaration;
2. The **Funders** will ensure jointly the establishment of robust criteria and requirements for the services that compliant **high quality Open Access journals and Open Access platforms** must provide;
3. In case such high quality Open Access journals or platforms do not yet exist, the **Funders** will, in a coordinated way, **provide incentives** to support will also be provided for Open Access infrastructures where necessary;
4. **Open Access publication fees are covered by the Funders or universities, not by individual researchers**; it is acknowledged that all scientists should be able to publish their work Open Access even if their institutions have limited means;

5. When Open Access publication fees are applied, **their funding is standardised and capped** (across Europe) → **DEBATE: *what would be a reasonable APC to be paid?***
6. The Funders will ask universities, research organisations, and libraries to **align their policies and strategies**
7. The above principles shall apply **to all types of scholarly publications**, but it is understood that the timeline to achieve OA for monographs and books may be longer
8. The **importance of open archives and repositories** for hosting **research outputs** is acknowledged because of their long-term archiving function and their potential for editorial innovation;
9. The **‘hybrid’** model of publishing is **not compliant** with the above principles; (**Very controversial → See**)
10. The Funders will **monitor compliance** and **sanction non-compliance**(**How?**)



## PlanS : Not only principles...



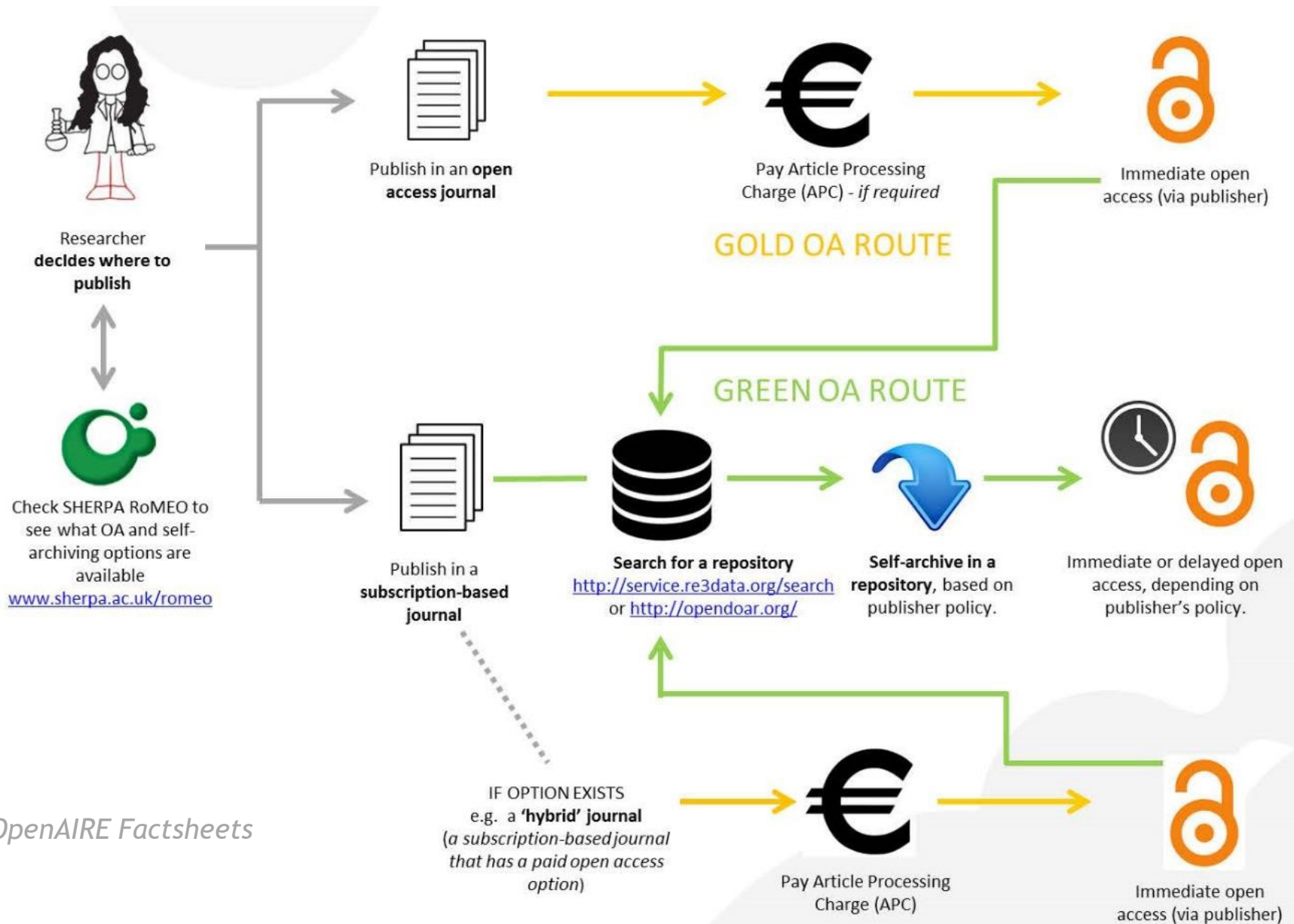
Guidance on implementation:

