Research data management and FAIR sharing: Why we need the big picture

Research data management and FAIR sharing: Why we need the big picture

Dr. ir. Shalini Kurapati
Data Steward
Faculty of Technology, Policy and Management
OpenAIRE National Workshop, Turin, 10 Dec 2018

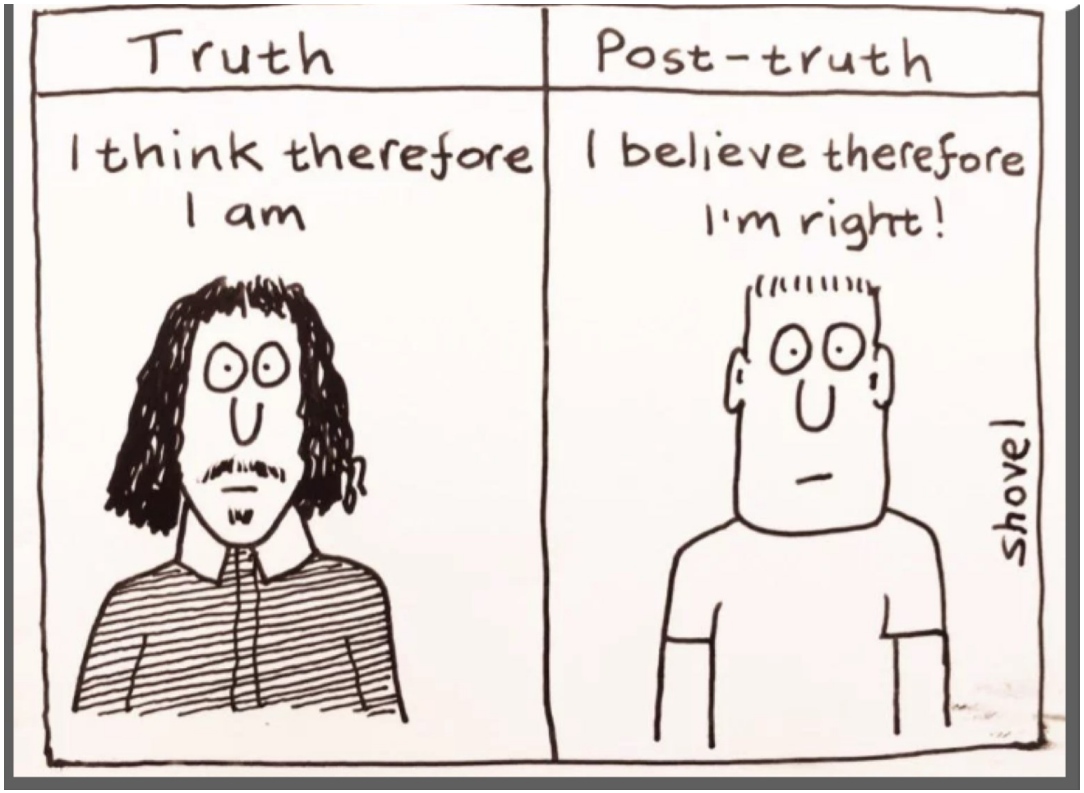
On a personal note

Outline of my talk

- Open Science: Why should you care
- Research data management and FAIR data sharing
- Institutional good practice: TU Delft data stewardship
- Need for the picture: Potential for EOSC

Open Science: Why should you care?

