

# **A Scientist's Perspective on Open Access & OA2020**

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# Outline

## Introduction

- *motivation & challenges*

## Interactive OA Publishing & Multi-Stage Open Peer Review

- *concepts & examples: ACP/EGU & Copernicus, arXiv & SciPost Physics ...*
- *message: we can do much better than traditional journals*
- *vision: **epistemic web***

## Large-Scale Implementation of Open Access

- *concepts & examples: OA2020, DEAL, Plan S ...*
- *message: transformative agreements are needed & successful*
- *vision: **efficient & swift transition***

## Conclusions

- *lessons learned, outlook & propositions*

# Motivation for Open Access

*Educational, economic & scholarly advantages of free & immediate online availability & usability of scholarly research articles*

## Educational:

- equal opportunities, information & stimulation (*global/social, teachers/students ...*)
- re-integrate scholarly & common knowledge (*Wikipedia, real vs. alternative facts ...*)

## Economic:

- facilitate innovation (*text mining by SME ....*)
- liberate distorted market of scientific information (*copyright ...*)

## Scholarly:

- enhance interdisciplinary exchange, discussion collaboration
- **advance scholarly evaluation & quality assurance:** *open review & discussion, transparency & new metrics beyond citation counting oligopoly ...*

## Open Access Variants:

- OA archiving (“green”): **good but not enough** (*delays & limits in usability & sustainability*)
- OA publishing (“gold”): **immediate & full benefits and sustainability**

# Motivation for New OA Platforms & Open Peer Review

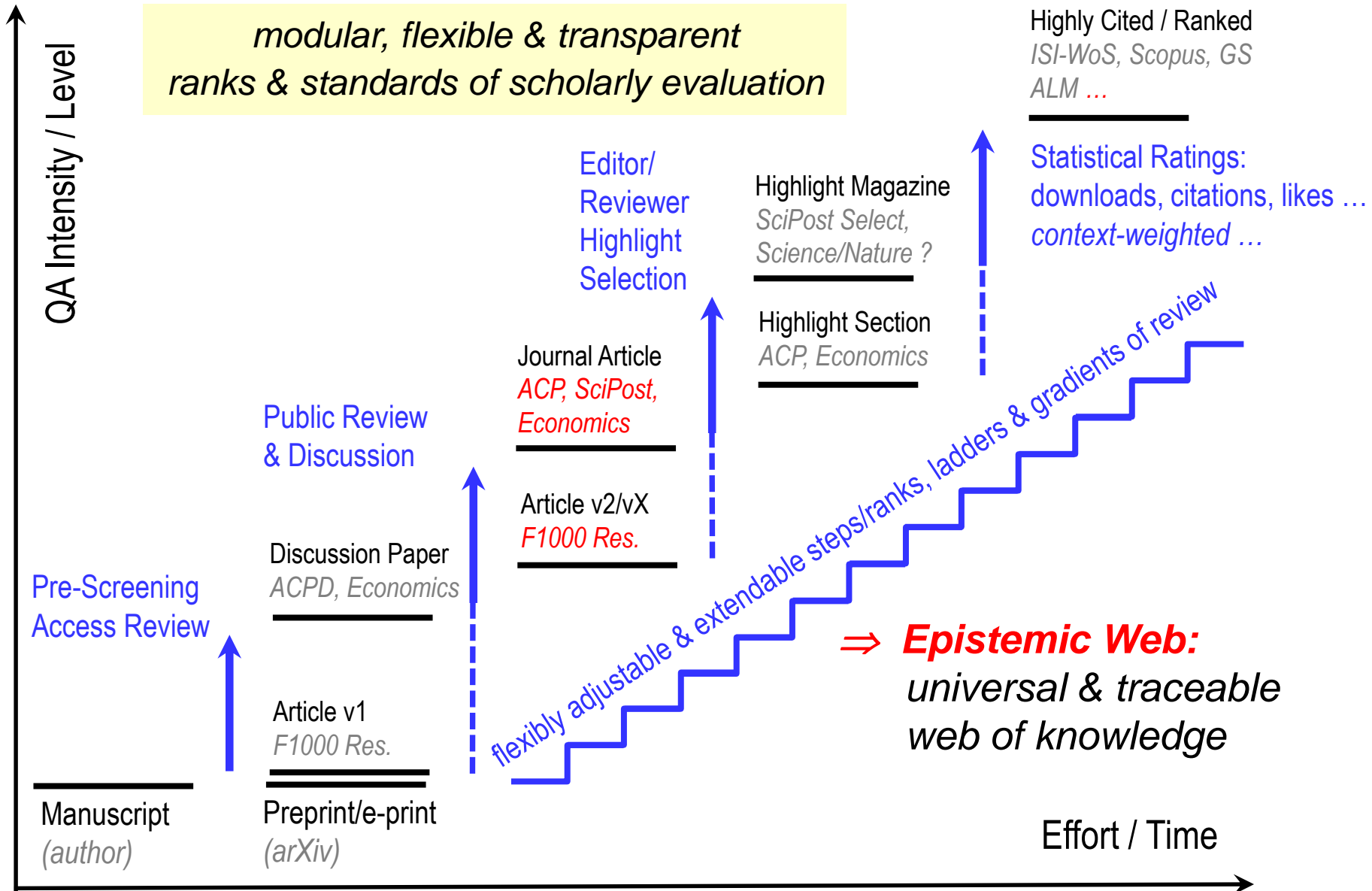
Traditional journals & peer review are not sufficient for efficient communication & quality assurance in today's diverse & rapidly evolving world of science:

- limited capacities of journal editors & reviewers;
- delays & loss of information from original manuscripts & reviewer comments (*often as interesting as final article*);
- iterative submissions & **waste of reviewer capacities** (*most limited resource in scientific publishing & quality assurance*)

Proper OA publishing & new platforms provide urgently needed opportunities for improved scientific quality assurance:

- transparency & new metrics beyond citation counting oligopoly:  
*article level metrics (ALM) ...*
- open peer review, pre-publication history, peer commentary, post-publication review etc.:  
*BMJ, BMC Medical Journals, BBS, PLOS One, PeerJ, Peerage of Science, Peer Community (PCI), PREreview, Winnower, F1000 Research/Wellcome Open Research ...*
- interactive OA publishing & multi-stage open peer review - **combine & integrate strengths of traditional peer review with virtues of transparency & self-regulation:**  
*ACP & EGU/Copernicus, Economics e-journal, SciPost/arXiv, ...*

# Multi-Stage Open Peer Review

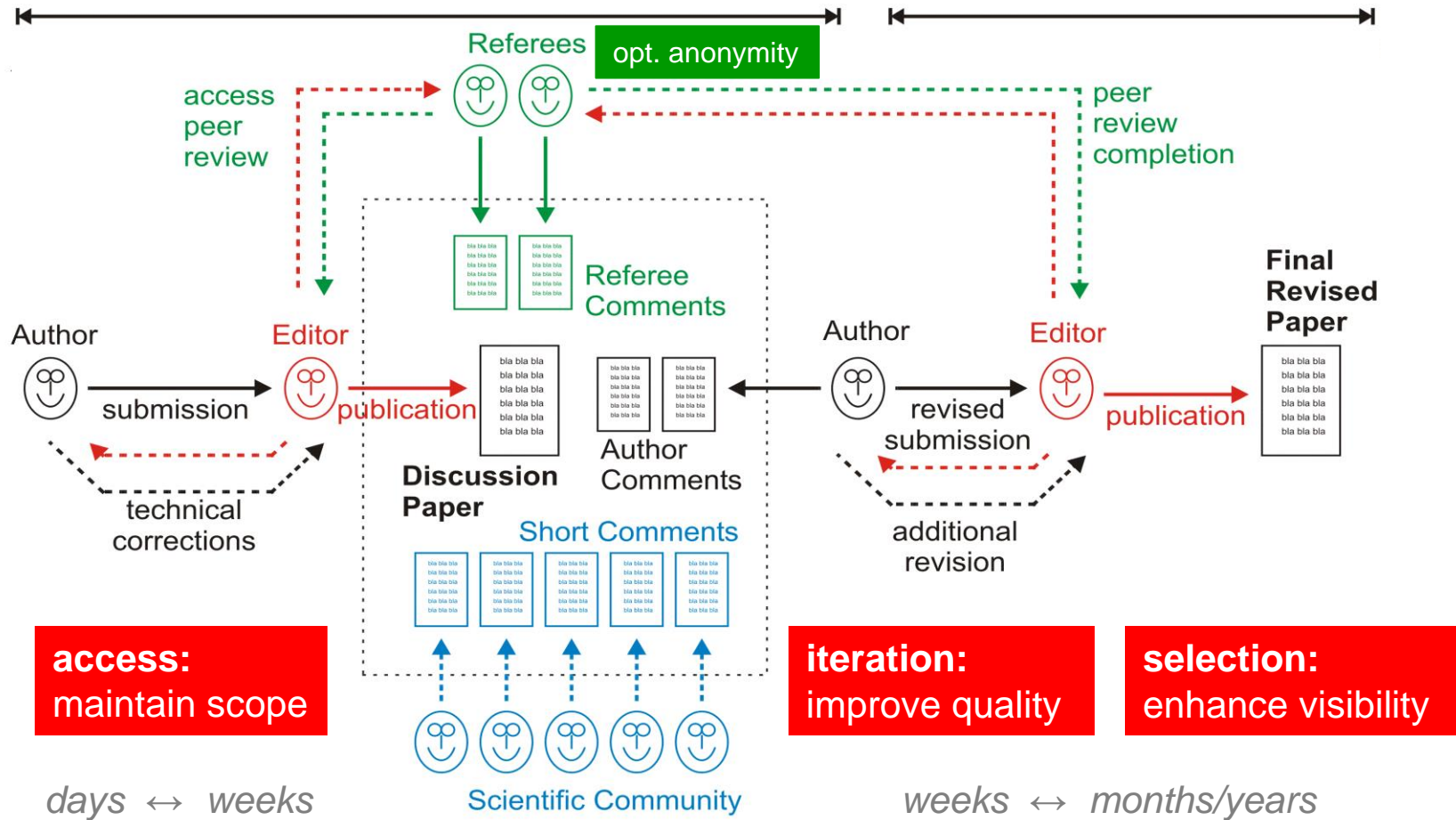


# Multi-Stage Open Peer Review @ ACP/EGU

*Flexible & transparent advancement of traditional journal review:*

## OA Discussion Forum (ACPD)

## OA Journal (ACP)



**1. Pre-publication review & selection**  
short term

**2. Public peer review & interactive discussion**  
mid-term, **integrative !**

**3. Peer review completion**  
mid term

**4. Post-publication review & evaluation**  
long-term, **ALM ...**



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Short summary

We use climate simulations, paleoclimate data and modern observations to infer that continued high fossil fuel...

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Atmos. Chem. Phys., 16, 3761-3812, 2016  
<http://www.atmos-chem-phys.net/16/3761/2016/>  
doi:10.5194/acp-16-3761-2016  
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Research article

22 Mar 2016

Ice melt, sea level rise and superstorms: evidence from paleoclimate data, climate modeling, and modern observations that 2 °C global warming could be dangerous

James Hansen et al.

**Hansen et al. 2016: climate change, 110 comments, 138 000 downloads**  
[www.atmos-chem-phys.net/16/3761/2016/acp-16-3761-2016-discussion.html](http://www.atmos-chem-phys.net/16/3761/2016/acp-16-3761-2016-discussion.html)

