Beyond citation metrics and other publishing innovations

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SPRINGER NATURE

Disclaimer

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At Springer Nature we're advancing discovery through robust and insightful research

We advance discovery by:

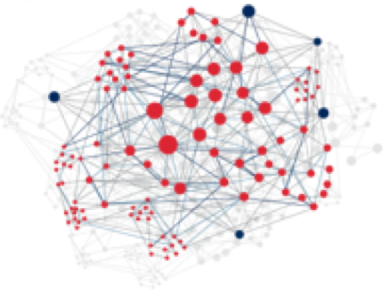
- **Supporting the development** of knowledge and new ideas
- Making information **more accessible** around the world
- Continually improving systems, prioritising ideas and innovations that **add value** to our community
- **Innovating science communications** and connecting people in a world where technology changes rapidly

We are enabling the development of new and existing products through both internal and external talent

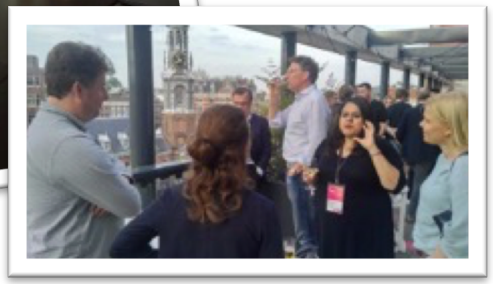
- Products like SharedIt, SciGraph and Bookmetrix have been created in-house
- LaunchPad Meetups have leveraged on external partnerships to find solutions for challenges that need solving e.g. author services and content discovery
- Hack Days provide a platform for our developers to trial new ideas

SN SharedIt

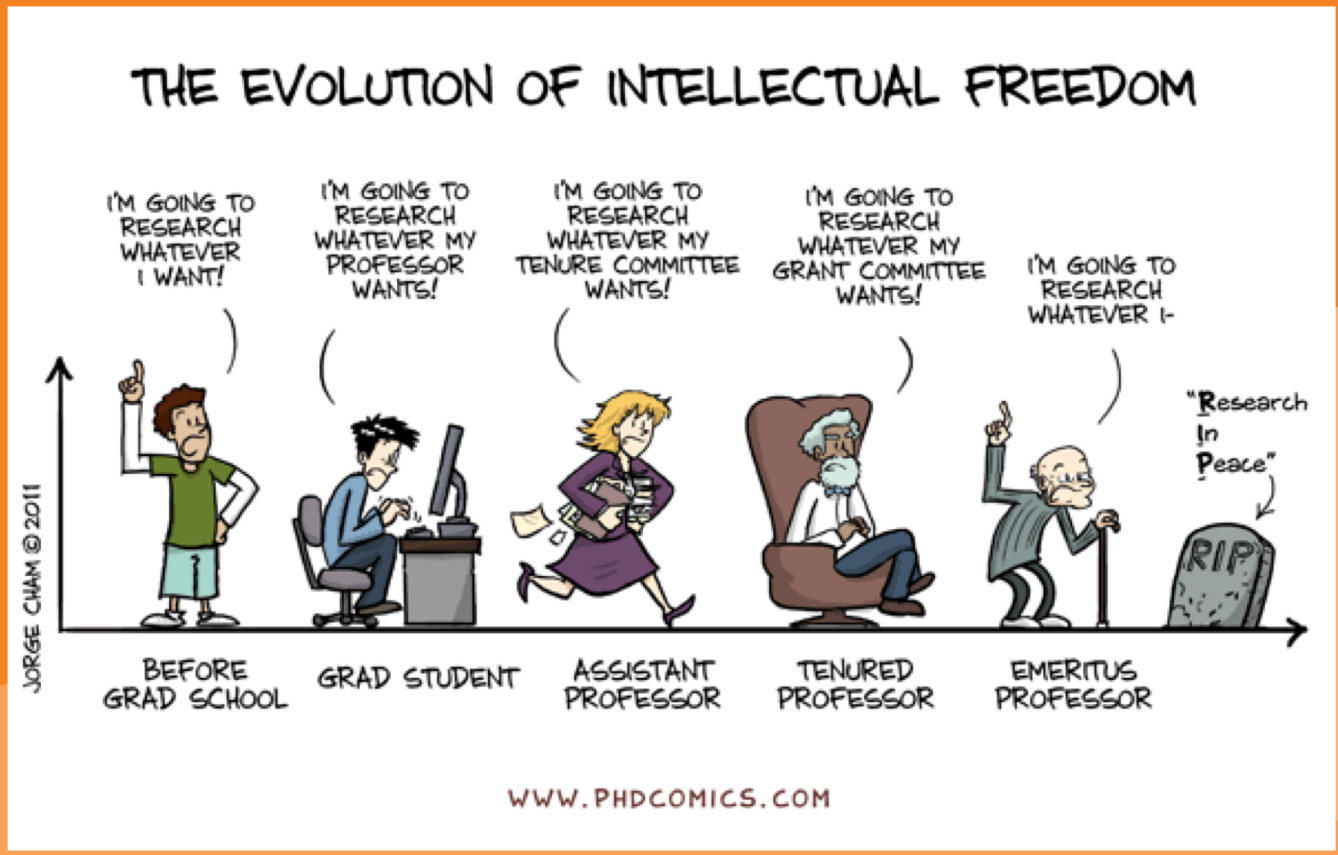
Bookmetrix



Launchpad Meetups



The current

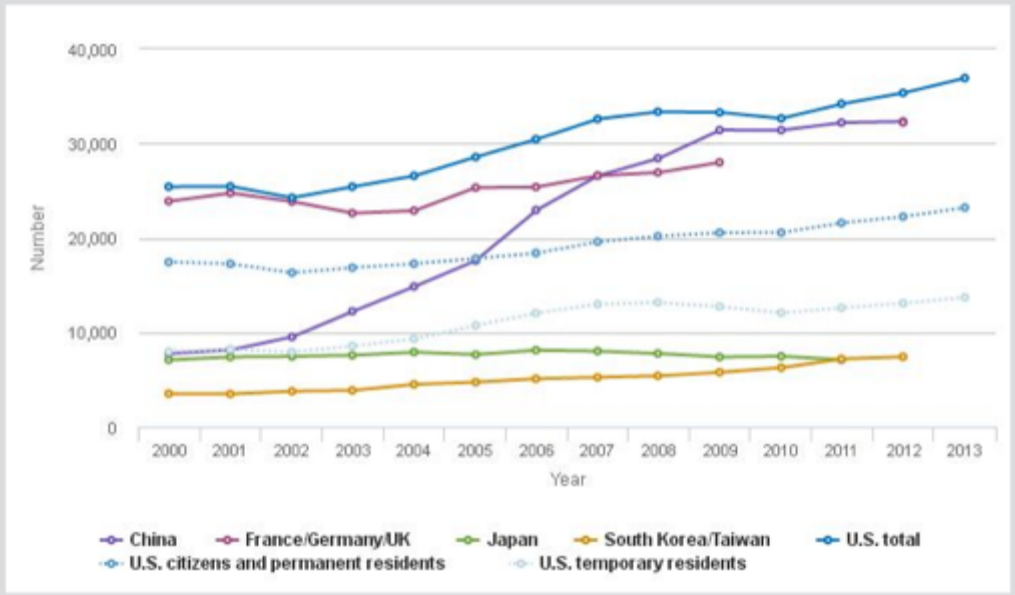

THE EVOLUTION OF INTELLECTUAL FREEDOM
I'M GOING TO RESEARCH WHATEVER I WANT!
I'M GOING TO RESEARCH WHATEVER MY PROFESSOR WANTS!
I'M GOING TO RESEARCH WHATEVER MY TENURE COMMITTEE WANTS!
I'M GOING TO RESEARCH WHATEVER MY GRANT COMMITTEE WANTS!
I'M GOING TO RESEARCH WHATEVER I-
"Research In Peace"
RIP
JORGE CHAM © 2011
BEFORE GRAD SCHOOL
GRAD STUDENT
ASSISTANT PROFESSOR
TENURED PROFESSOR
EMERITUS PROFESSOR
WWW.PHDCOMICS.COM

Researcher life cycle

Source: Outsell analysis

Rapid rise in number of researchers results in an increased competition

Doctoral degrees in S&E, by selected region/country/economy: 2000–13



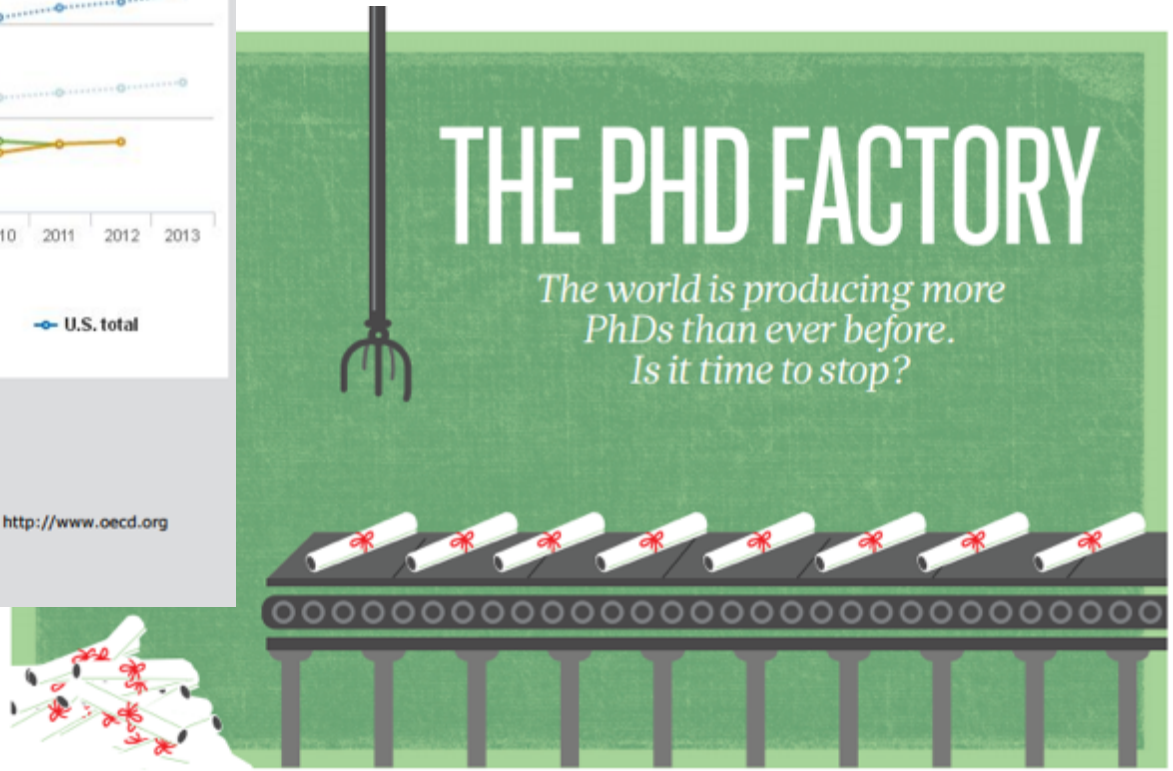
NA = not available.

UK = United Kingdom.

NOTE: Data are not available for all regions/countries/economies in all years.

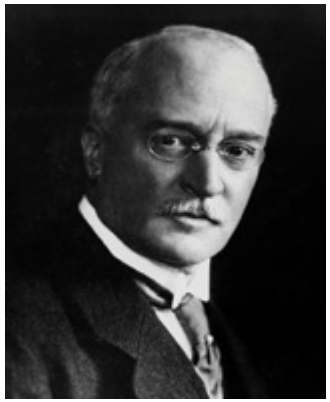
SOURCES: Organisation for Economic Co-operation and Development, Education Online database, http://www.oecd.org/education; national statistical offices.