The credibility of science is under threat

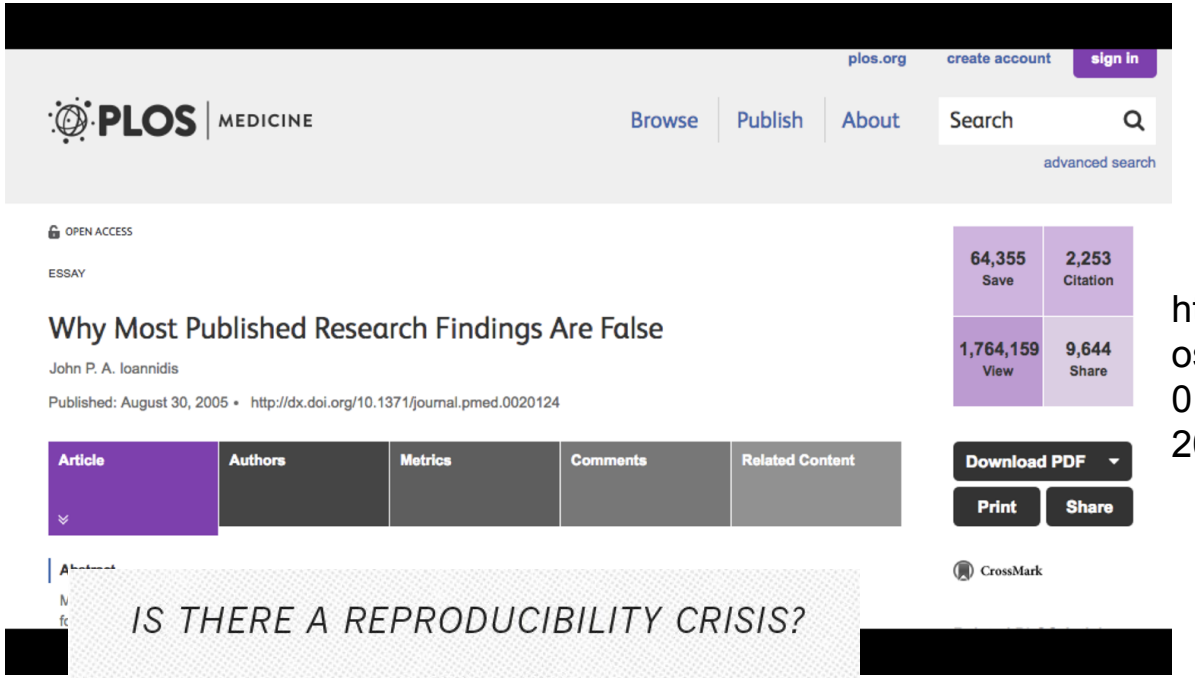


Idea source: Dr. Danny Kingsley

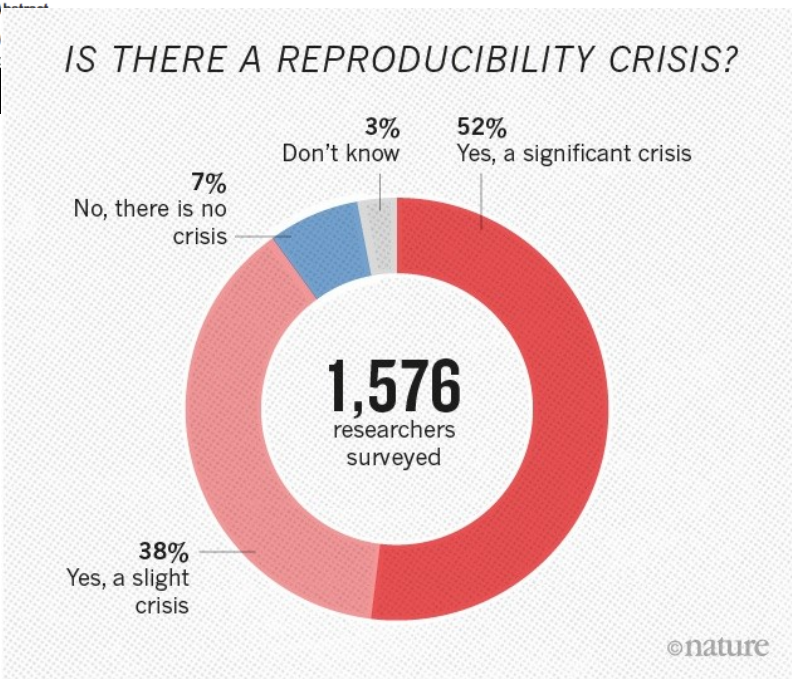
https://www.repository.cam.ac.uk/handle/1810/276106

Comic by https://thenorwichradical.com/2017/01/12/post-truth-politics-and-the-war-onintellect/

Research reproducibility crisis



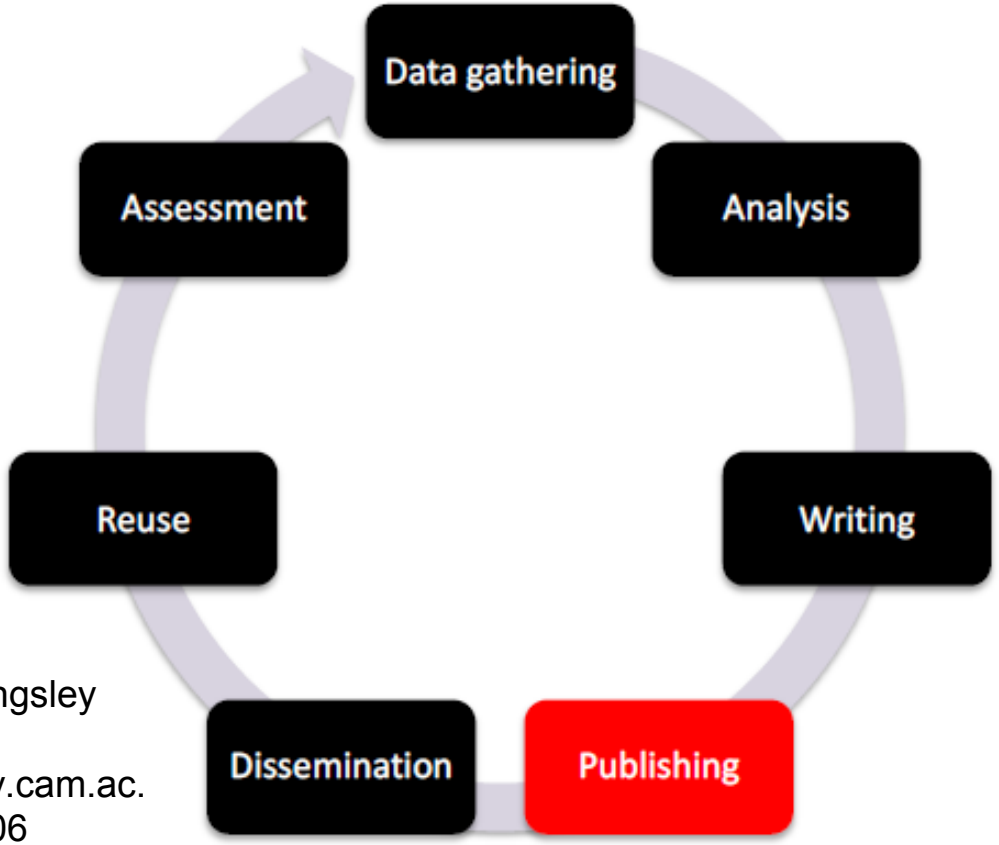
http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.0020124



Nature 533, 452–454 (26 May 2016)
doi:10.1038/533452a

How did we get there

The only thing that counts in academia is **publication** of novel results in **high impact** journals



Source: Dr. Danny Kingsley

https://www.repository.cam.ac.uk/handle/1810/276106

Pressure to publish positive results...

- Design the study
- Collect data
- Analyze data as prespecified
- Oops! P> 0.05?
  - *Torture data until it confesses*
- Then, and only then… write the manuscript

Adapted from:
Turner, Erick (2016):
https://doi.org/10.6084/m9.figshare.3381379.v1