<https://www.coalition-s.org/feedback>

MORE THAN 2200 comments received (e.g.):

- OpenAire: <https://www.openaire.eu/openaire-response-plans-implementation-guidelines>
- LERU: <https://www.leru.org/news/plan-s-to-be-a-winner-plan-to-win>
- YERUN: <https://www.yerun.eu/wp-content/uploads/2019/02/YERUN-Response-to-the-Guidance-on-implementation-of-PlanS.pdf>

# Open Access “ROUTES”



[https://elpais.com/elpais/2019/01/22/ciencia/1548167584\\_025876.html](https://elpais.com/elpais/2019/01/22/ciencia/1548167584_025876.html)

EL PAÍS

CIENCIA

SUSCRÍBETE



# España analiza si se suma al acceso universal y gratuito a las publicaciones de investigación

El conocido como 'plan S' persigue que los trabajos financiados con dinero público se publiquen únicamente en revistas y plataformas abiertas



ELENA SANZ

31 ENE 2019 - 13:16 CET



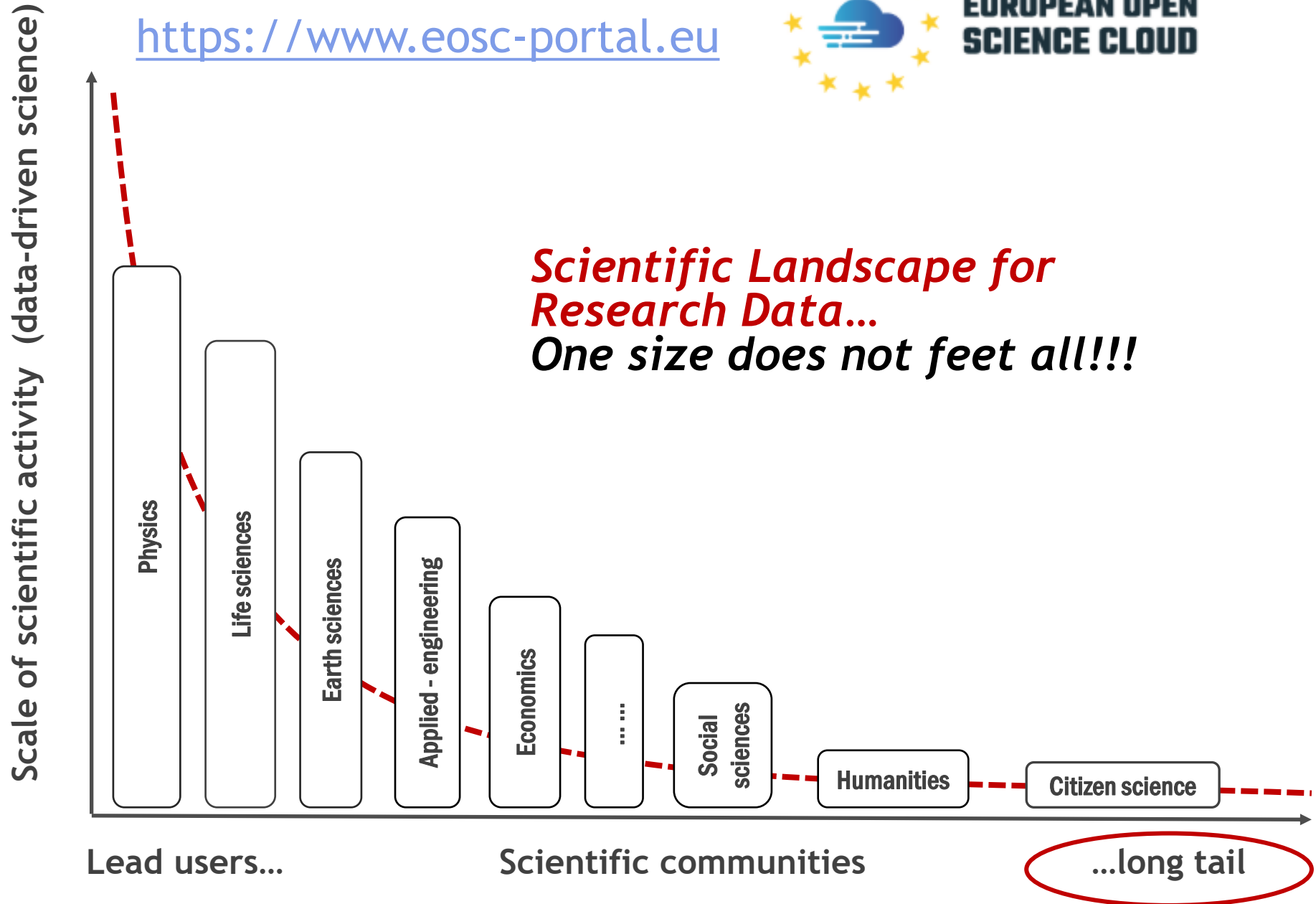
**goeuro**

San Sebastián – Leon desde 33 € 	San Sebastián – Madrid desde 30 € 
Leon – San Sebastián desde 33 € 	Pamplona – Leon desde 23 € 

¿Y tú qué piensas

# Infrastructures for (O)RD:

<https://www.eosc-portal.eu>



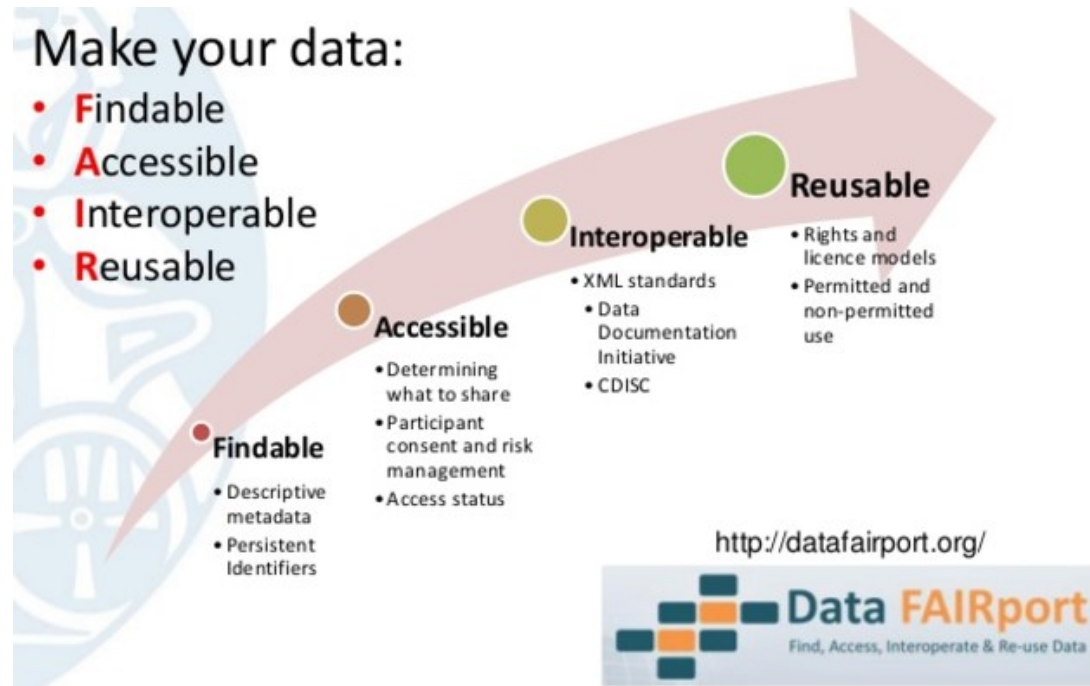


**EUROPEAN OPEN  
SCIENCE CLOUD**

- FAIR Data
- FAIRRR
- Reproducibility
- Reliability
- Inspiration
- Data-driven research
- Multidisciplinarity
- Transparency / Engagement
- Openness
- Serendipity