Science and Engineering Indicators 2016

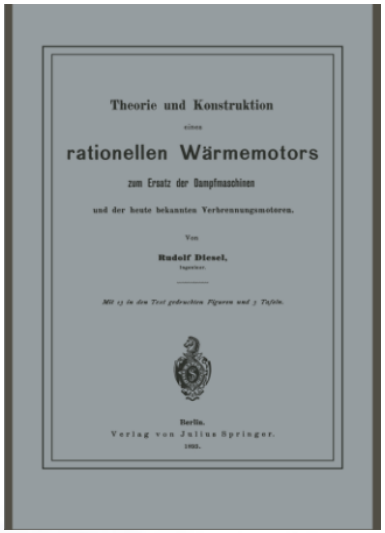


https://www.nsf.gov/statistics/2016/nsb20161/uploads/1/nsb20161.pdf

Research evaluations were once bespoke and performed by peers…



https://en.wikipedia.org/wiki/Rudolf_Diesel



https://en.wikipedia.org/wiki/Nobel_Prize

…but now research evaluations are done now routine and reliant on metrics

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http://www.nature.com/news/bibliometrics-the-leiden-manifesto-for-research-metrics-1.17351

Research dissemination channels are changing rapidly to accommodate the increasing volume of scholarly literature

A research output is mentioned online every **1.8 seconds**

That's an average of **47,000** new mentions a day

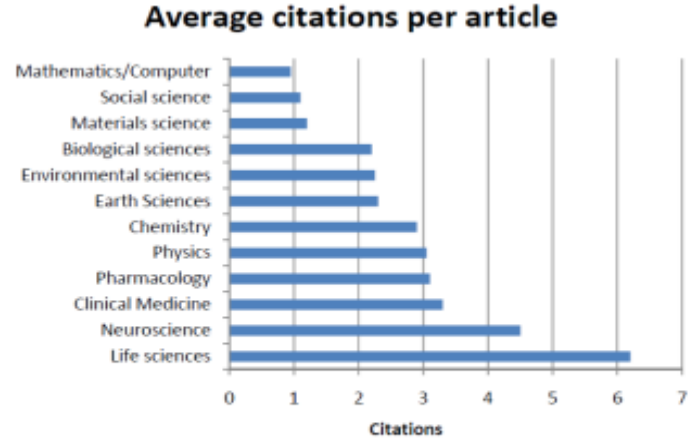
Around **15,000** unique research outputs are shared or mentioned online each day

Altmetric

The rise of mega-journals and devaluation of IF

- Launched June 2006
- Biology and Medicine
- Rejection rate: 15%
- Jan 2012: Article 30.000 published
- 2010 Impact Factor: 4.351

#Arti



Average citations per article for different disciplines, showing that citation practices differ markedly. Data from Thomson Scientific [Amin-Mabe 2000].

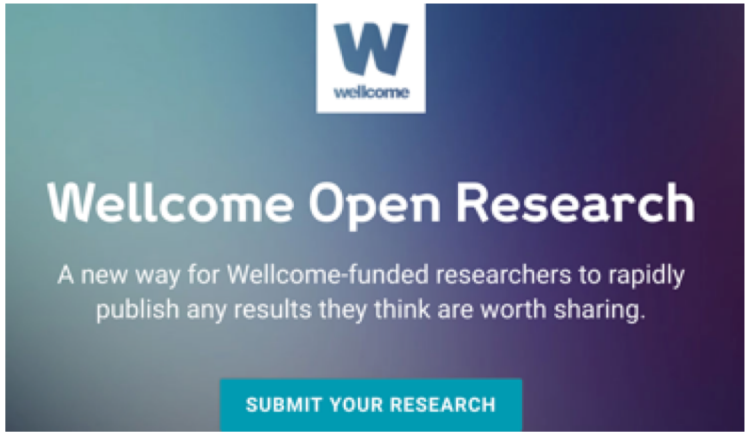
Chemistry Central Journal
AIP Advances
mBio An ASM Access Publication
BIOLOGY OPEN
Physical Review
SAGE Open
nature.com SCIENTIFIC REPORTS
WILEY Open Access
BMC Research Notes
QSCIENCE connect
BMJ open
open Biology
G3

External forces are driving change

Part 3 Section 3: Impact template and case studies (REF3a/b)

Definition of impact for the REF

140. For the purposes of the REF, impact is defined as an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia (as set out in paragraph 143).



2003: Berlin Declaration

2012: San Francisco DORA

2015: Leiden Manifesto

2015: The Hague Declaration

The Leiden Manifesto for research metrics

The Hague DECLARATION

"There is a pressing need ***to improve the ways in which the output of scientific research is evaluated*** *by funding agencies, academic institutions, and other parties."*
San Francisco Declaration on Research Assessment

Changed Research Evaluation in:

- UK
- Netherlands
- Australia

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The future of publishing

STM Tech Trends 2022

created at our meeting on 4 December 2017

Chris Fell	Cambridge UP	Heather Staines	Hypothesis
David Smith	IET	Graham McCann	IOPP
Jonathan Morgan	ACS	Michael Forster	IEEE
Todd Carpenter	NISO	Richard Fidczuk	Sage
Bob Saffell	Kluwer	Michael Duerst	Karger
IJ JAalbersberg	Elsevier	Daniel Schiff	Thieme
Daniya Tamendarova	APA	Phill Jones	Digital Science
Debbie Sweet	Cell Press	Liz Marchant	T&F
Richard Kidd	RSC	John Sack	Highwire
Philip Roberts	CABI	Dawa Riley	Hypothesis
Renny Guida	IEEE	KentAnderson	Redlink
John Connolly	SpringerNature	Sam Bruinsma	Brill
Martijn Roelandse	SpringerNature	Eefke Smit	STM

https://www.stm-assoc.org/standards-technology/tech-trends-2022/

Tech Trends 2022

STM
The global voice of scholarly publishing

OPEN SCIENCE
- Early sharing
- Includes all research artefacts
- European Open Science Cloud (EOSC)

SOCIAL MEDIA:
- Cyber Influencing
- Bots warfare
- Internet Surveillance
- Citizen Science
- How to avoid fake science

EASY ACCESS
- Single Sign-on
- Transparent collaboration
- Complexity of ID Management
- Simple Business Models
- RA21

SHARING PLATFORMS
- A Spotify for Science?
- Find the Napster moment
- How to control governance
- Will it all be Google or Sci-Hub
- Complete platform integration
- Responsible sharing
- Will it all be open ?
- CHORUS

BREXIT

Research in Asia

NET NEUTRALITY

METRICS:
- New reward systems
- Measuring all outputs

GDPR:
- Will it take all development resources?
- May change marketing fundamentally
- Impact on user data analytics
- What does it do to the UX interface?

Publishing to underpin TRUST:
- Help avoid crap science
- Quality Assurance of Data

RESEARCH DATA:
- Who funds the infrastructure
- Will it bust the pipes?
- Volume is enormous
- What will funders pay for?
- FAIR Data
- Persistent ID's
- Data Management Plans

BLOCKCHAIN:
- Can Blockchain help solve the trust-issues
- Ensure Authenticity in a Network of Trust
- Is it robust and fast enough?
- Will it all be open?

Kindly sponsored by IEEE

Deep Publishing Knowledge

Where the hippocampus is located, regulating long term memory and emotions

Smart Services

- Personalization
- User tracking
- New metrics
- AI for Peer Review
- Smart contracts
- Cryptocurrencies
- Machine written articles
- User Power
- Performance assessments
- Customized alerts
- Intelligent augmentation
- Computer generated hypothesis
- Turing test for peer review
- Find research flaws with AI

User Oriented Publishing

- Individualised precision information
- Targeted discovery
- Accelerates research

What are we facing outside the brain:

Social Media

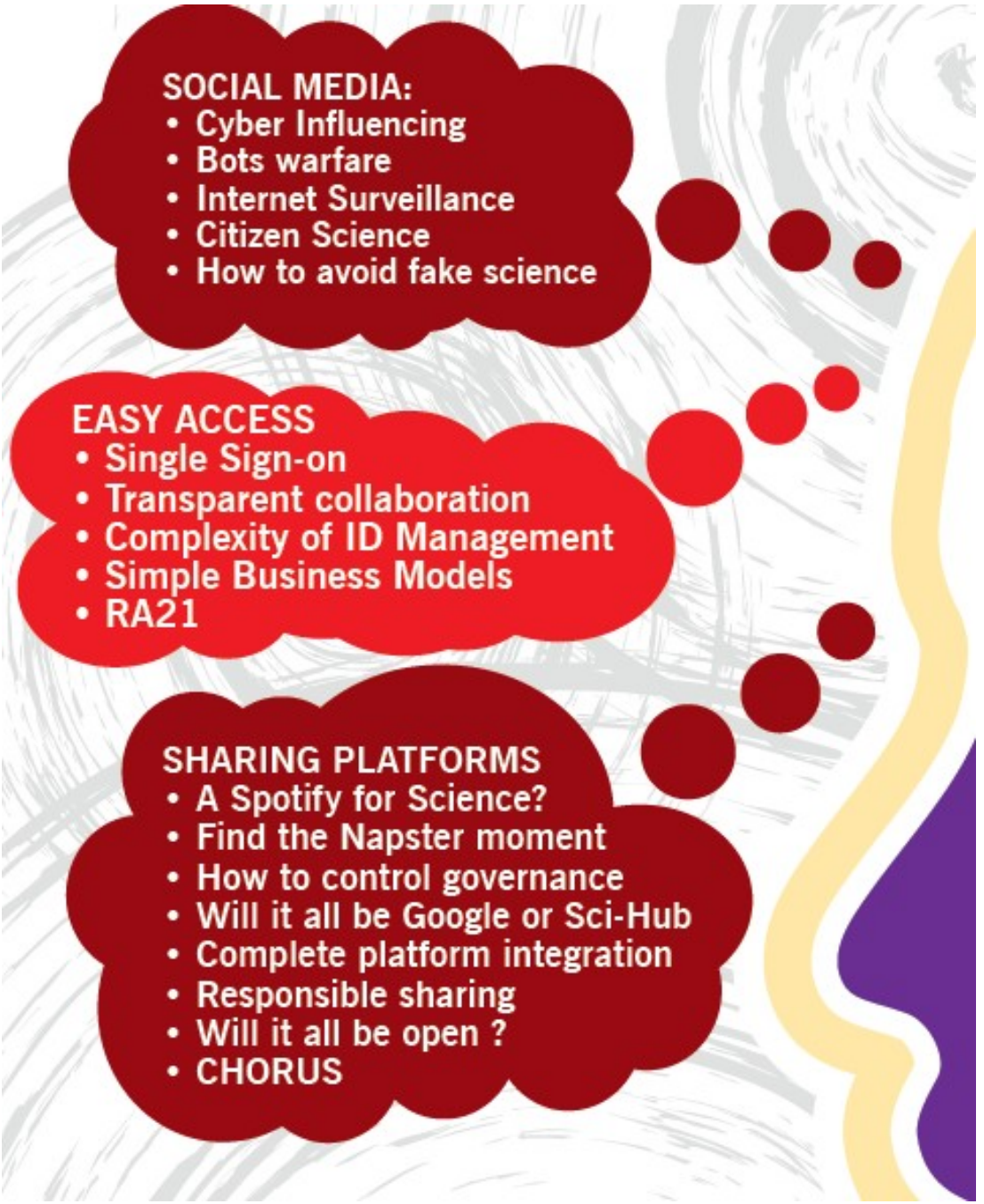
- Cyber influencing
- Citizen Science
- Avoid fake science