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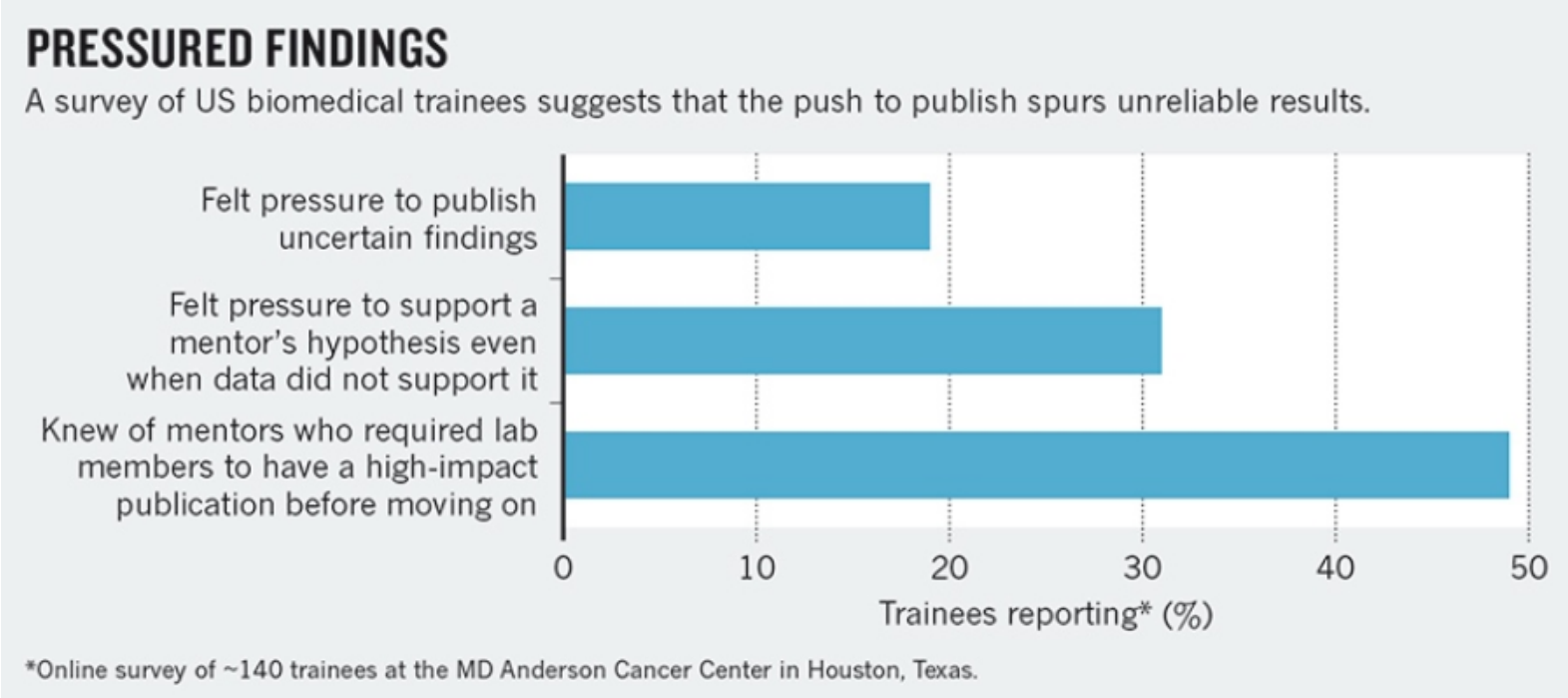
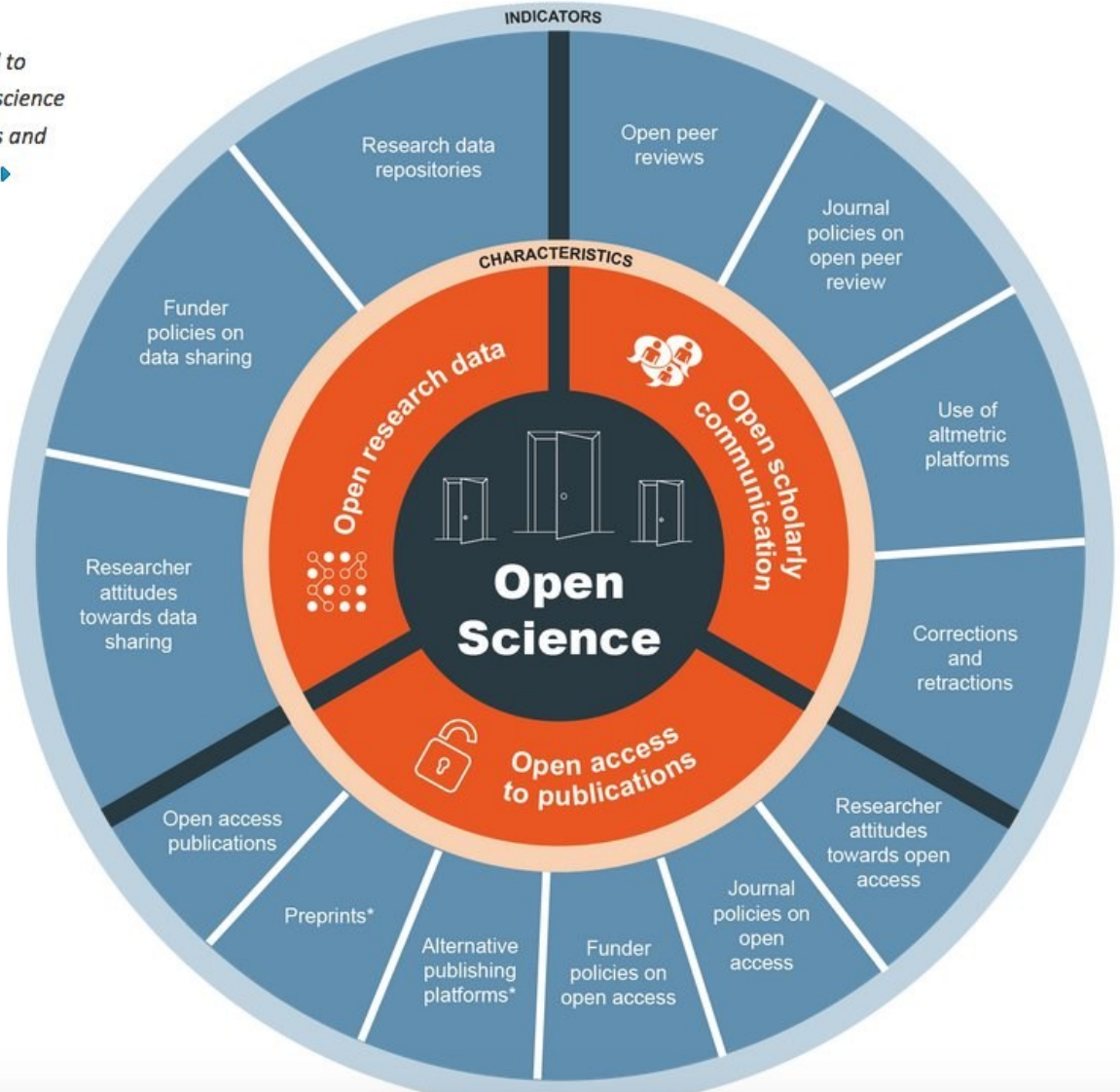
"In many laboratories, the incentives to be first can be stronger than the incentives to be right."