Make your data:

- **F**indable
- **A**ccessible
- **I**nteroperable
- **R**eusable



<http://datafairport.org/>





# Policies for OA/ORD

## 3. Mandate on open access to publications

[Article 29.2](#) of the Model Grant Agreement sets out detailed legal requirements on open access to scientific publications: under Horizon 2020, **each beneficiary must ensure open access to all peer-reviewed scientific publications** relating to its results.

Horizon 2020 already mandates open access to all scientific publications

..... BE PART OF THE NEW ERA OF OPEN SCIENCE .....



reach more  
people, have  
greater impact



avoid  
duplication  
of efforts



preserve data for  
future researchers



simplify final  
Horizon 2020  
reporting thanks to  
an up-to-date DMP

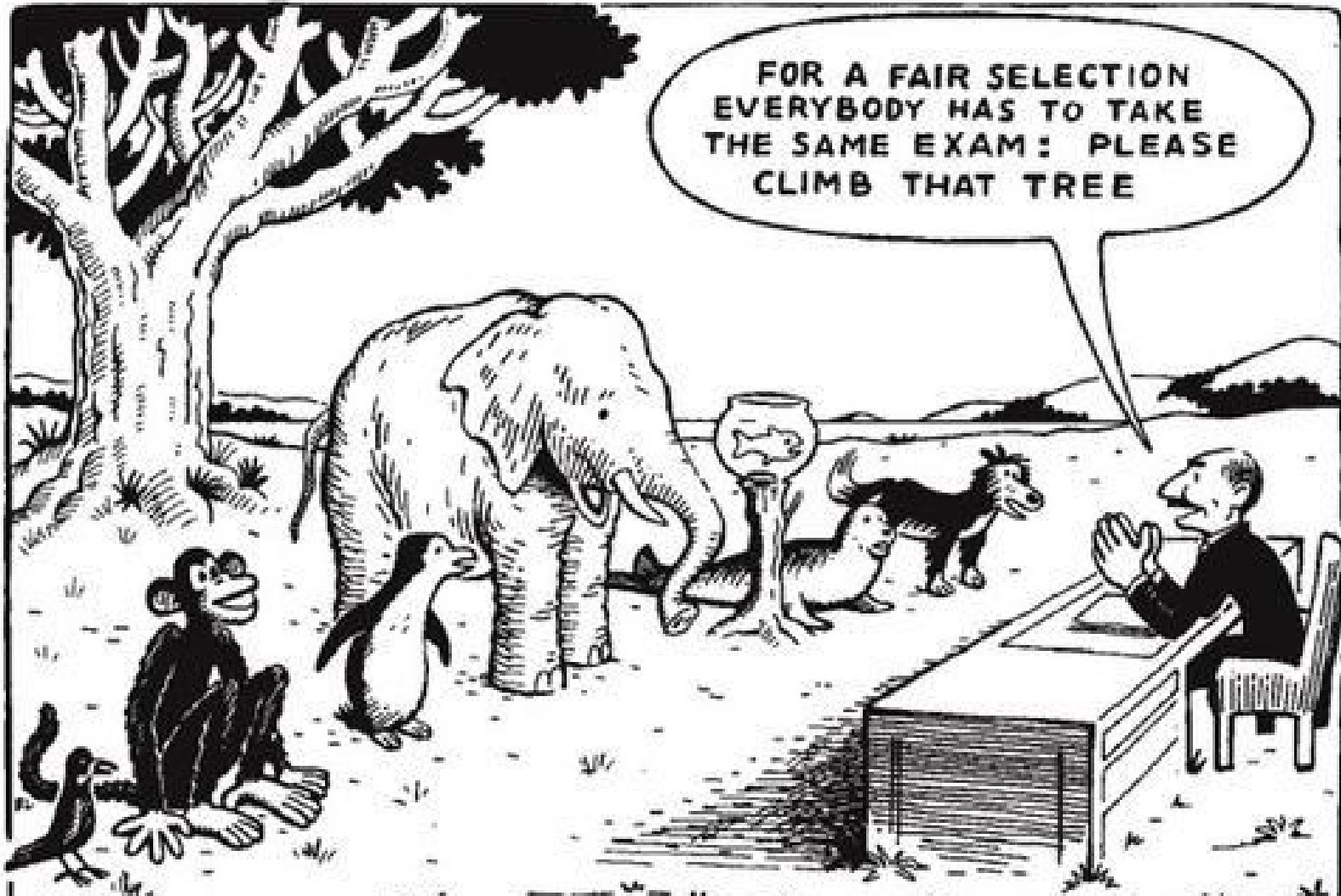


From 2017,  
**research data is  
open by default,**  
with possibilities to opt out