Easy Access

- Single sign-on
- Fix the off campus problems
- RA21

Sharing Platforms

- A spotify for science?
- Governance
- Google, SciHub
- Responsible sharing



Publishing to underpin Trust and Quality

Trust in Science

- Quality Assurance
- Avoid crap science

Research Data

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Blockchain

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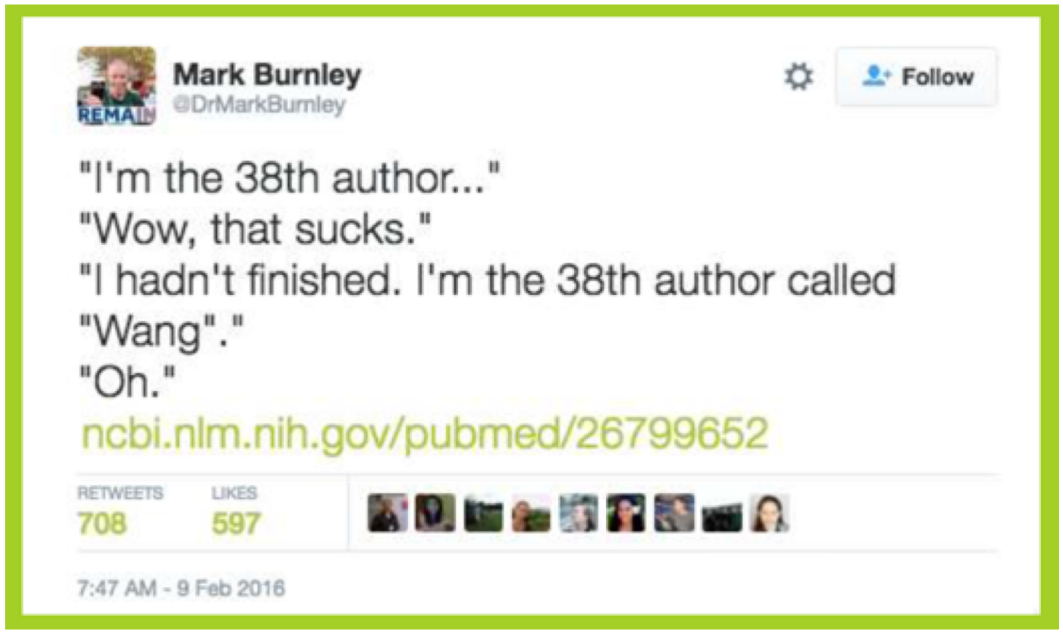
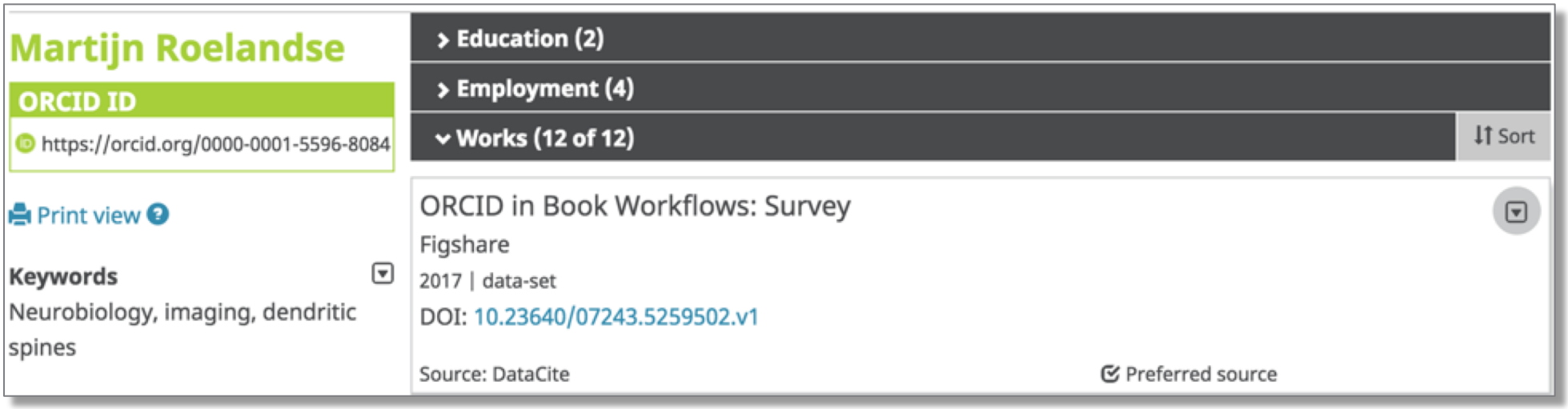
Persistent ID’s – or why your lifelong identifier is important in the digital age





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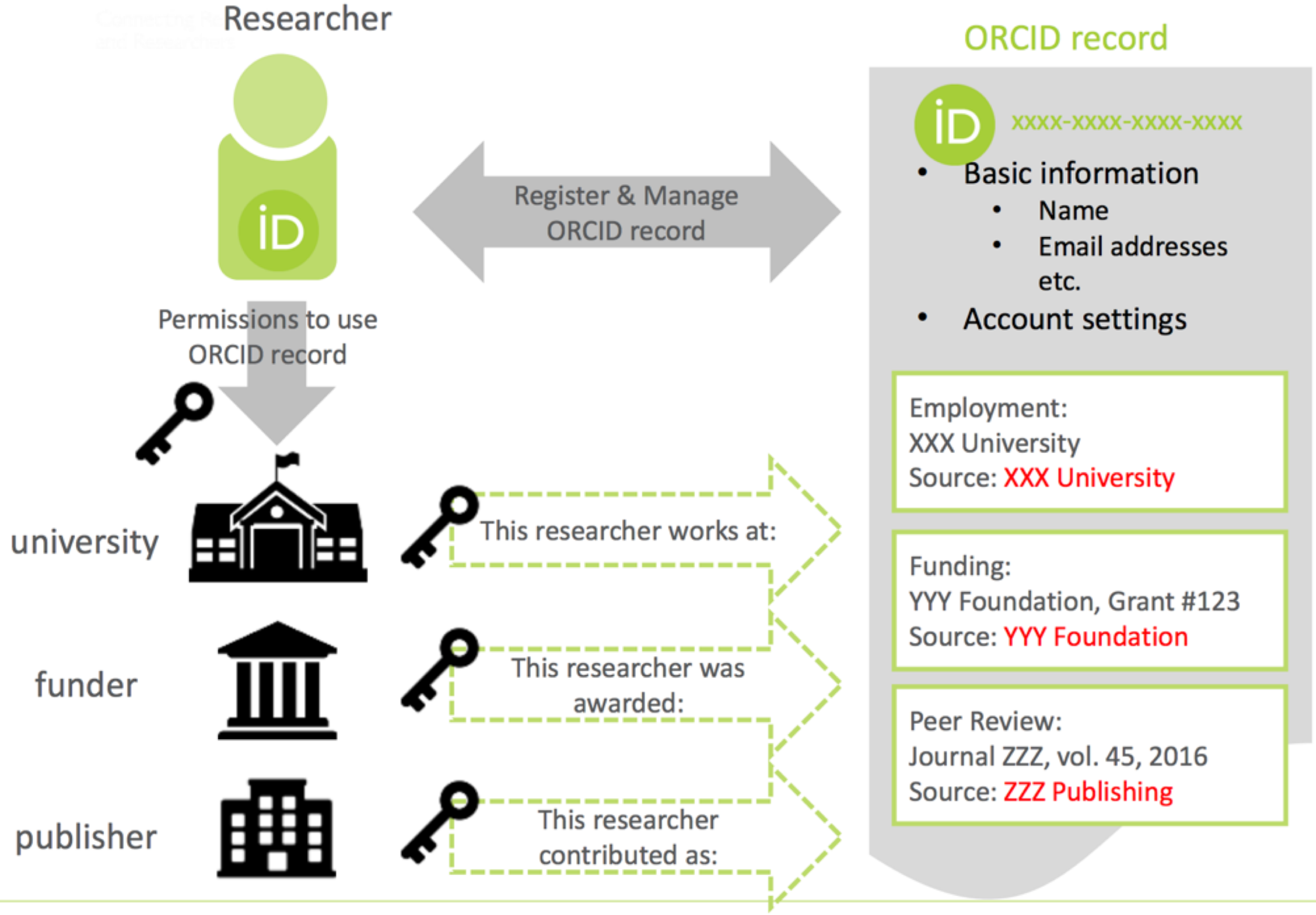
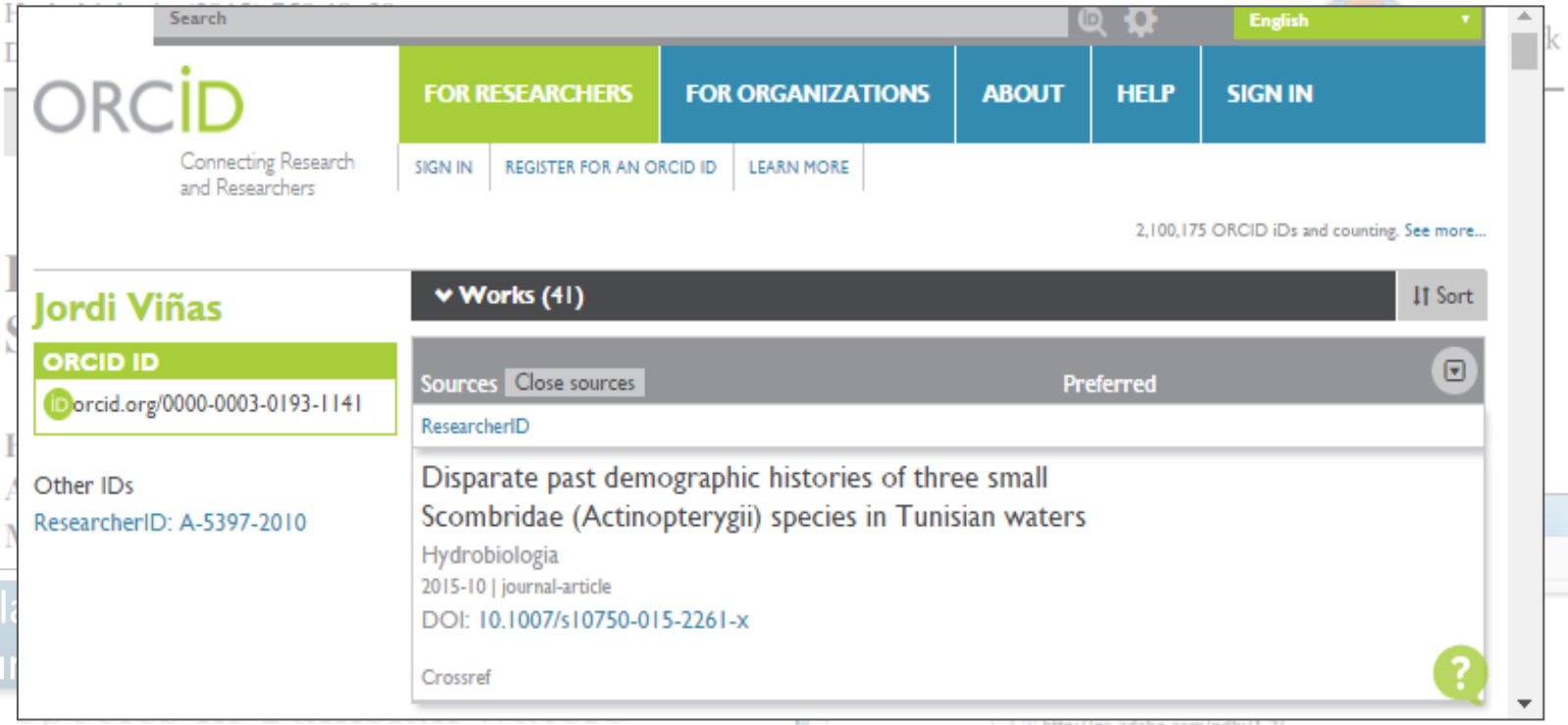
https://www.slideshare.net/ORCIDSlides/orcid-overview-why-your-lifelong-identifier-is-important-in-the-digital-age-n-miyairi


Researcher
ORCID record
xxxx-xxxx-xxxx-xxxx
Register & Manage ORCID record
Basic information
Name
Email addresses
etc.
Account settings
Permissions to use ORCID record
university
This researcher works at:
Employment:
XXX University
Source: XXX University
funder
This researcher was awarded:
Funding:
YYY Foundation, Grant #123
Source: YYY Foundation
publisher
This researcher contributed as:
Peer Review:
Journal ZZZ, vol. 45, 2016
Source: ZZZ Publishing

ORCID on SpringerLink, in metadata and pdf



Auto-update of ORCID records

- List of works is automatically updated when we send metadata to Crossref
- Prerequisite: researcher has enabled this service in the record's preferences and authorized Springer Nature to read/write to the record

http://link.springer.com/article/10.1007/s10750-015-2261-x

Book / chapters with an ORCID

There are 1.347.345 works that have a book type and a DOI.