Nature 525, 25–27 (03 September 2015) doi:10.1038/525025a

Open Science, RDM & FAIR data can be a solution

Use the wheel to explore open science characteristics and indicators. ▸ ▸



http://ec.europa.eu/research/openscience/index.cfm?pg=home&section=monitor

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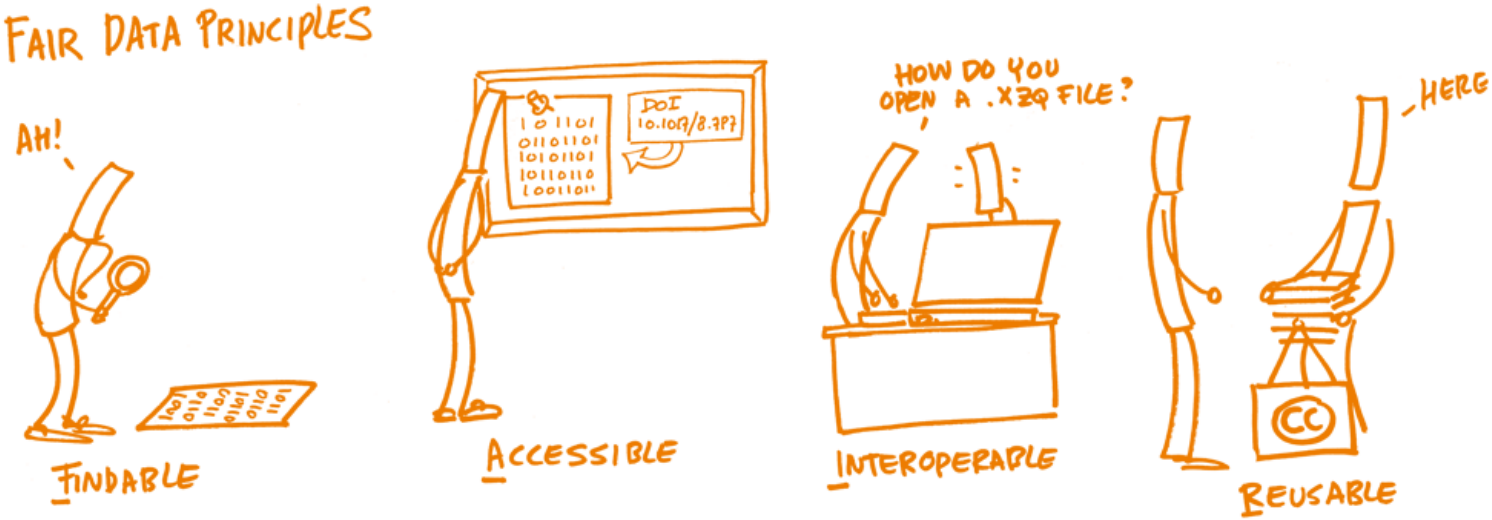
Have you ever thought?

- What if someone asks you for data supporting your publication?
- What if someone asks you for data supporting your publication, 5 year after publication?
- What if the request comes 10 years later?

Findable Accessible Interoperable Reusable



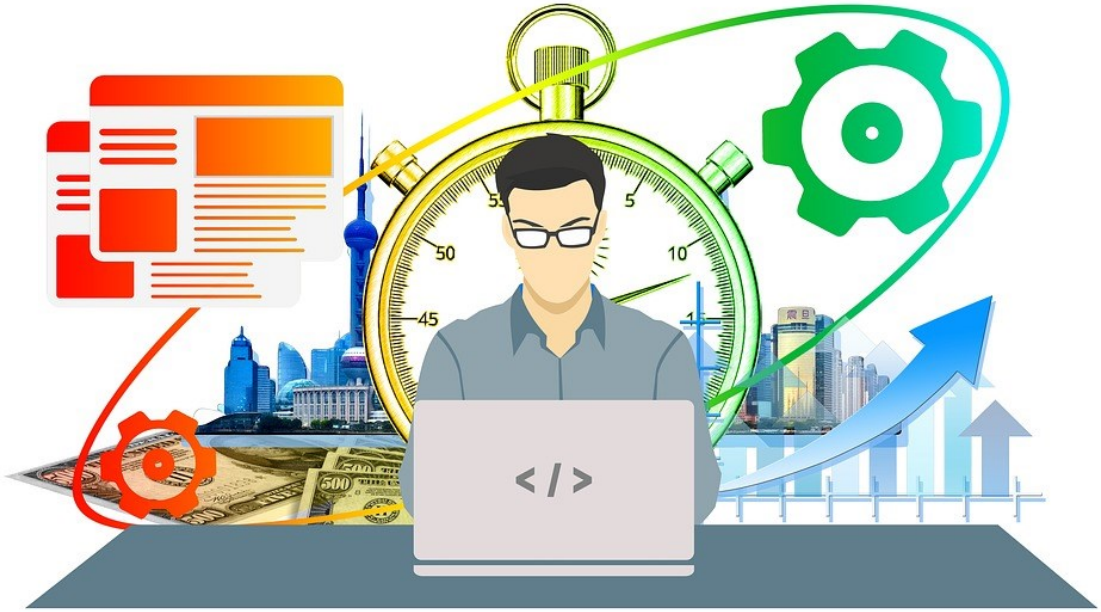
Hochstenbach, P. (2018). *Open Research Data Material - FAIR data principles*. [image] Available at: https://hochstenbach.wordpress.com/ [Accessed 26 Apr. 2018].

Good data management is a prerequisite to open science

It’s not easy, and researchers need support!