Download

- Final revised paper (published on 22 Mar 2016)
- Supplement to the final revised paper
- Discussion paper (published on 23 Jul 2015)
- Supplement to the discussion paper

Interactive discussion

Status: closed

AC: Author comment | RC: Referee comment | SC: Short comment | EC: Editor comment

- Printer-friendly version - Supplement

- SC C5202: 'SC Two papers that conflict with section 2.2. argument for Eemian "superstorm" activity', Andrew Revkin, 26 Jul 2015
- SC C5522: 'Is a 10% increase in wind speed enough to increase wave heights enough to move the Bahamian boulders in the Eemian?', Michael Wehner, 31 Jul 2015
- AC C8101: 'Response to SC C5522', James Hansen, 15 Oct 2015
- AC C5615: 'Boulders in the Bahamas: Response to Comment by A. Revkin on paper Ice Melt, Sea Level Rise and Superstorms', James Hansen, 04 Aug 2015
- SC C5885: 'Boulders show mega-tsunamis and multi-metre sea level rise could result from rapid Arctic warming; both precautionary and preventative actions are required urgently', John Nissen, 13 Aug 2015
- AC C7872: 'Response to SC C5885', James Hansen, 12 Oct 2015
- SC C6270: 'Speculations on superstorms', Max Engel, 26 Aug 2015
- AC C7633: 'Reply to SC C6270 'Speculations on superstorms'', Max Engel, 26 Aug 2015', James Hansen, 06 Oct 2015
- SC C5208: 'Evidence and validation', Erik Stabenau, 26 Jul 2015
- SC C6508: 'Antarctic sea ice growth', Steven Marcus, 03 Sep 2015
- AC C7963: 'Response to SC C6508', James Hansen, 13 Oct 2015
- AC C7962: 'Response to SC C5208', James Hansen, 13 Oct 2015

- RC C5209: 'Very important but strenuous paper', David Archer, 27 Jul 2015
- SC C5270: 'Archer's comment on Hansen's new SLR paper', Rud Istvan, 27 Jul 2015
- SC C5316: 'RE: Rud Istvan's reply to 'Archer's comment on Hansen's new SLR paper'', Rud Istvan, 29 Jul 2015
- SC C5336: 'Greenland ice mass loss', Rud Istvan, 29 Jul 2015
- AC C7878: 'Response to SC C5336', James Hansen, 12 Oct 2015
- AC C7876: 'Response to SC C5316', James Hansen, 12 Oct 2015
- AC C7874: 'Response to SC C5270', James Hansen, 12 Oct 2015

**Self-regulation by transparency:**  
- efficient handling of controversial studies  
- top impact & visibility @ low rejection rate