In total, ORCID holds 11,648,419 works with DOIs

At Springer Nature we published 5.472 chapters with ORCID iDs.

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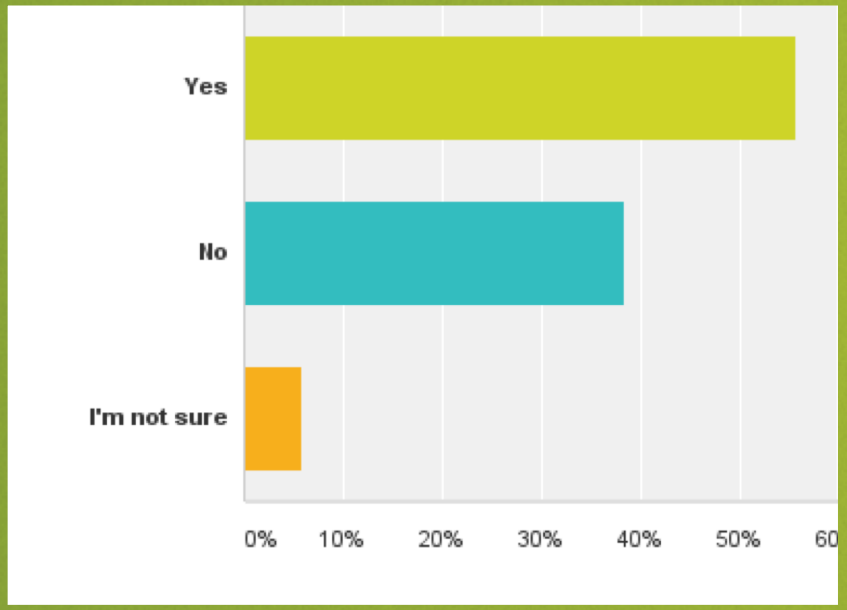
Springer Nature implements ORCID unique digital identifiers for books and chapters

ORCID used in book workflow to help solve author name ambiguity problems in research and scholarly communications

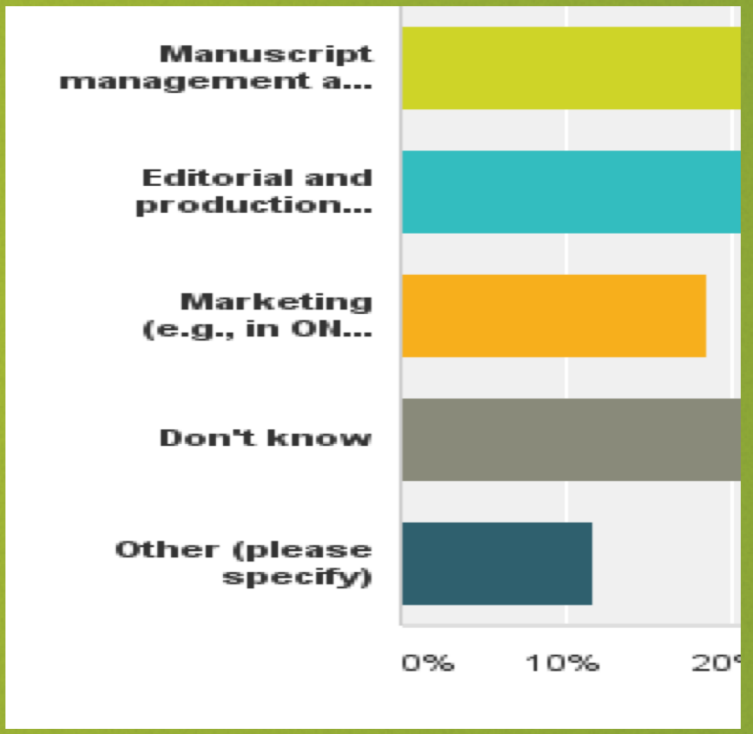
Heidelberg / London, 2 November 2015

ORCID Books Survey 2017

Does your organization currently use ORCID iDs in any of your book and/or journal publishing workflows



Are any of the systems you use in your book publishing workflows already capable of incorporating ORCID iDs for contributors?



Total Responses: 85 / Date Created: Saturday, March 18, 2017 / Complete Responses: 37

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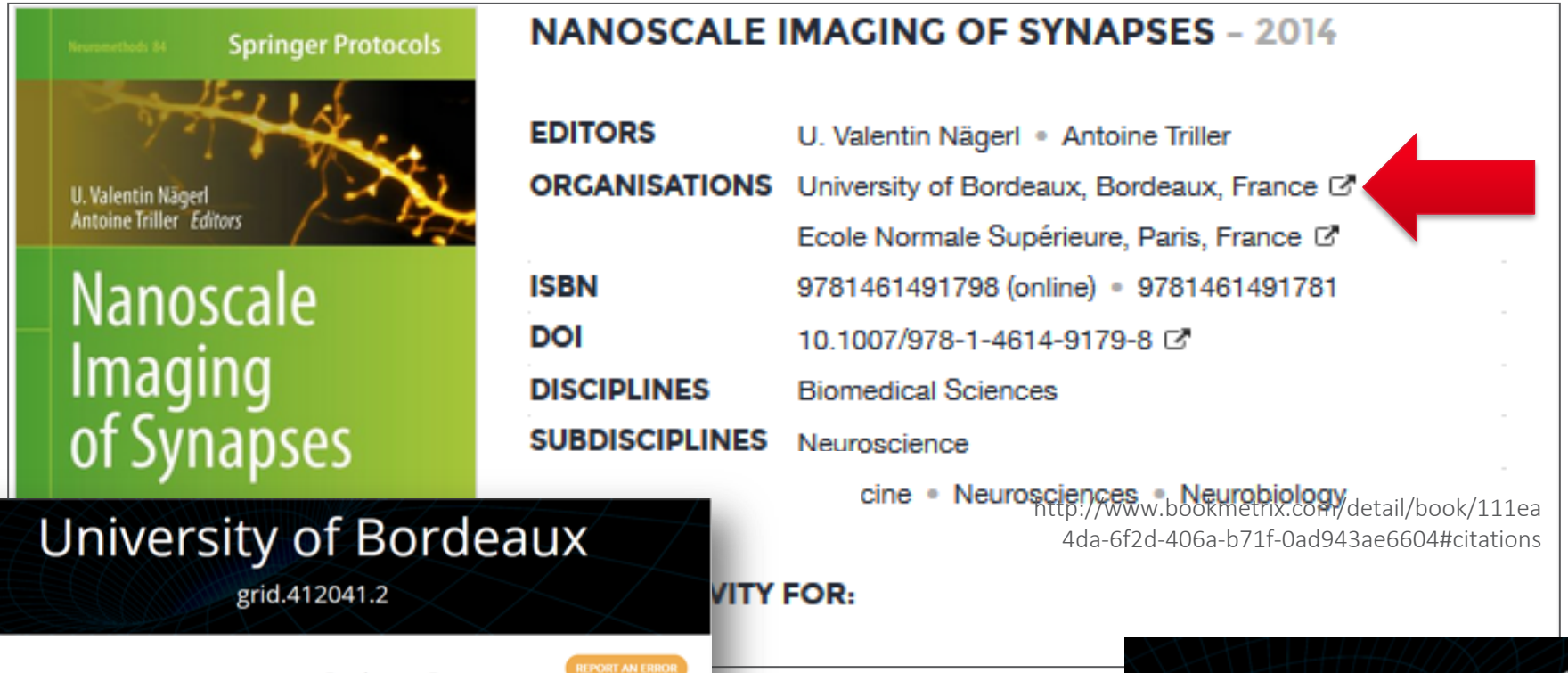
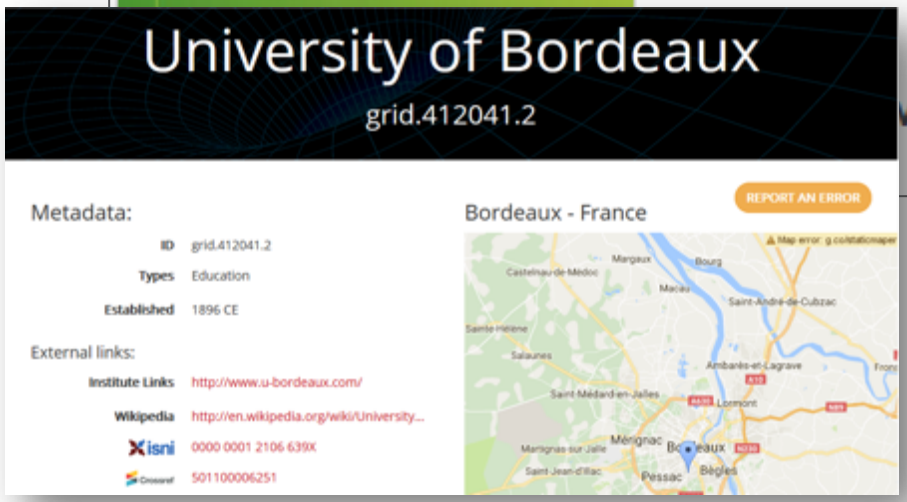
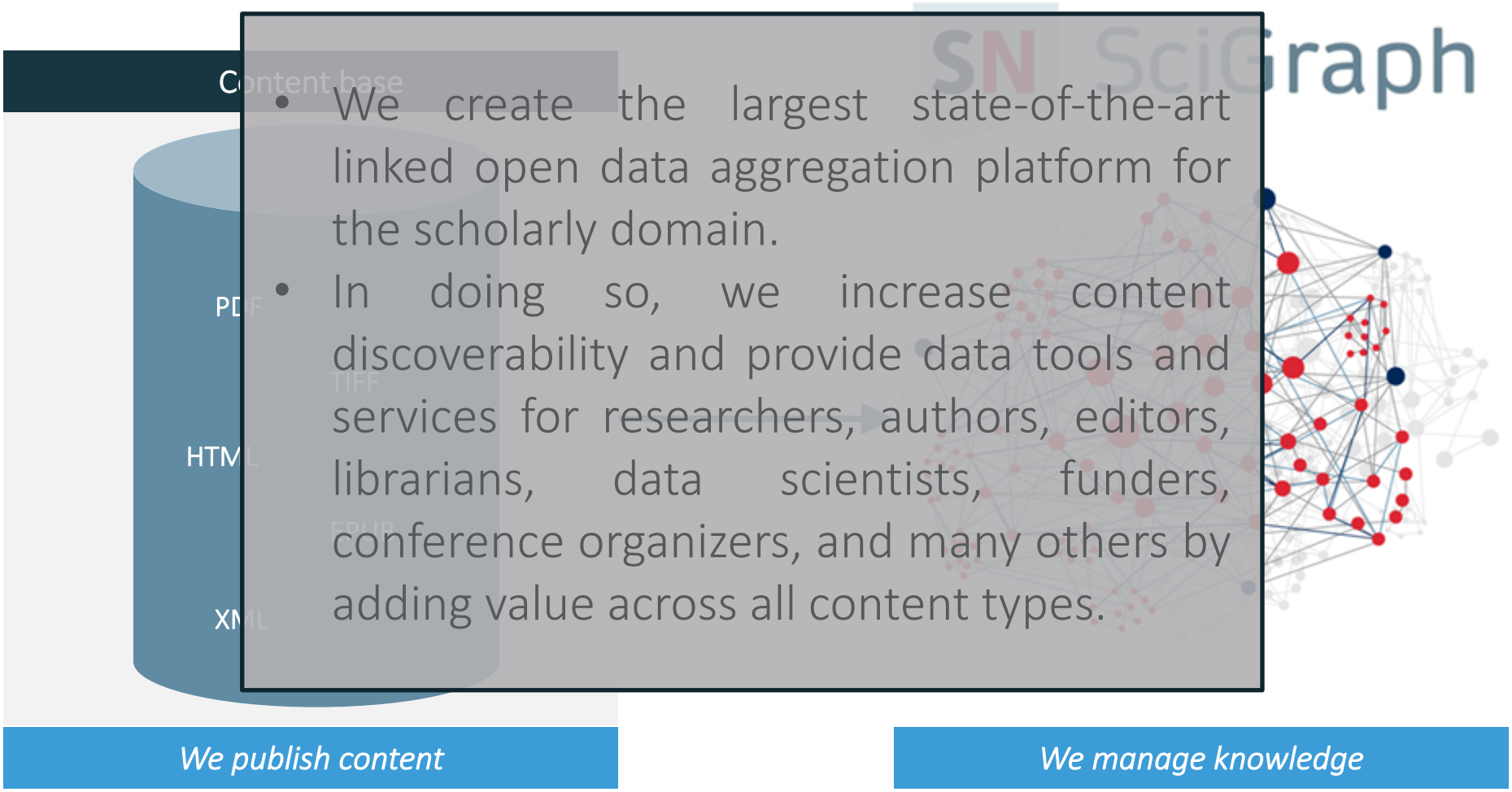
Global Research Identifier Database - cataloguing the world's research organisations