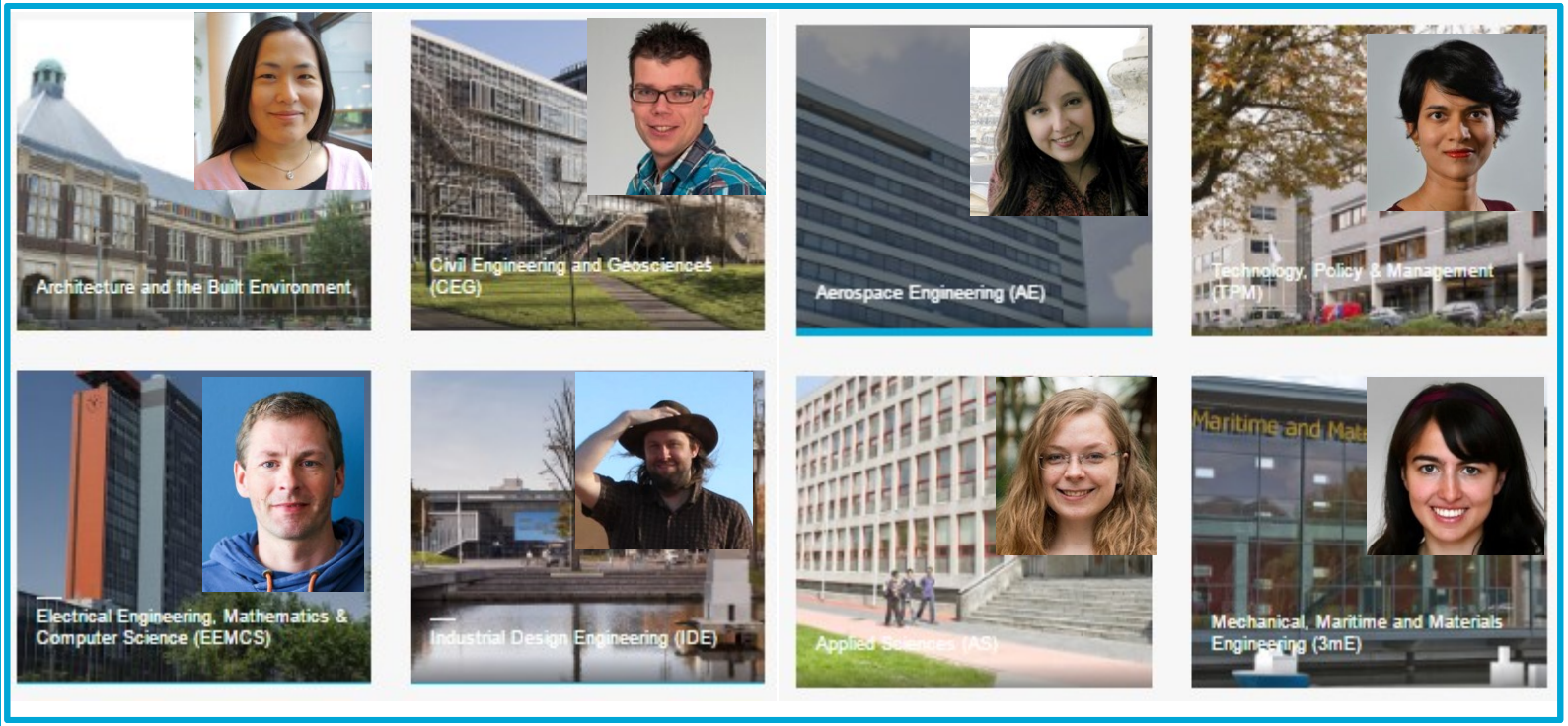
Data Stewardship at TU Delft

Aim: to develop mature practices for research data management across the campus.



For support to be relevant, it needs to be discipline-specific

We appointed a dedicated Data Steward at every faculty: all have a PhD (or equivalent)



Training in data management provided:
https://openworking.wordpress.com/2017/09/18/training-for-data-stewards/

Who are the data stewards?

- First contact points for any data questions
- Advocacy and training
- Research is central
- Consultants, not police!

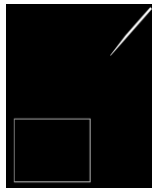
Data Stewardship at TU Delft

Secure data storage, data sharing, citation, impact

For data management in grant proposals

Advice and templates

Request workshops, information sessions



Advice

Archiving

Costs

Compliance

Data Management Plans

Tools

Training

4TU.Centre for Research Data or disciplinary repositories

With funders' and journals' policies

For data and software management

Raising awareness on archiving solutions: 4TU.Centre for Research Data

- Consortium of three technical universities:
  - TU Delft, TU Eindhoven and Twente University, Wageningen university (not a full member)
  - But open to everyone
- Certified and trusted research data repository
- Datasets preserved for at least 15 years
- Each Dataset is assigned a DOI
  - Over 7,500 datasets
- Data Refinement Fund: €5,000 / dataset

http://researchdata.4tu.nl/en/home/

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2014 DSA 2017

4TU. CENTRE FOR RESEARCH DATA

Community building: Data champions

Community of researchers actively engaged with open/FAIR science

Data champions: Grassroots advocacy

Our Data Champions

Yilin Huang

Assistant Professor
Faculty of Technology, Policy and Management
Department: Multi-Actor Systems

Areas of expertise:
Data analysis, modelling, simulation

(+) Contact information
(+) Motivation

Frans van der Meer

Assistant Professor
Faculty of Civil Engineering and Geosciences
Department: Materials, Mechanics, Management & Design

Areas of expertise:
Computational mechanics, coding, simulations

(+) Contact information
(+) Motivation

Anneke Zuiderwijk- van Eijk

Postdoctoral Researcher
Faculty of Technology, Policy and Management
Department: Engineering Systems and Services

Areas of expertise:
Open data, research data, data infrastructures, design, user service patterns, online education

(+) Contact information
(+) Motivation

Thomas Abeel

Assistant Professor
Faculty of Electrical Engineering, Mathematics and Computer Science
Department: Intelligent Systems

Areas of expertise:
Bioinformatics, genomics, high performance computing, data integration