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**Journal metrics**

**IF 5.053**

**IF 5-year 5.656**

**SNIP 1.574**

**IPP 5.054**

**SJR 3.022**

**h5-index 92**

► Definitions

- Abstracted/indexed**
- Science Citation Index



# Achievements ACP/EGU

## Atmospheric Chemistry & Physics (ACP)

launched 2001 with Nobel laureate P. Crutzen &

## European Geosciences Union (EGU)

20 EGU sister journals since then:

*Biogeosciences, Climate, Hydrology ...*

Large-scale move to interactive OA

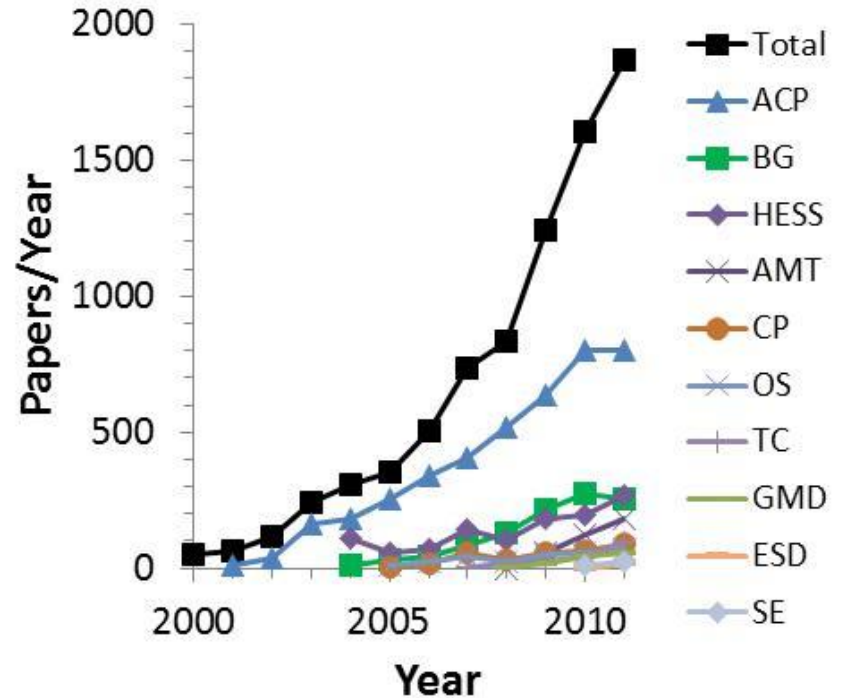
publishing in geosciences:

> 10 000 papers; > 50 000 comments

Spread of concept to other communities/platforms:

*Economics e-journal, SciPost Physics/arXiv.org,*

*F1000 Research, Wellcome Open Research ...*

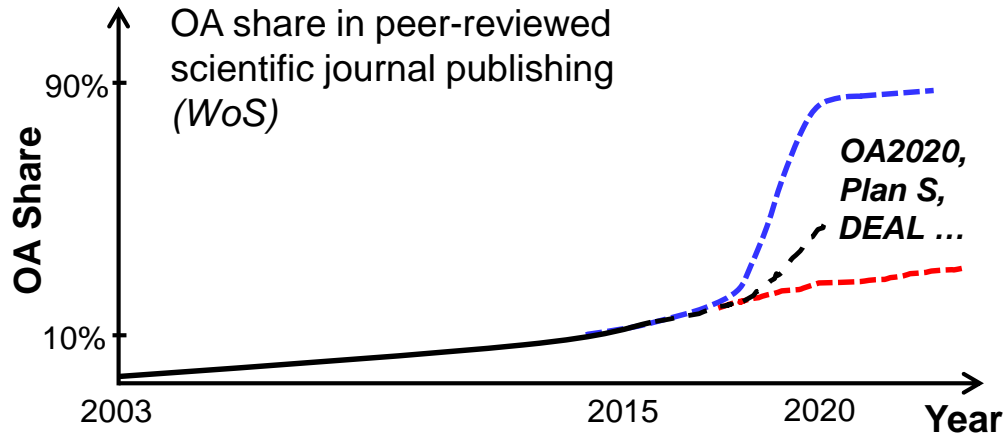


## Unique combination:

- top speed: 1+x weeks from submission to citable publication (discussion paper)
  - top impact & visibility (across atmos., environ. & geosciences)
  - low rejection rate (~15% vs. ~50+%)
  - large volume (~10% of geoscience journal market)
  - low cost (~1 kEUR/paper vs. ~2-4 kEUR/paper)
  - fully self-financed & sustainable (incl. review, production, archiving & 10-20% surplus for publisher & society), 2019: ~ 5000 papers, ~ 5 MEUR turnover, > 500 kEUR surplus
- self-regulation by transparency



# Let's act now because ... (B12 OA Conference 2015)



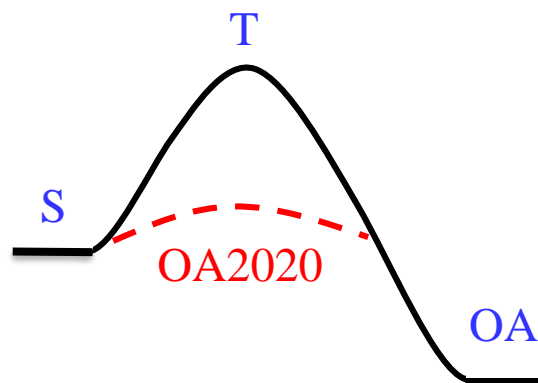
Concerted action is required to reach high OA share swiftly  
(long-term contracts, ...)