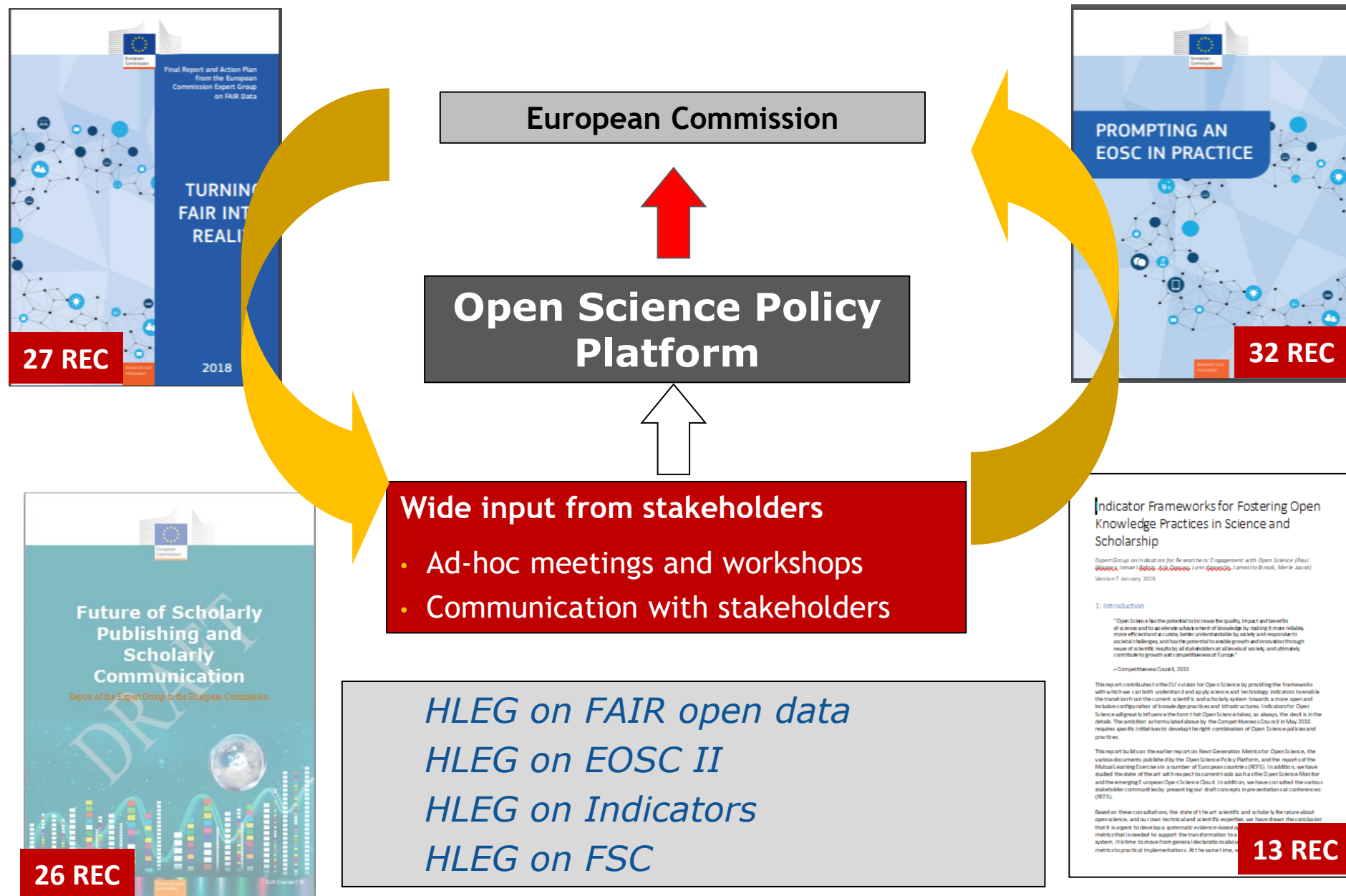
# Research evaluation

## ... AGAIN *One size does not feet all!!!*



This metaphor is very much used in the context of education assessment but it works for research evaluation. See: <https://www.quora.com/What-did-Albert-Einstein-mean-when-he-said-Everybody-is-a-genius-But-if-you-judge-a-fish-by-its-ability-to-climb-a-tree-it-will-live-its-whole-life-believing-that-it-is-stupid>

# Where we are? Among **RE**ports (4)&**RE**commendations (87)



# Where we want to be? Among Open Science practices

EVERYONE ON THE ROAD TO OPEN SCIENCE



OPEN EDUCATIONAL  
RESOURCES



CITIZEN  
SCIENCE



# Where we want to be?

## Among Open Science practices



# We need **PCIs** (Practical Commitments for Implementation) in Open Science

---

Shift from “*declaration/recommendation mode*”  