(+) Contact information
(+) Motivation

Anton Akhmerov

Associate Professor
Faculty of Applied Sciences
Department: Quantum Nanoscience

Areas of expertise:
Quantum nanoscience, numerical simulations

(+) Contact information
(+) Motivation

Scott Cunningham

Associate Professor
Faculty of Technology, Policy and Management
Department: Multi-Actor Systems

Areas of expertise:
Statistics, Bayesian networks, image processing, geographic information systems, open source computing, text mining, consumer and microdata, science and technology information, urban science,

https://www.tudelft.nl/library/our-datachampions

Front Runners: Data Champions

nature COMMUNICATIONS

ARTICLE

DOI: 10.1038/s41467-018-06595-2 OPEN

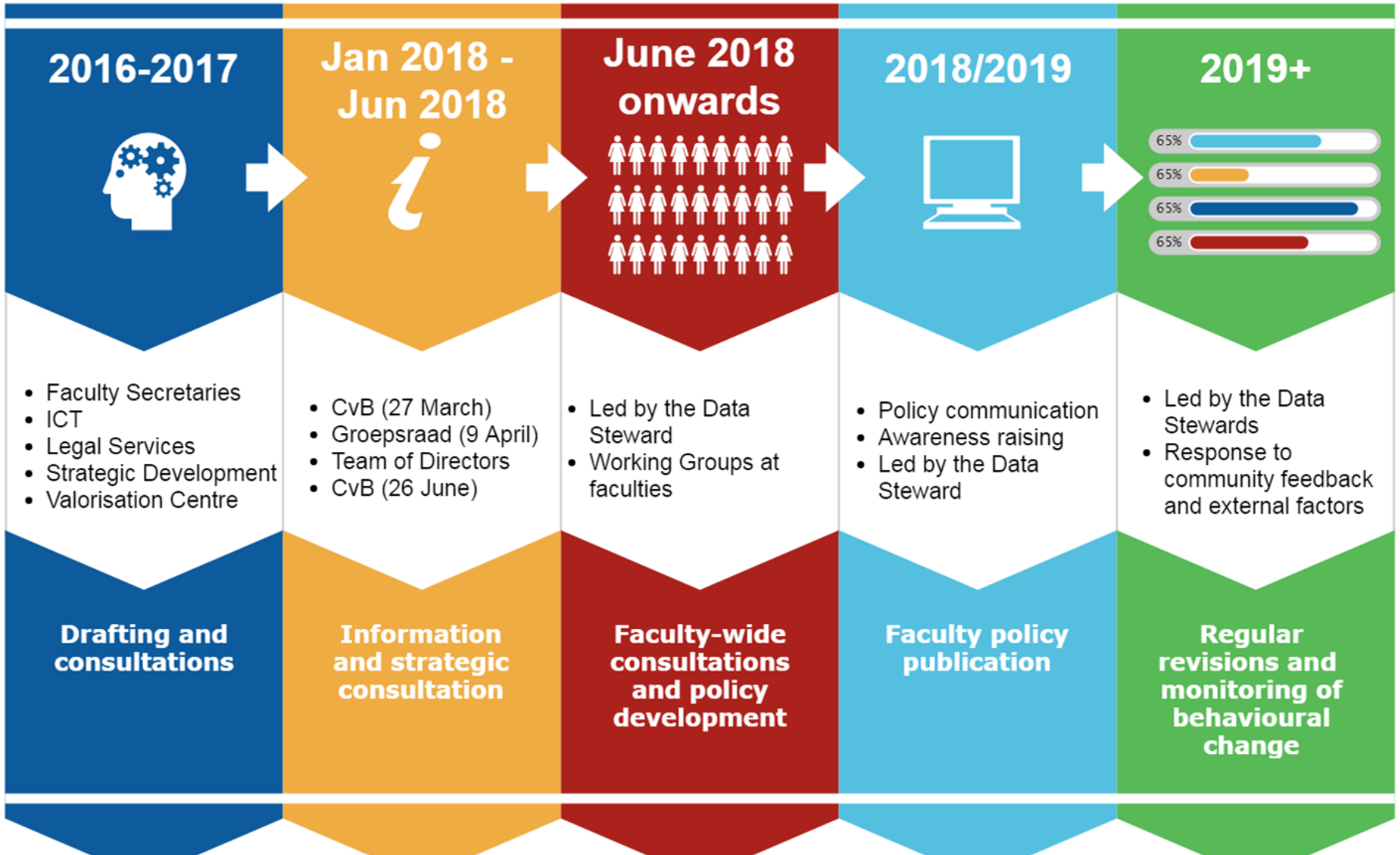
A ballistic graphene superconducting microwave circuit

Felix E. Schmidt [1], Mark D. Jenkins[1], Kenji Watanabe [2], Takashi Taniguchi[2] & Gary A. Steele[1]