Inactivity may lead to slow increase of high quality OA & promote low quality OA („predatory publishers“)

- **OA publishing well established (~20 years); substantial volume achieved (~13% pure OA journal articles in WoS); tipping point in reach ...**
- Politics pay attention and support, traditional publishers start to move
- Junior scientists & public demand free information on the Internet (*collective & personal use*)
- **OA publishing & increase limited by availability of high quality OA journals:**  
percentage OA publishing  $\approx$  percentage OA journals (WoS:  $\sim 1500$  of  $\sim 12000$ )
- **Delayed transition may harm integrity & quality of scientific literature:**  
predatory publishers & self-archiving may erode trad. system before adequate replacement
- **Concerted action enables continuity, stability & full benefit**
- **Pilots & role models available** (SCOAP3, AT-IOP, DE-RSC, AT/NL/UK/MPG-Springer, ...)
- **Publishing Costs  $\approx$  1-2% of Science Budgets: Let's stop the tail wagging the dog**

# Scientific View of OA Transformation

**Subscription (S):**  
high cost; restricted  
access & usability  
(~ 4 kEUR/article)



**Transition (T):**  
activation needed

**Catalyst (OA2020)**

**Open Access (OA):**  
lower cost; full  
access & usability  
(~ 1.5-2 kEUR/article)

## Trust & apply the principles of mass/energy conservation & reaction kinetics:

Publications carry much of the value but only ~1% of the costs of scientific research:  
stop the tail wagging the dog

Necessary funds are already in the system: ~50% buffer (~8 bn EUR vs. ~4 bn EUR)<sup>1</sup>

OA will liberate distorted market & lead to higher value @ lower cost <sup>2</sup>

**Change requires activation:** OA2020 serving as energizer & catalyst (Eol & collaboration)

**Multiple pathways & tools:** transformative agreements with traditional publishers;  
continued & extended support for alternative & improved OA publishing platforms

# OA2020 Expression of Interest

Building on the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities and on the progress that has been achieved so far, we are pursuing the large-scale implementation of free online access to, and largely unrestricted use and re-use of scholarly research articles.

We recognize and endorse various ways of implementing open access (OA), including the development of new OA publishing platforms, archives and repositories.

In scholarly journal publishing, OA has gained a substantial and increasing volume. Most journals, however, are still based on the subscription business model with its inherent deficiencies in terms of access, cost-efficiency, transparency, and restrictions of use.

To gain the full benefits of OA and enable a smooth, swift and scholarly oriented transition, the existing corpus of scholarly journals should be converted from subscription to open access.

Recent developments & studies indicate that this transition process can be realized within the framework of currently available resources. With this statement, we express our interest in establishing an international initiative for the OA transformation of scholarly journals, and we agree upon the following key aspects:

We aim to transform a majority of today's scholarly journals from subscription to OA publishing in accordance with community-specific publication preferences. **At the same time, we continue to support new and improved forms of OA publishing.**

We will pursue this transformation process by converting resources currently spent on journal subscriptions into funds to support sustainable OA business models.

Accordingly, we intend to re-organize the underlying cash flows, to establish transparency with regard to costs and potential savings, and to adopt mechanisms to avoid undue publication barriers. ...