→ to “implementation mode”

- You, at your institution, at your office, with your attributions, etc. **what can you do for Open Science?** (regarding the 8 challenges, and taking into account your condition as stakeholder...)
  - I am a researcher....
  - I am a policy maker...
  - I am a publisher...
  - I am a research infrastructure manager...
  - I am a librarian, etc.

# PCIs in Open Science

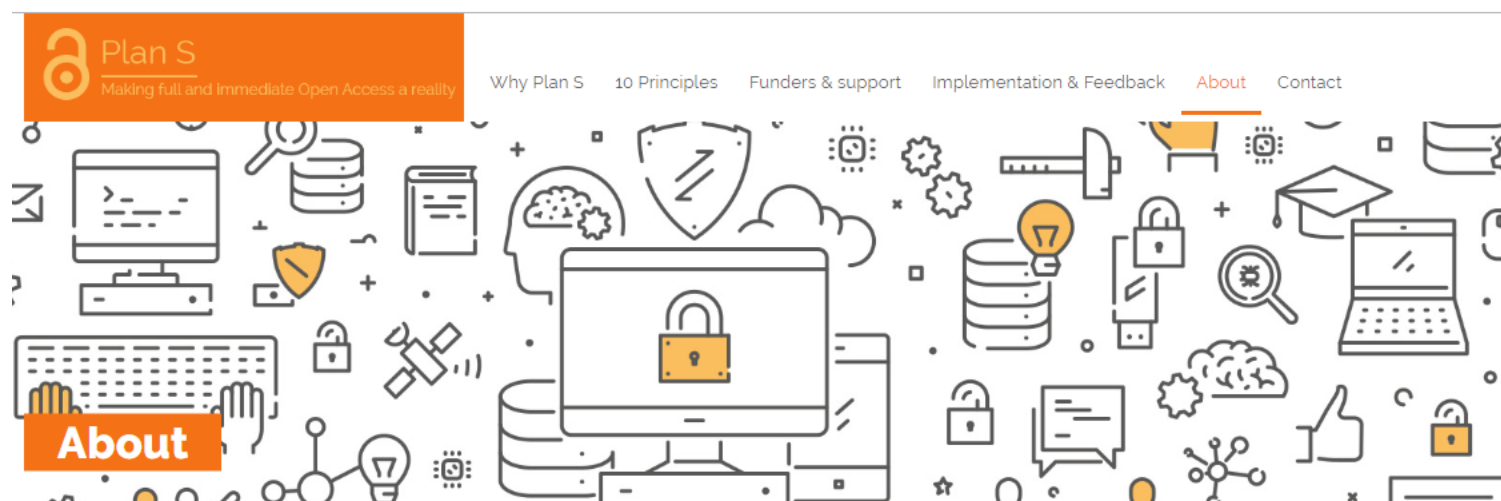
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- **Commitments** regarding any aspect (challenge) of Open Science
- Actual, **realistic** and **affordable**... in a level where the proponent has “jurisdiction”
- **Effect** → real **implementation**
- They answer to the question: *What **CAN** I do to make Open Science happen?*
- Open science at “action level” (**practical**)