From Content to Data

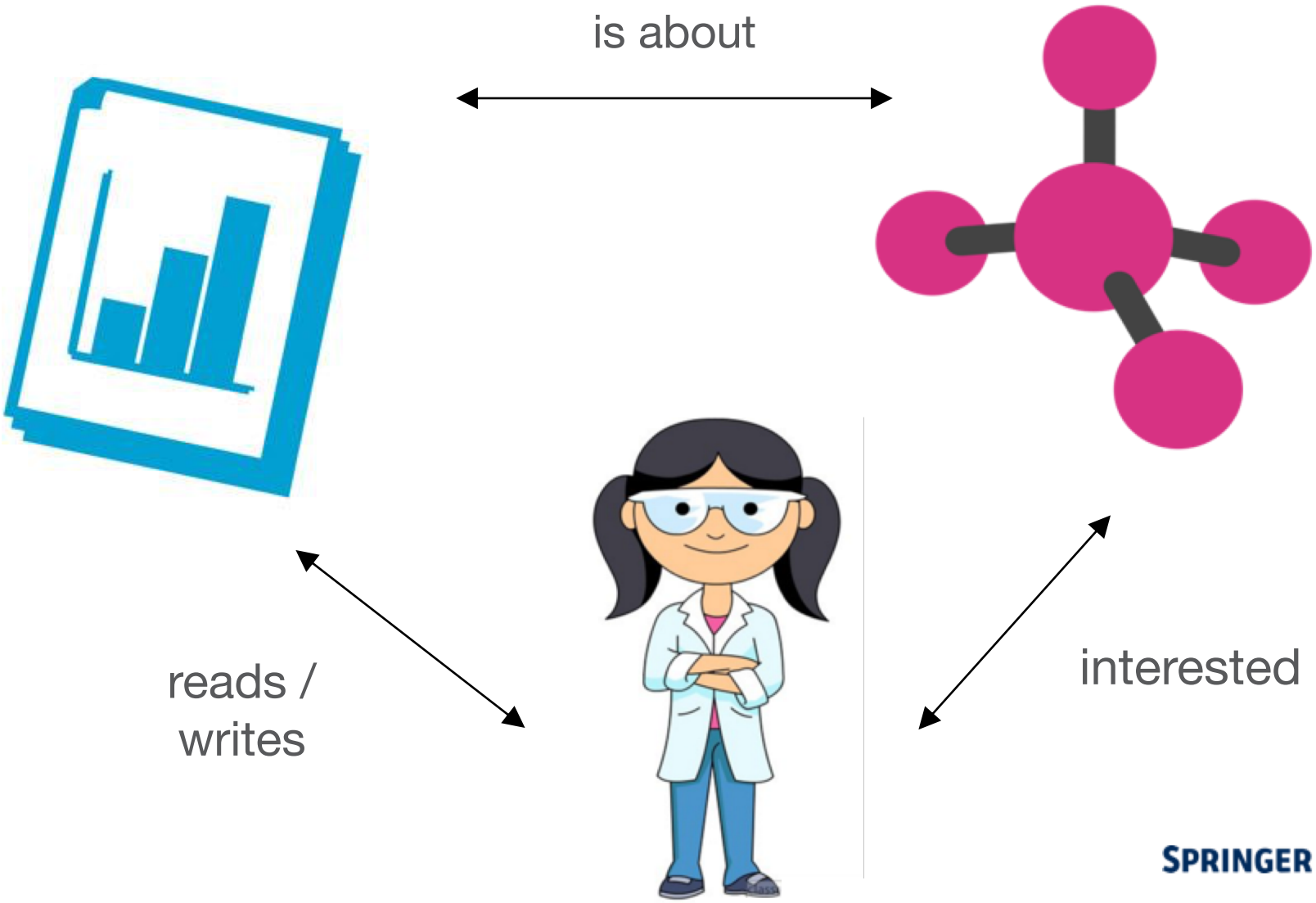


- We create the largest state-of-the-art linked open data aggregation platform for the scholarly domain.
- In doing so, we increase content discoverability and provide data tools and services for researchers, authors, editors, librarians, data scientists, funders, conference organizers, and many others by adding value across all content types.