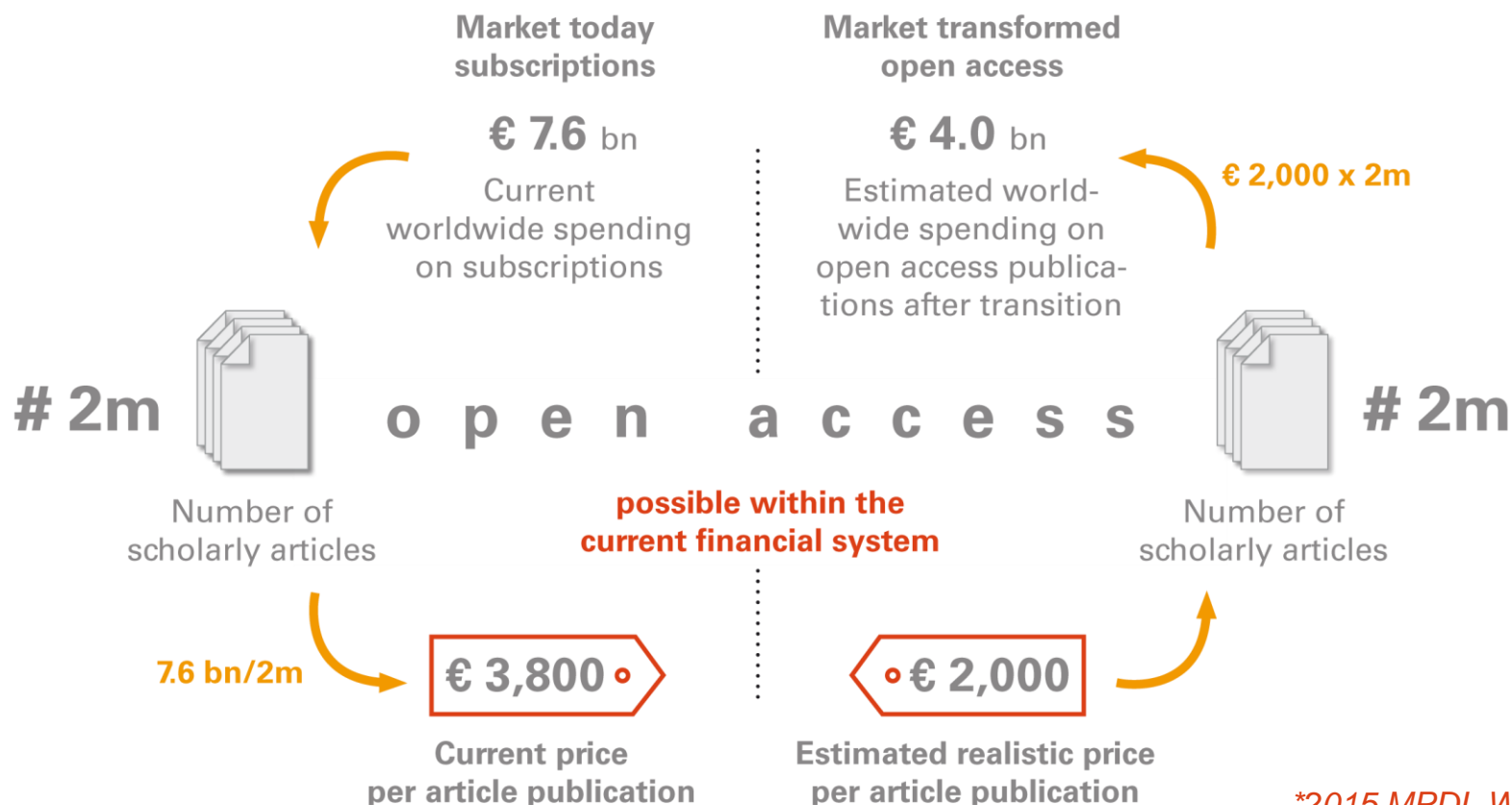
We see the initiative as one element of a more profound evolution of the academic publishing system **that will lead to major improvements in scholarly communication and research evaluation.**