# PCIs example: FUNDERS

<https://www.coalition-s.org>



## What is cOALition S?

On 4 September 2018, a group of national research funding organisations, with the support of the European Commission and the European Research Council (ERC), announced the launch of cOALition S, an initiative to make full and immediate Open Access to research publications a reality. It is built around Plan S, which consists of one target and 10 principles.

cOALition S signals the commitment to implement, by 1 January 2020, the necessary measures to fulfil its main principle:

### Further

- > [Gu](#)
- > [Im](#)
- > [Pa](#)
- > [Pr](#)
- > [Eu](#)
- > [St](#)



# PCIs example: RPOs- LIBRARIES

## UNIVERSITY JOURNALS

<http://www.universityjournals.eu>

- University of Groningen
- Wageningen University
- Linköping University
- University of Zurich
- Maastricht University
- University of Amsterdam
- Universidad Carlos III de Madrid
- Vrije Universiteit Amsterdam
- Universitat de Barcelona
- Erasmus University Rotterdam
- Technische Universiteit Delft
- Tilburg University
- University of Essex
- Utrecht University

# PCIs example: RESEARCHER

<http://anxosanchez.eu/adopting-plan-s-as-an-individual-researcher>

ANXO SÁNCHEZ

[HOME](#)

RESEARCH

## PROJECTS

## TALKS

## 17 ENE ADOPTING PLAN S AS AN INDIVIDUAL RESEARCHER

Posted at 18:01h in Sin categoría by 1dinamoanx • 0 Comments • 0 Likes • Share



Since Plan S was announced last September, I have been ruminating about whether it should be something for funding agencies only, or on the contrary it should involve individual researchers too, so bottom-up working together with top down. As you probably know, Plan S is an initiative

for Open Access publishing supported by cOAlition S, an international consortium of research funders. Plan S requires that, from 2020, scientific publications that result from research funded by public grants must be published in compliant Open Access journals or platforms. So far, 13 national funders, along with other organizations have joined cOAlition S, and I do hope, along with many of my colleagues, that the Spanish



**Anxo Sánchez** @anxosan

10h

Today I have made a decision I've been thinking about for a while. From 2020 I will follow Plan S [coalition.org](https://www.coalition.org) as an individual researcher, no matter where my funds come from. Potential co-authors, students and postdocs, be aware. Read about it [anxosanchez.eu/adopting-plan-...](https://anxosanchez.eu/adopting-plan-...)

1 5 8 ...



**Anxo Sánchez**

@anxosan

I believe @evamen will like this. If you also like this, spread the word, and think about it. Perhaps you want to contribute to ending the crazy, unfair and damaging business of scientific publication

Translate Tweet

# PCIs example: MY INSTITUTION



Piloting Open Science practices: be prepared for a National OS policy + HEurope

- **Publications:**
  - From 26% OA (Repository) to 100% 2020 :-O (94% -- 85% realistic)
  - All the thesis and dissertations
- **Research Data:**
  - Incentivate *shareData* culture (thesis)
  - Proactive management of research Data: FAIR Data
- **Citizen science** → *maker space* / Innovation
- **Training in** Open Science (ECR but also PIs)
- **New incentives**
- Openness and transparency part of *Research Integrity*

# And you? What are you going to do?



Introduction video: Conference Open Science 4- 5 April 2016, Dutch  
Presidency EU2016: <https://www.youtube.com/watch?v=C9a3Ap3yyak>  
[[Amsterdam Call for Action](#)]

# Thank you!!

Prof. Dr. Eva Méndez

**uc3m**

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@evamen