We publish content

We manage knowledge

Three areas of knowledge we care about

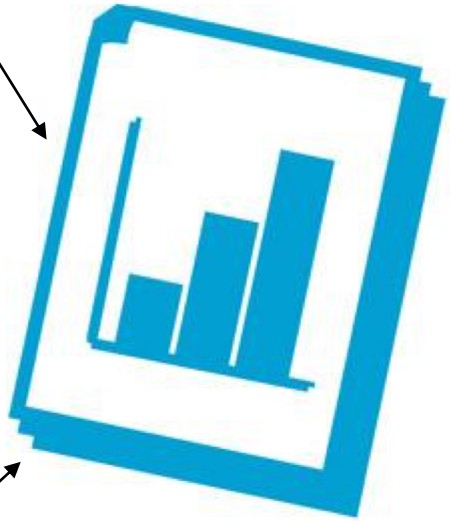


Produces

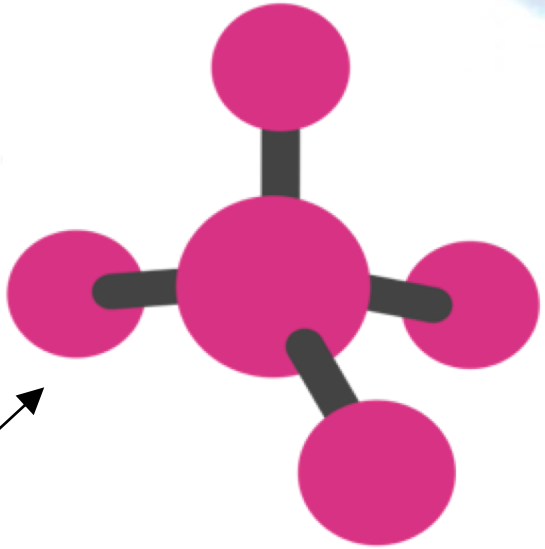
Has topic

In proceedings

Describes research data set



Attends

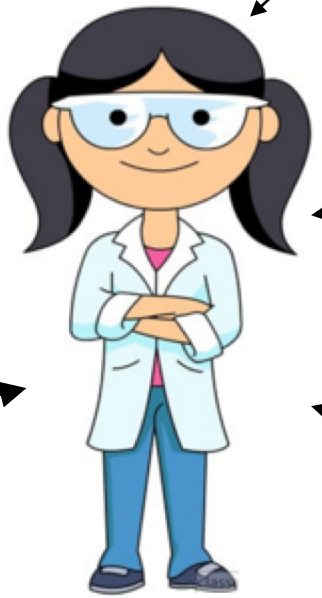


Studies

Produces

Contains

Reads / Writes



Lead researcher in

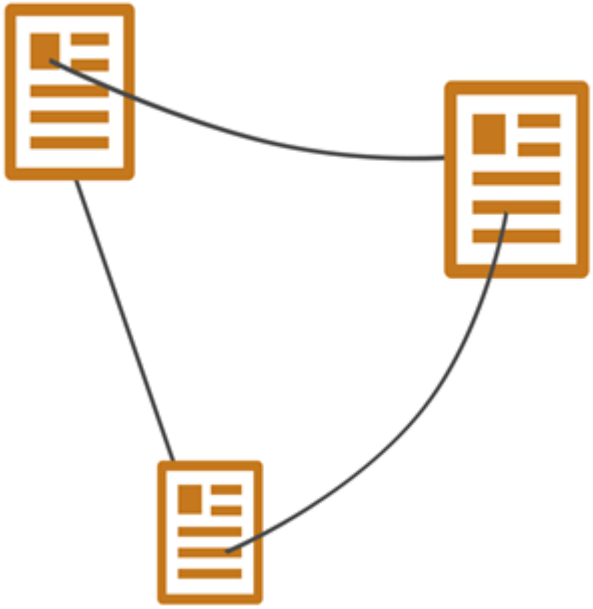
Cites

Funds

Works for

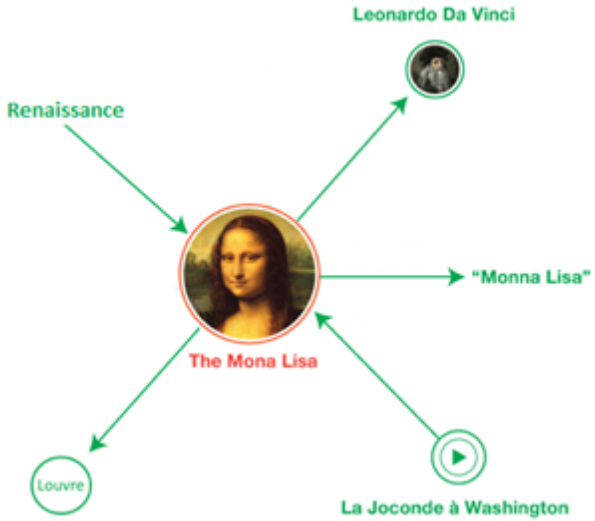
Located at

Turning the World Wide Web into the Web of Data

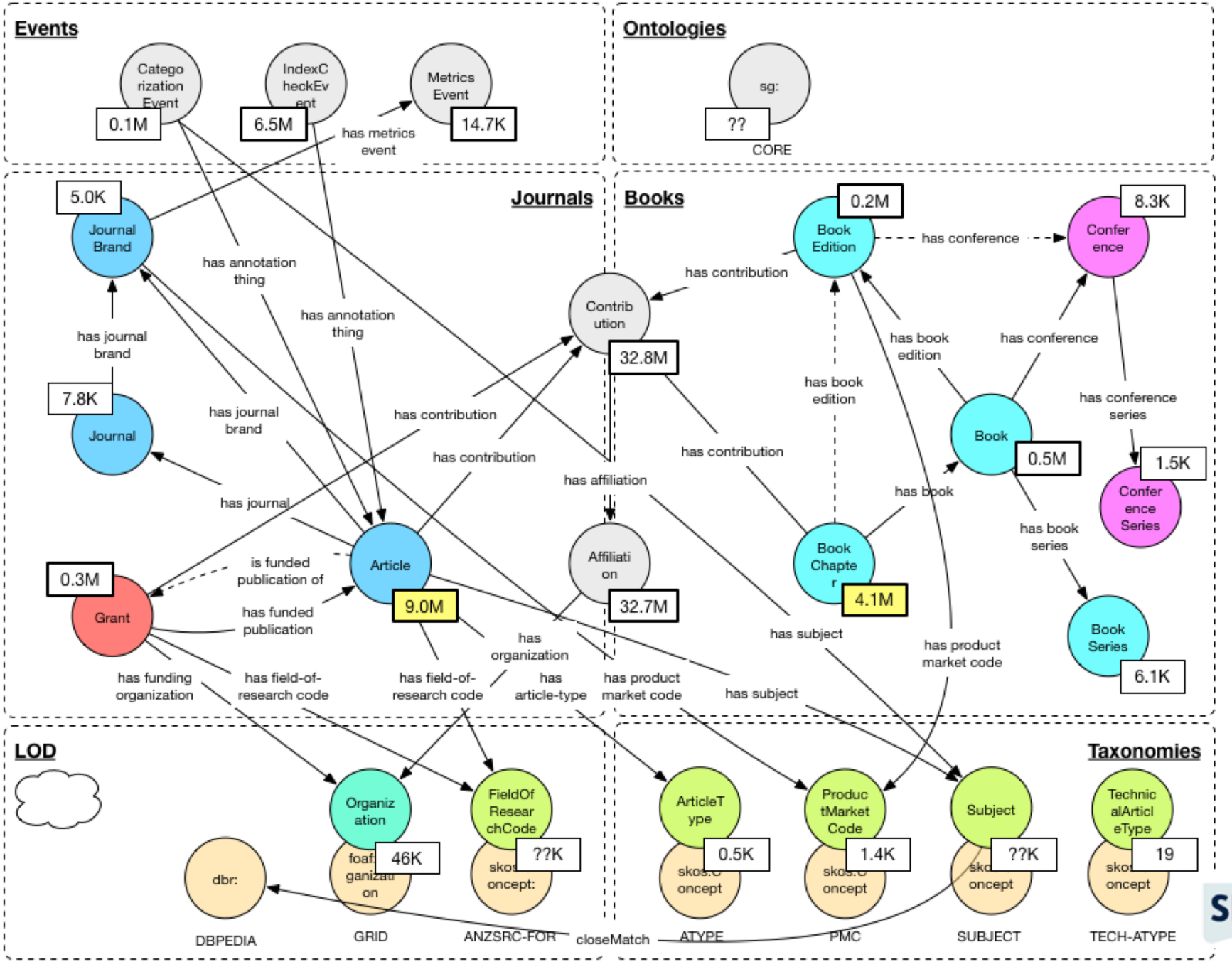


Data is relationships, not only properties

The more data you connect → the more one can find out



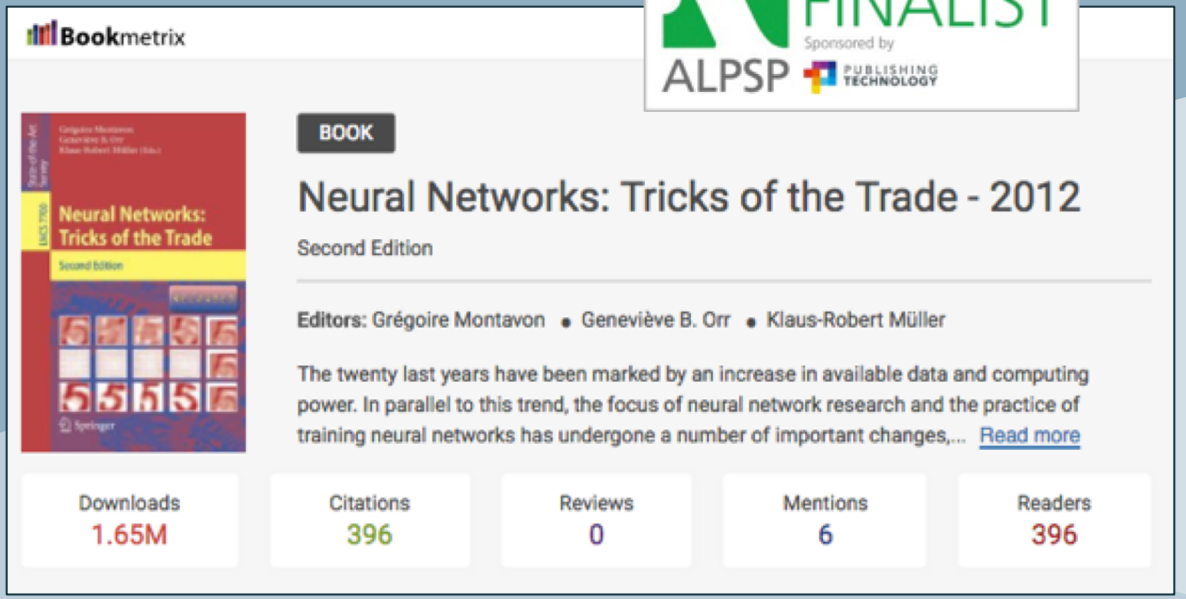
- From hypertext pages to the **Web of Data**
- TED Talk Tim Berners-Lee: The Next WEB


Events
Categorization Event
0.1M
IndexCheckEvent
6.5M
Metrics Event
14.7K
has metrics event
Ontologies
sg:
??
CORE
Journals
Books
5.0K
Journal Brand
has annotation thing
has annotation thing
has journal brand
7.8K
Journal
has journal brand
has journal
has contribution
has contribution
Contribution
32.8M
has affiliation
Affiliation
32.7M
0.2M
Book Edition
has conference
8.3K
Conference
has contribution
has book edition
has book edition
has conference
has conference series
Book
0.5M
1.5K
Conference Series
has book
has book series
Book Chapter
4.1M
Book Series
6.1K
0.3M
Grant
is funded publication of
has funded publication
Article
9.0M
has organization
has subject
has product market code
has subject
has funding organization
has field-of-research code
has field-of-research code
has article-type
has product market code
LOD
Taxonomies
Organization
46K
FieldOfResearchCode
??K
ArticleType
0.5K
ProductMarketCode
1.4K
Subject
??K
TechnicalArticleType
19
dbr:
foaf:
skos:Concept
DBPEDIA
GRID
ANZSRC-FOR
closeMatch
ATYPE
PMC
SUBJECT
TECH-ATYPE

SN SciGraph

Metrics – measuring all outputs
(but let's start with books…)

ALPSP Awards for Innovation in Publishing 2015 FINALIST
Sponsored by PUBLISHING TECHNOLOGY



Let’s start with a couple of questions…

- Who has authored a (scholarly) book or chapters?
- …and knows how many citations, downloads and altmetrics it has?
- …and did it count in your university assessment / funder evaluation?

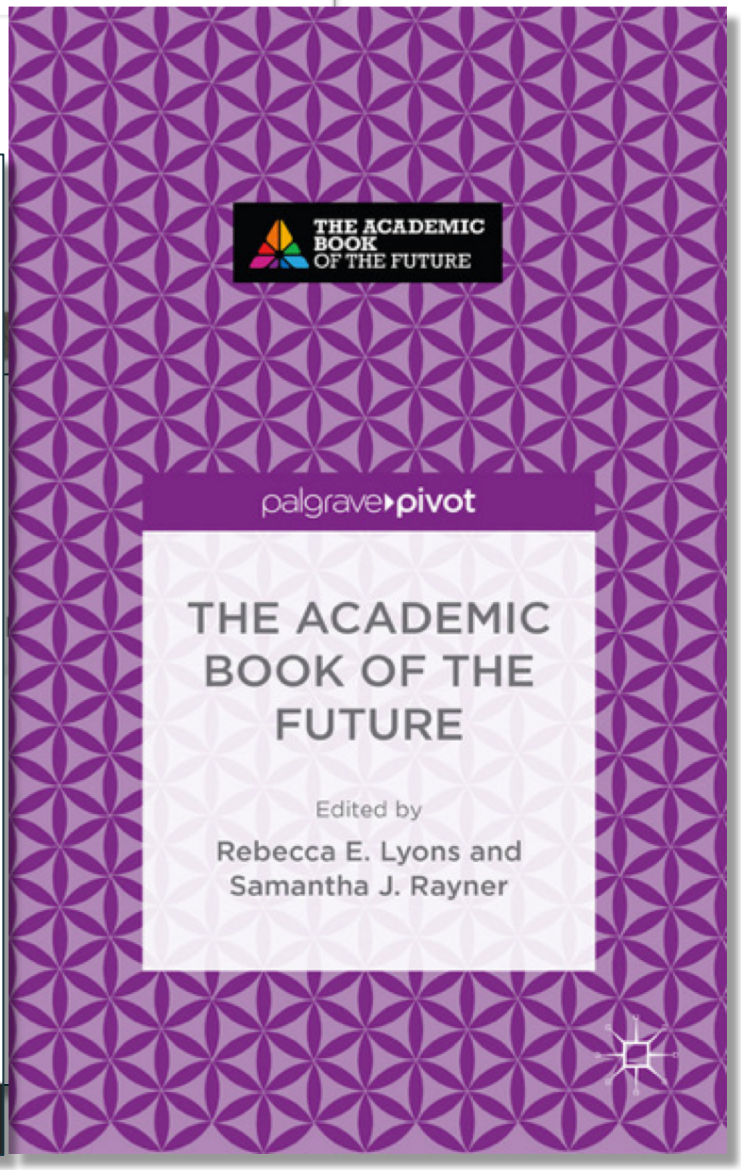
- Who is involved in researcher assessments / evaluations?
- …and included books/chapter in this, to a similar extend as journal articles?

- Who is involved in purchasing decisions for e-book collections?
- …and knows the reach & impact of the purchases?

Frankfurter Allgemeine
Feuilleton

Frankfurt am Main 17°

UMSÄTZE BRECHEN EIN



These 2017 books made an impact.
In 2017.