Data availability

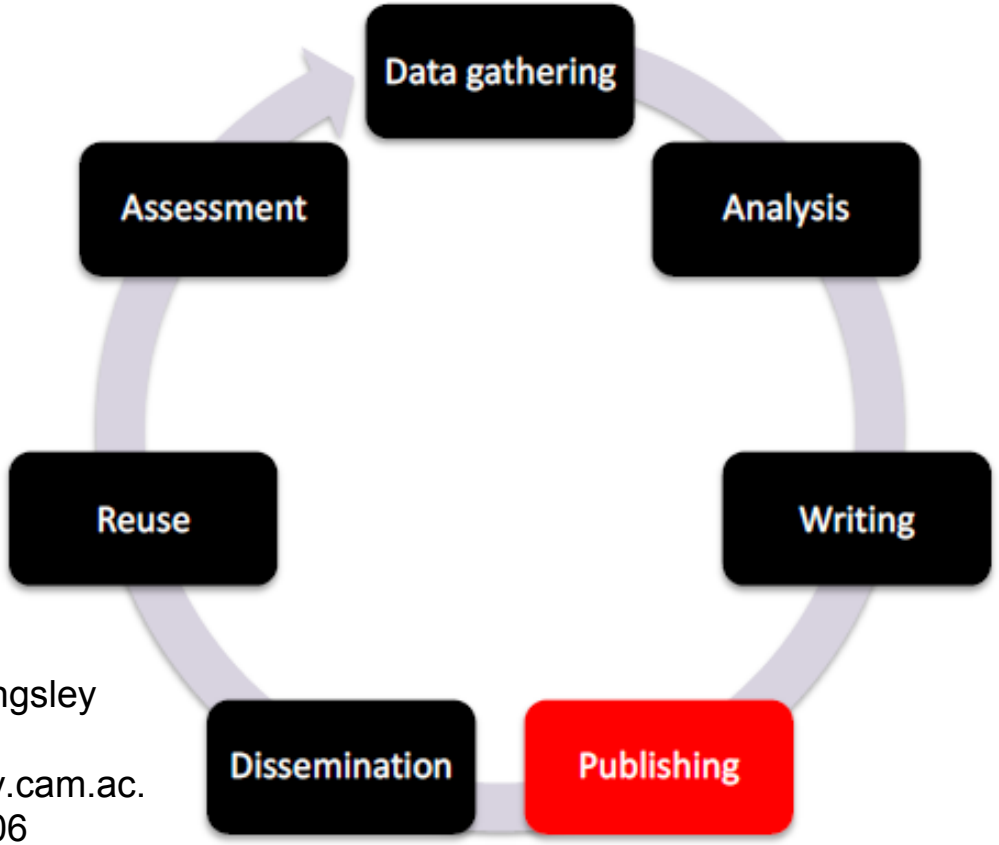
All raw and processed data as well as supporting code for processing and figure generation is available in Zenodo with the identifiers https://doi.org/10.5281/zenodo.1296129[43] and https://doi.org/10.5281/zenodo.1408933[44].

Data stewards lead RDM policy development



These institutional efforts are great but...

The only thing that counts in academia is **publication** of novel results in **high impact** journals



Source: Dr. Danny Kingsley

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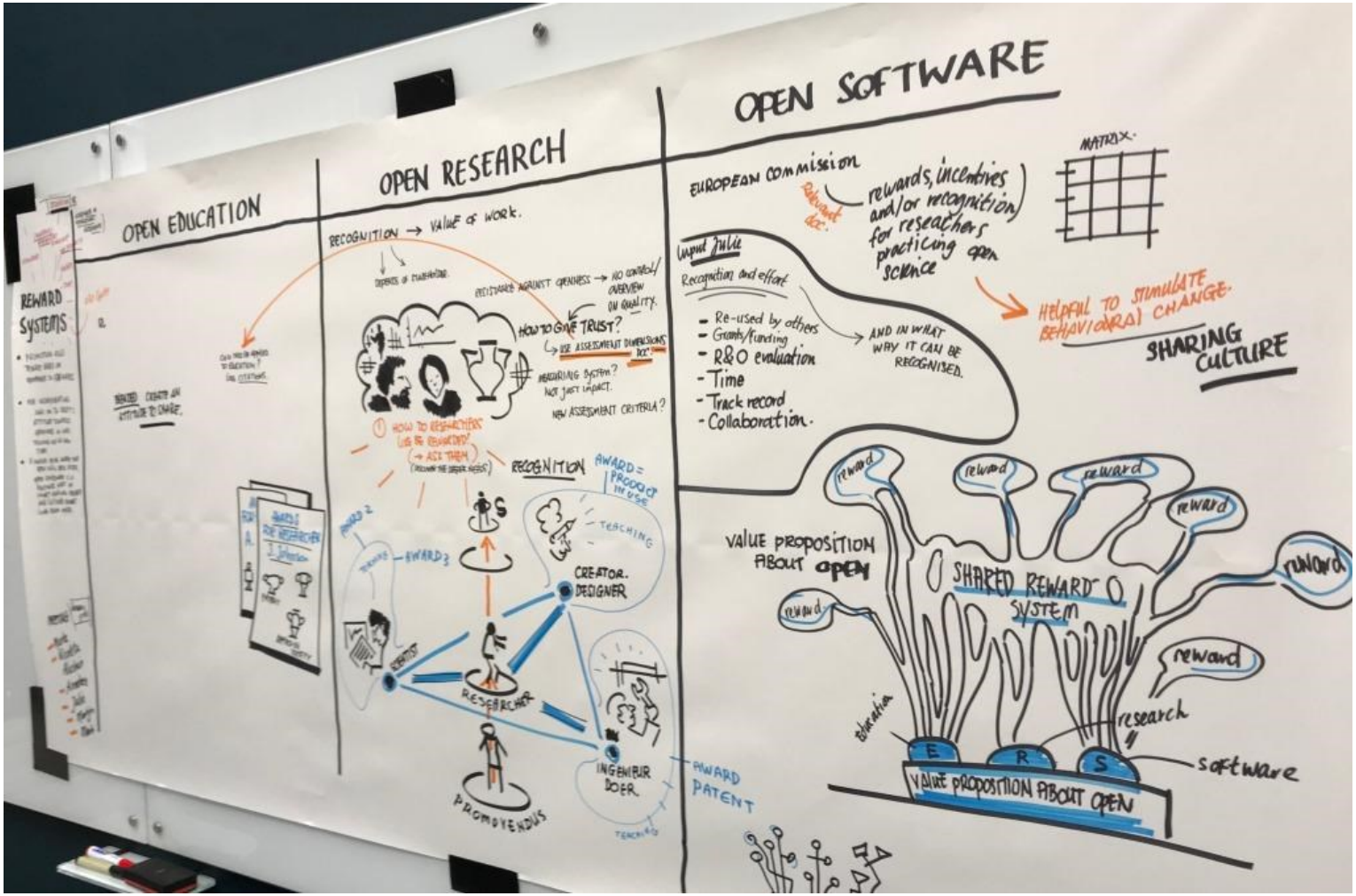
Rewarding researchers for quality (reproducible) research



The sketch will be available at:
https://opensketching.weblog.tudelft.nl/

We cannot do this alone

Need for international collaboration

European Open Science Cloud: Can we tap into this opportunity?