# The amount of money in the subscription system\*

o p e n a c c e s s  
2 0 2 0



## Worldwide Publishing Market



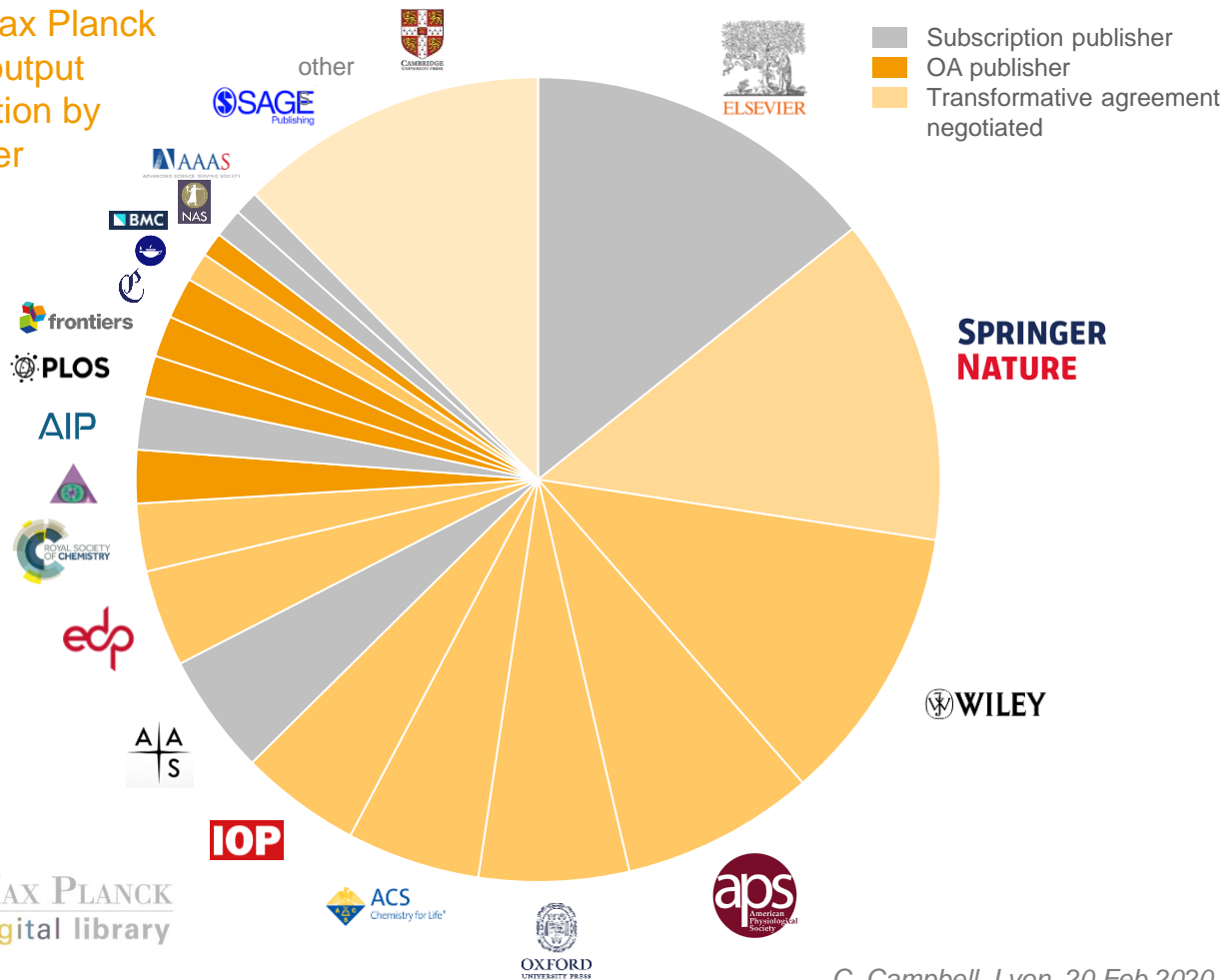
*\*2015 MPDL White Paper*

# OA Transformation in Germany: Max Planck Society & DEAL Consortium

**Goal:** enable OA for all papers from our authors & maintain access to others (“Publish & Read”)

**Status:** ~80% open access publications @ MPG, similar developments at DEAL partners

2017 Max Planck  
article output  
distribution by  
publisher



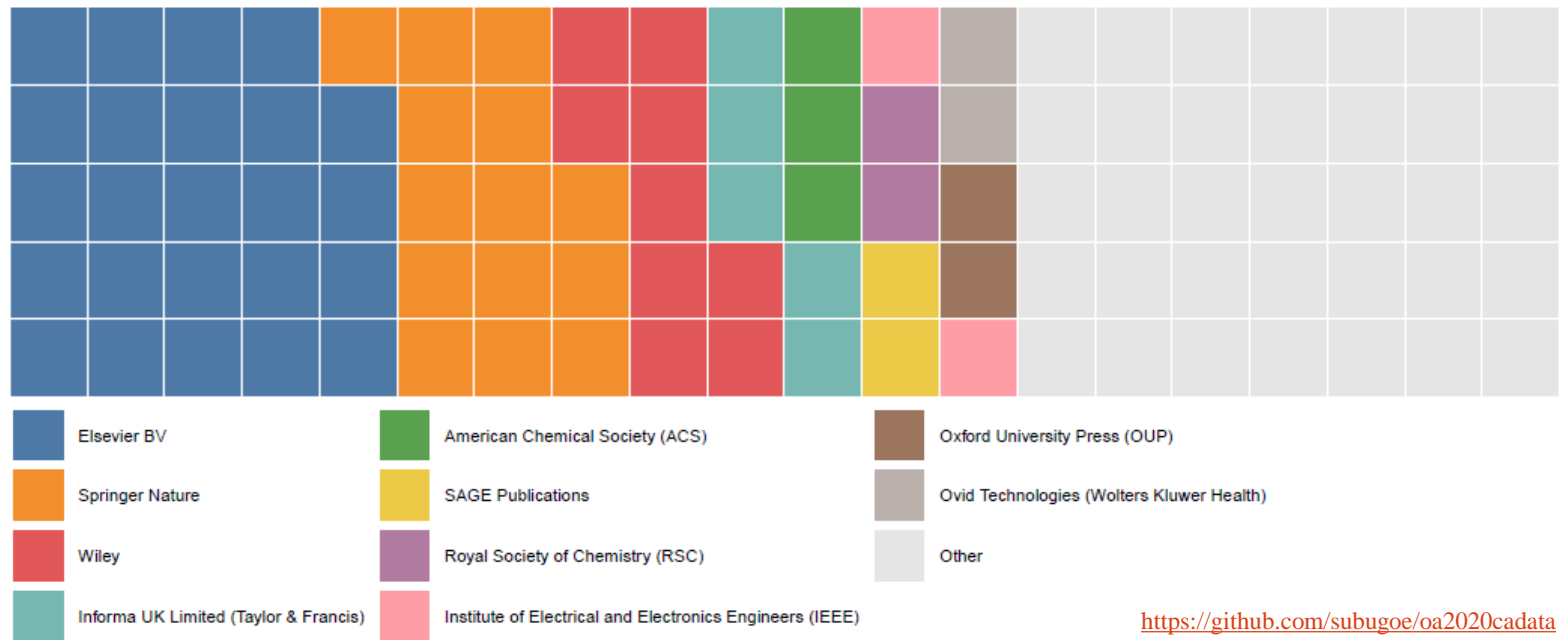
## Transformative agreements (P&R):

~20 publishers provide open access for ~80% of MPG output; similar developments with other DEAL partners & publishers (Springer, Wiley ...)