Top cited books

Top mentioned books

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http://www.springersource.com/the-top-books-published-in-2017/

Our books are very much alive and used

31% of our 2017 books have been cited once or more in 2017

47.5% of our 2017 books have been mentioned online once or more in 2017

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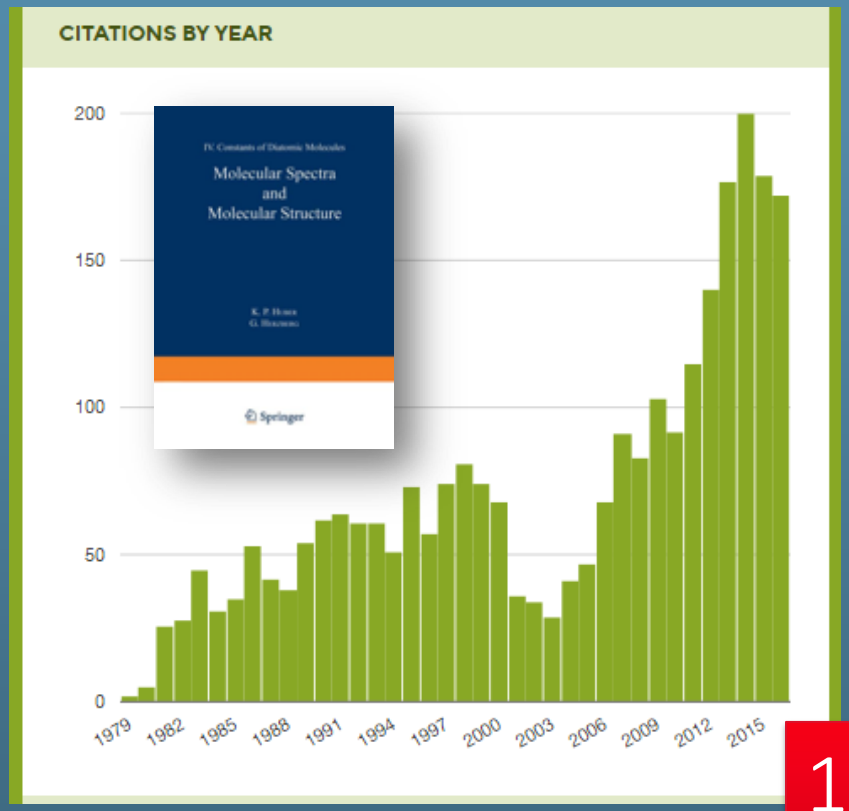
http://www.springernature.com/gp/open-research/journals-books/books/the-oa-effect

Traditional citation databases underestimate the impact of books



Crossref

On average **20 citations** per book

Cited half life **20 - 30 years**

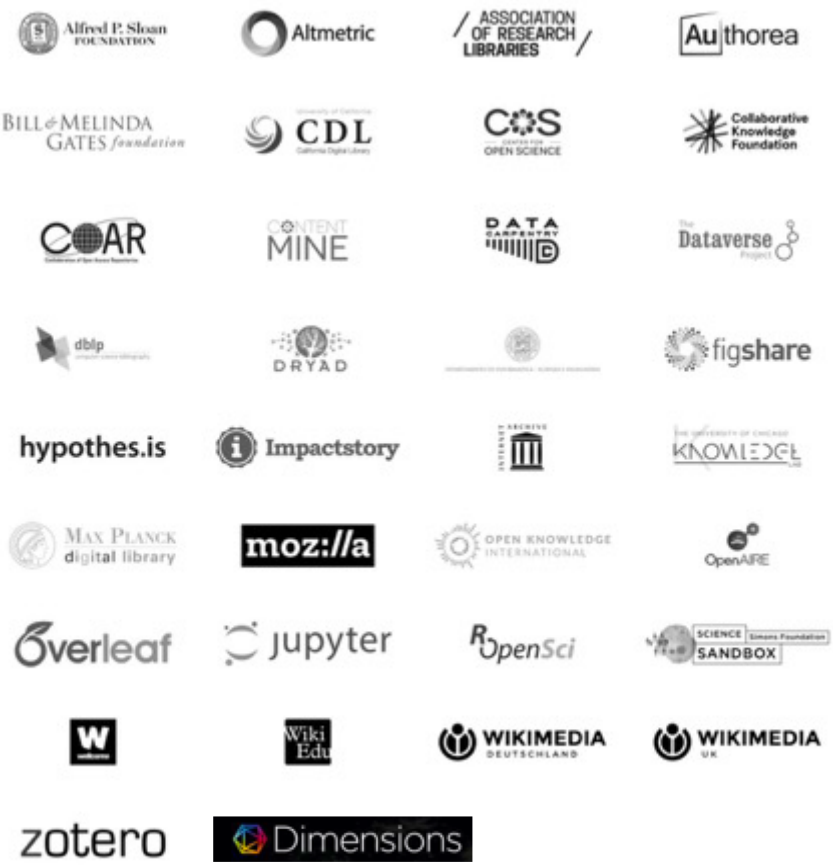
10.81 citations per article

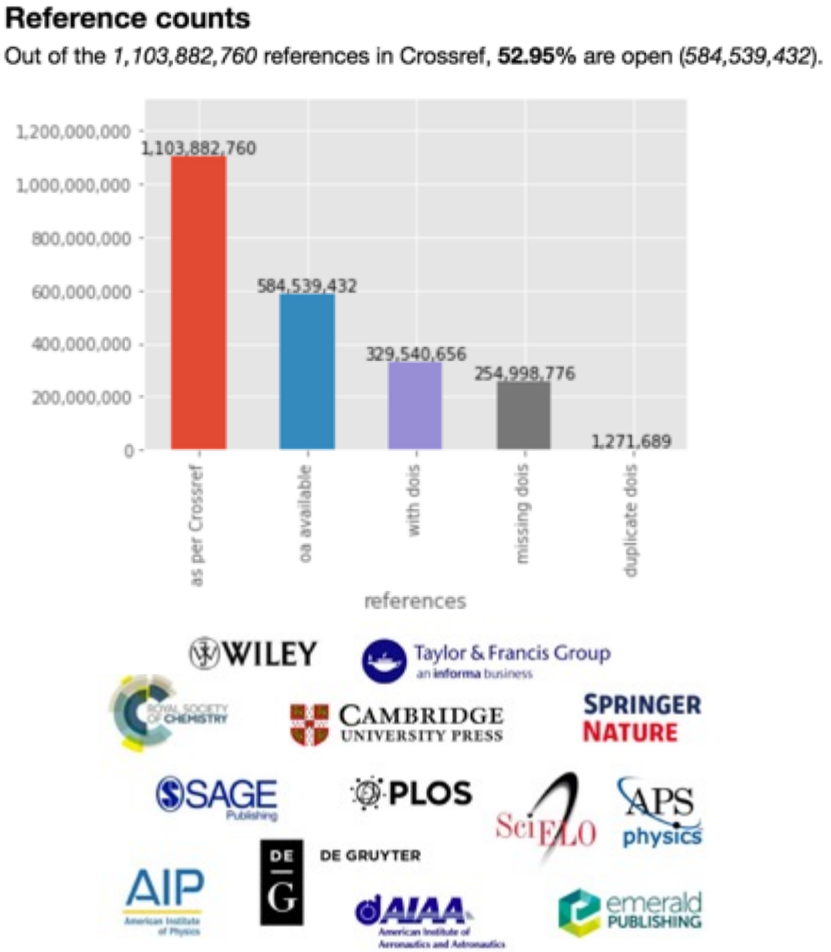
Source: Thomson Reuters' Essential Science Indicators database, 2000 - 2010

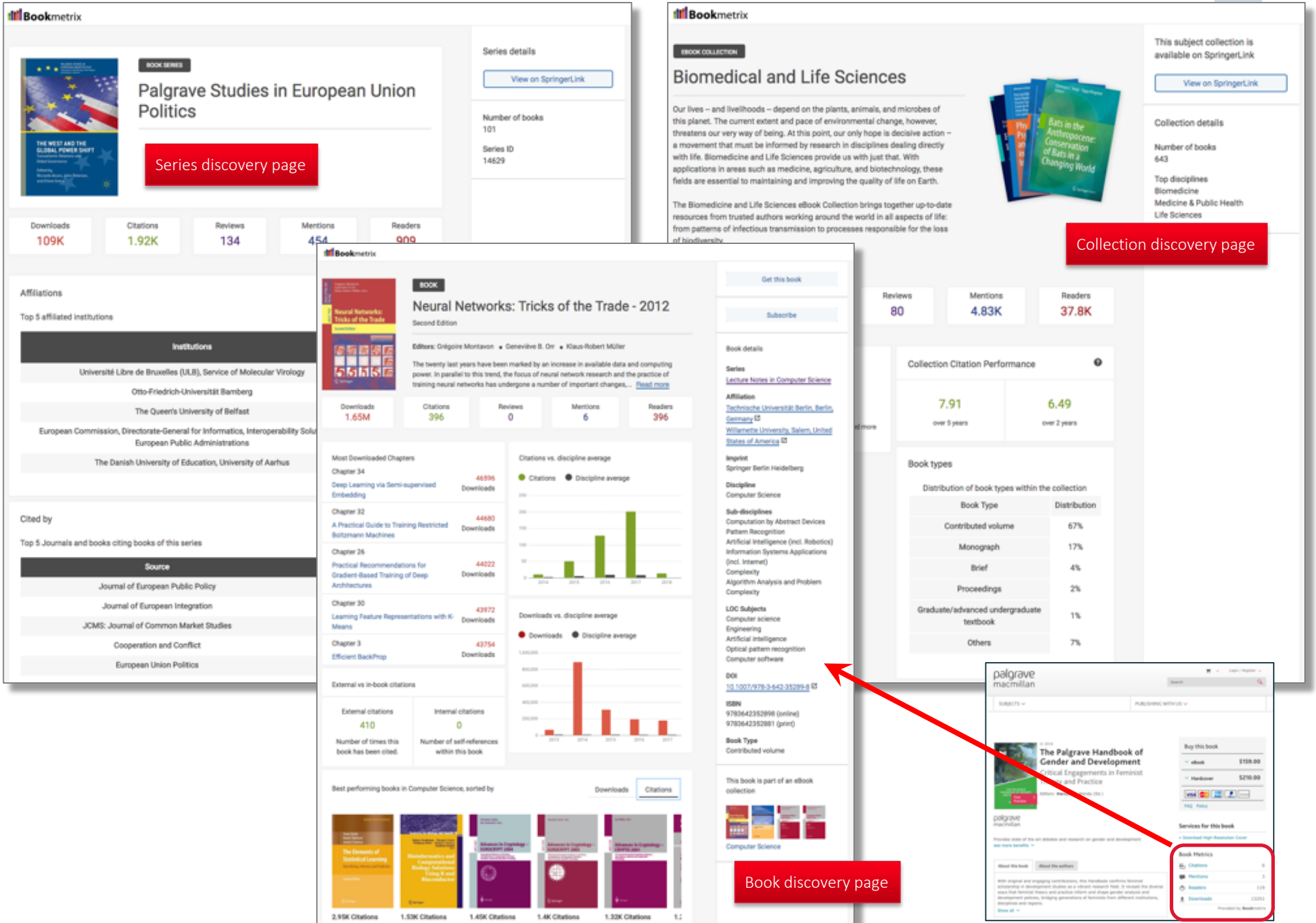
N= 107,313 English language titles, citation data from CrossRef

Initiative for Open Citations – I4OC

The Initiative for Open Citations is a collaboration between scholarly publishers, researchers, and other interested parties to promote the unrestricted availability of scholarly citation data.