English EN Search

European Commission > Research and Innovation > Strategy > Policy goals > Open Science >

European Open Science Cloud (EOSC)

This is a cloud for research data in Europe. Background, policy information, events and publications related to the EOSC

http://ec.europa.eu/research/openscience/index.cfm?pg=open-science-cloud#

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TU Delft endorsed EOSC principles and declared actions

NOVEMBER 15, 2017

Declaration of Actions for Euro Open Science Cloud

Declaration of Actions from TU Delft Library and 4TU.ResearchData for European Open Science Cloud

Open Working from

4TU. CENTRE FOR RESEARCH DATA

and

TU Delft

SEARCH

https://openworking.wordpress.com/2017/11/15/declaration-of-actions-for-euro-open-science-cloud/

Recent efforts: Open science skills

SEP
26

Time for open science skills to count in academic careers!

by 4TU.Centre for Research Data in association with EOSCPilot

Free

REGISTER

Open science skills workshop

- 26 Sep 2018 in Delft with EOSCpilot
- Researchers at various levels: PhD students, post-docs, tenure trackers and professors together with librarians, support staff, policy makers
- Hands-on workshop to identify the key open science science at various career levels

It's time for open science skills to count in academic careers (Part 1: Talks)

Authors: Shalini Kurapati, Marta Teperek, Maria Cruz, Angus Whyte

Disclaimer: In the spirit of openness and transparency, we would like to share that Shalini Kurapati wrote parts of this blog post based on the zenodo record of the presentations even though she wasn't present during the event. Her account was verified by the remaining authors who were present.

To read Part 2 of this blog post follow this link.

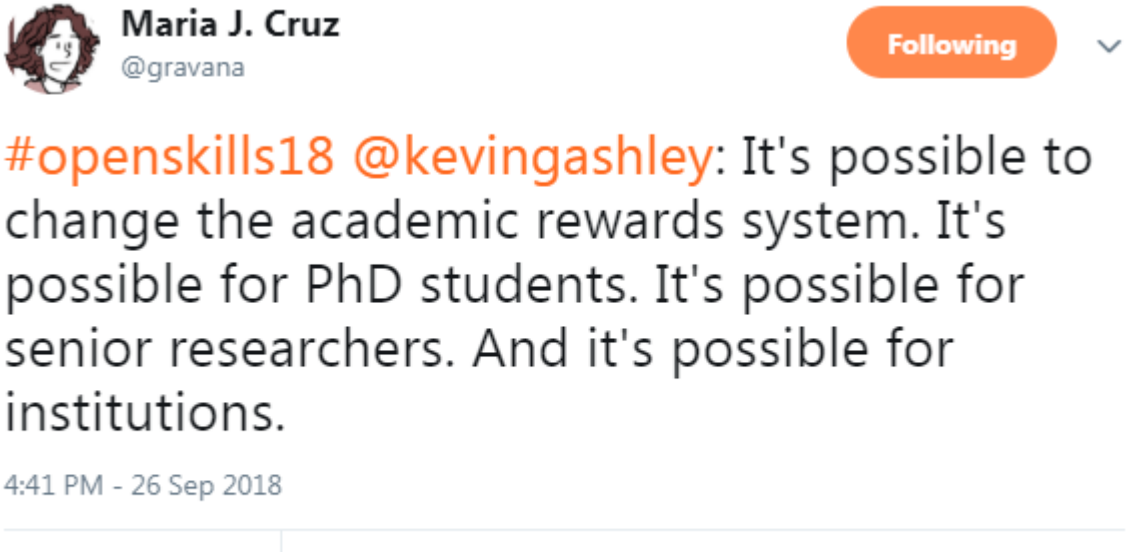
Open Science is not always easy – skills are urgently needed

Open science is becoming a ubiquitous and recurring theme in the current academic environment. Researchers are increasingly expected to publicly share their research outputs (data, code, models etc.) as well as their publications. This often requires considerable effort from researchers to manage and curate their research outputs to make them shareable.

https://openworking.wordpress.com/2018/12/03/its-time-for-open-science-skills-to-count-in-academic-careers-part-1-talks/

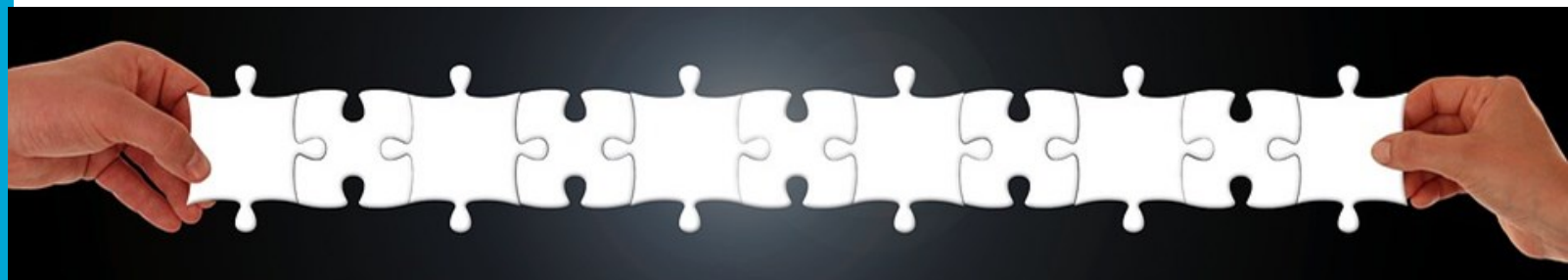
Open Science skills workshop: Main takeaways

- Need for **proper infrastructure** and **policy support** from institutions
- **Recognition** is the main drivers for both scientific and non-scientific staff to pursue open science
- Outputs will be applied in EOSCpilot to help its Skills Framework
- And most importantly: everyone can contribute to changing cultures and daily practices.



Taking open science forward, together.

- Sharing case studies, good practice, expertise and infrastructure
- Advertisement of EOSC resources and services available to the research community
- Providing suggestions and community feedback to EOSC



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Summary

- The importance of open science, RDM and FAIR sharing in today's world
- Experiences from TU Delft data stewardship project
- Institutional efforts are great but researchers need to be rewarded everywhere
- The need for collaboration and coordinated effort: The EOSC opportunity

And finally..

“Not everything that can be counted counts.

Not everything that counts can be counted.”

— **William Bruce Cameron**

Questions/ Comments?

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