MPG-Elsevier contract expired 1 Jan 2019, DEAL partner contracts expired since 2016/17, few complaints

# Global Perspectives

Global Publisher Market Share indexed in the Web of Science between 2014–18



<https://github.com/subugoe/oa2020cadata>

## Status 2018:

~10 bn dollar turnover; ~70% by 10 publishers; ~80% behind paywalls

## Perspective 2020:

- many countries & organizations engaged in successful transformative activities (see *OA2020.org*)
- most publishers ready to offer transformative agreements (“*Publish & Read*”)
- Elsevier continues its “denial of service” in largest markets but starts to move in smaller markets

# Conclusions

## 1) Continue & promote experiments with improved forms of OA & OPR

- build on existing models & experience rather than re-inventing the wheel
- foster transparency & self-regulation (*multi-stage open peer review*)

## 2) Introduce & demand access to article reviews & pre-publication history

- establish new standards & proofs of quality assurance to cope with increase of scholarly articles & journals (*incl. predatory OA publishers*)

## 3) Advance & apply new metrics of publication impact & quality

- use article level metrics instead of journal impact factors
- use OA to terminate intransparent & unscholarly reliance on citation counting oligopoly (*WoS, Scopus, Google Scholar*)

## 4) Return control of scholarly publishing to scholarly community

- continue to support new & improved forms of OA publishing
- trust principles of mass & energy conservation: OA publishing costs can be covered by conversion of subscription budgets (*offsetting/transformation, cancelation ...*)
- proceed to large-scale implementation of OA & enhance diversity of publishing venues
- **stand united & discontinue inappropriate subscription contracts** (*Elsevier*)
- **endorse OA2020 Initiative for efficient & swift transition to OA** (*oa2020.org*)
- *Lyrics 1: there's no problem, only solutions* (J. Lennon)
- *Lyrics 2: a little less conversation, a little more action please* (E. Presley)







# Further References I

The following references and links provide orientation about the development and perspectives of open access in general and interactive open access publishing with public peer review and interactive discussion in particular (multi-stage open peer review as practiced at EGU).

## 1. Open Access Declarations & Initiatives

### 1.1. Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities

<http://openaccess.mpg.de/286432/Berlin-Declaration>

<http://openaccess.mpg.de/319790/Signatories>

[http://openaccess.mpg.de/mission-statement\\_en](http://openaccess.mpg.de/mission-statement_en)

[http://openaccess.mpg.de/1527674/Session\\_II](http://openaccess.mpg.de/1527674/Session_II)

<http://openaccess.mpg.de/1528633/Session-2-Poeschl.pdf>

### 1.2. Bethesda Statement on Open Access Publishing

<http://legacy.earlham.edu/~peters/fos/bethesda.htm>

### 1.3. Budapest Open Access Initiative

<http://www.budapestopenaccessinitiative.org/>

<http://www.budapestopenaccessinitiative.org/boai-10-recommendations>

<http://www.opensocietyfoundations.org/voices/opening-access-research>

## 2. Development & Concepts of Interactive Open Access Publishing & Public Peer Review

### 2.1. Multi-stage open peer review: scientific evaluation integrating the strengths of traditional peer review with the virtues of transparency and self-regulation

<http://journal.frontiersin.org/Journal/10.3389/fncom.2012.00033/abstract>

### 2.2. Interactive journal concept for improved scientific publishing and quality assurance

<http://www.ingentaconnect.com/content/alpsp/lp/2004/00000017/00000002/art00005>

# Further References II

## *2.3. A Short History of Interactive Open Access Publishing*

[http://publications.copernicus.org/A\\_short\\_History\\_of\\_Interactive\\_Open\\_Access\\_Publishing.pdf](http://publications.copernicus.org/A_short_History_of_Interactive_Open_Access_Publishing.pdf)

## *2.4. EGU Position Statement on the Status of Discussion Papers Published in EGU Interactive Open Access Journals, European Geosciences Union 2010*

<http://www.egu.eu/about/statements/position-statement-on-the-status-of-discussion-papers-published-in-egu-interactive-open-access-journals/>

## *2.5. Further initiatives & visions of open evaluation*

<http://www.economics-ejournal.org/>

<http://f1000research.com/>

<https://www.scienceopen.com/>

[http://www.frontiersin.org/Computational\\_Neuroscience/researchtopics/Beyond\\_open\\_access:\\_visions\\_for\\_open\\_evaluation\\_of\\_scientific\\_papers\\_by\\_post-publication\\_peer\\_review/137](http://www.frontiersin.org/Computational_Neuroscience/researchtopics/Beyond_open_access:_visions_for_open_evaluation_of_scientific_papers_by_post-publication_peer_review/137)