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Collection Citation Performance *(CCP)*

The total number of citations in 2016 to books published in 2014 and 2015 in a eBook collection

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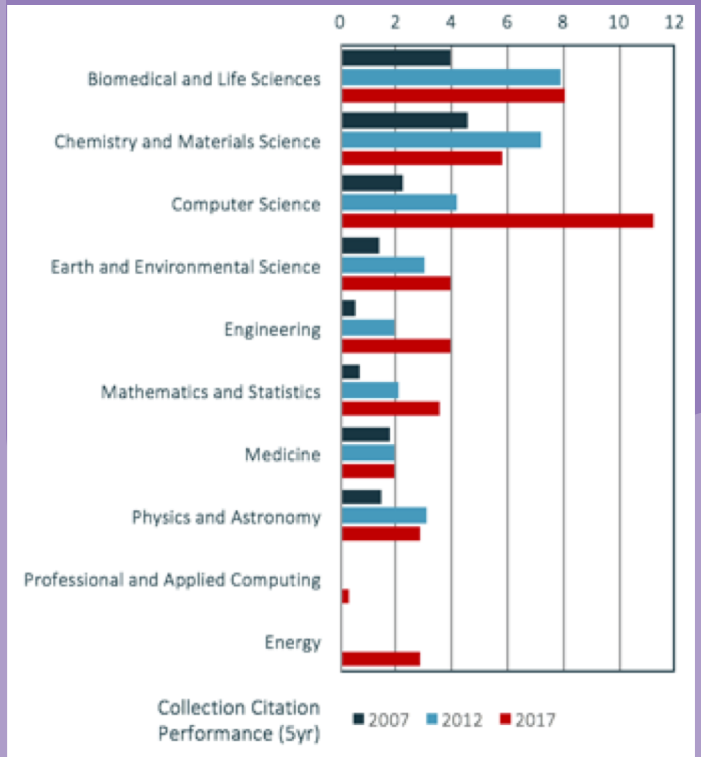
The total number of books published in the same eBook collection in 2014 and 2015



Responsible sharing

"We advance discovery not by working in isolation and recreating solutions found elsewhere, but by collaborating with partners, harnessing what they do best and coupling it with our best-in-class services, solutions and products."

- Steven Inchcoombe, Chief Publishing Officer

SPRINGER NATURE

ResearchGate

#scishare

STARTING POINT: THE PROBLEM WE SOUGHT TO SOLVE

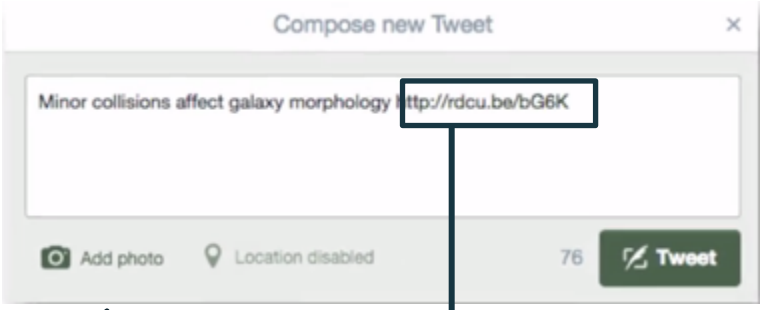
Scientists have always shared their work … helping them do so is central to *Nature*'s mission

Nature has a duty to readers and authors to facilitate sharing that benefits research and is commercially viable

- Tools are sub-optimal (Dropbox; I can haz PDF)
- It's a black box: for publishers/libraries
- It creates conflict: take-down notices = reputational damage

Users with access rights share with colleagues and collaborators

With the content sharing function ...



Just by attaching share URLs to email or social media, anyone can access

readcube

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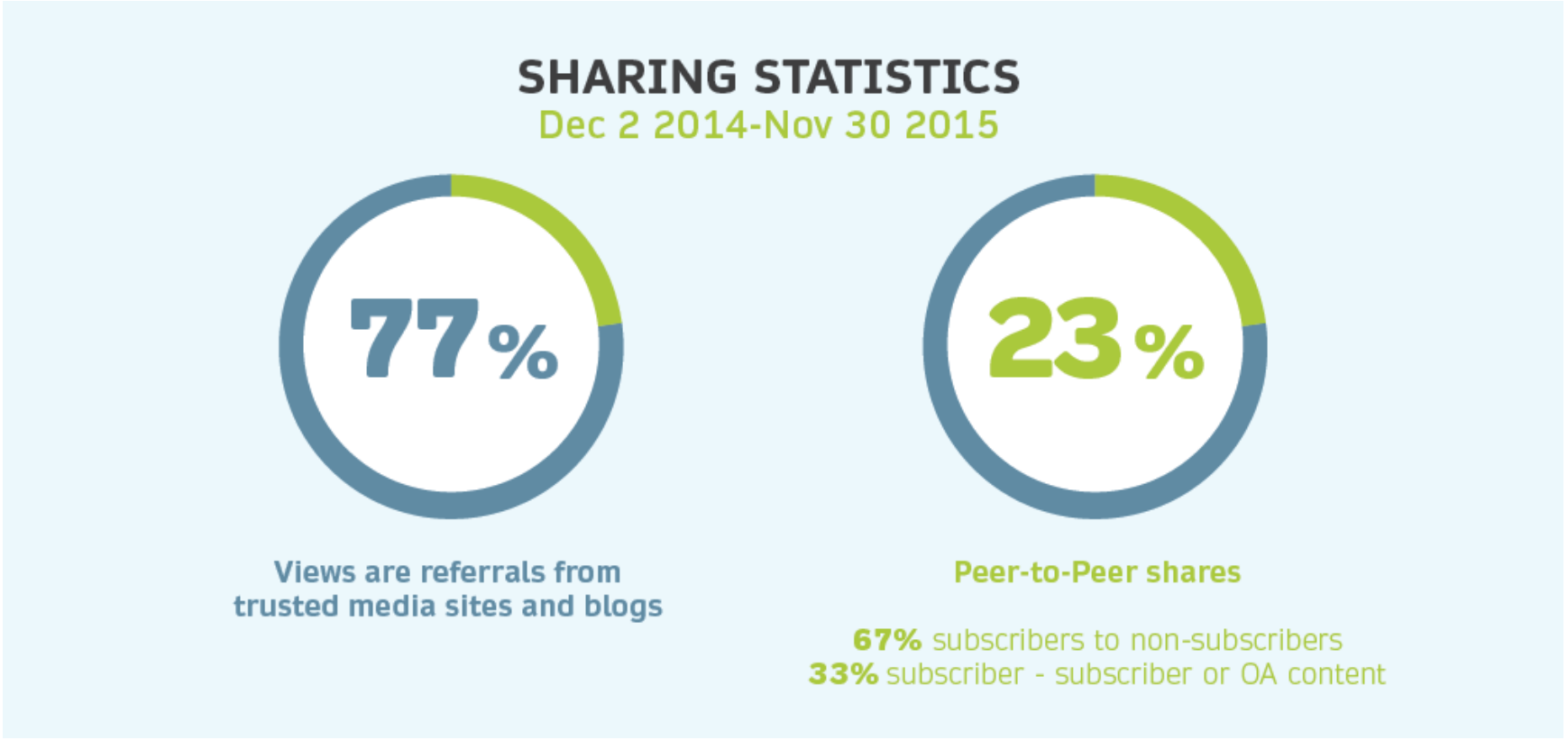
Sharing Statistics – *Dec 2 2014 - Nov 30 2015*



- About 815K ‘shared views’ during period
- Most (~630K) views are referrals from whitelist media sites
- Of ~184K Peer-to-Peer shares:
  - 67% (123K) subscribers to non-subscribers
  - 33% (61K) subscriber- subscriber or OA content

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Sharing Activity - Top Five

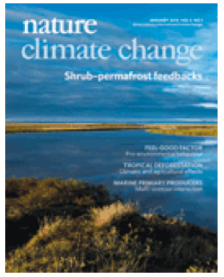
BBC The New York Times theguardian Science The Washington Post

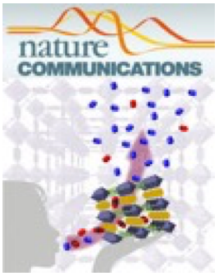
TOP TEN COUNTRIES

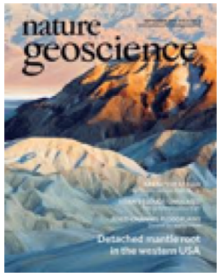
Sharing articles

Receiving articles

#scishare







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SN SharedIt

10/17/16

We've SharedIt! Springer Nature completes integration of its content sharing initiative across its entire owned portfolio of over 1,300 journals

ALPSP Awards for Innovation in Publishing 2017
FINALIST
Sponsored by MPS

London, 17 October 2016

SN SharedIt – one year later....

Springer Nature continues to advance sharing

Over 3.25 million articles accessed in SharedIt's first year

London | Berlin, 27 November 2017

Articles have been successfully shared by authors, subscribers and media outlets over 3.25 million times during the first year of SharedIt, Springer Nature's free content sharing initiative.

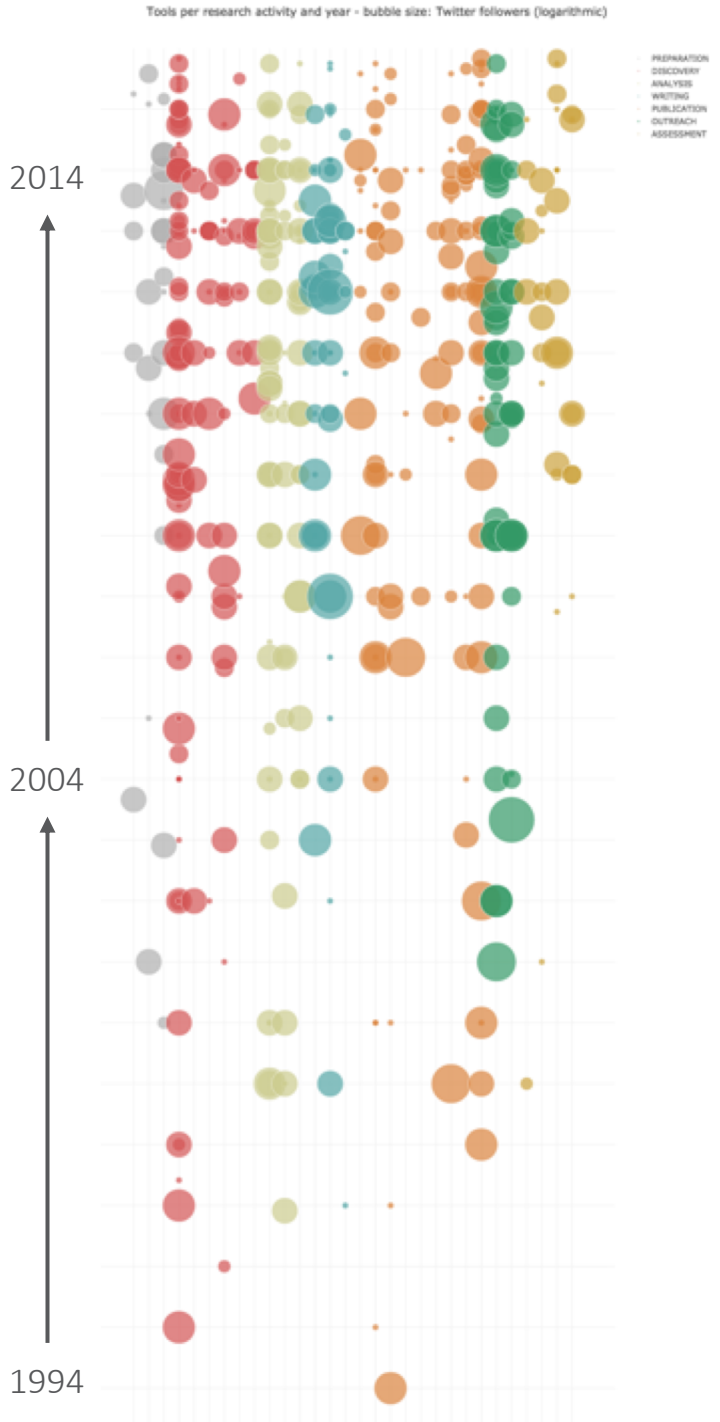
SharedIt was launched in October 2016 and covers over 2,700 journals including all the Springer Nature-owned portfolio and over 1,000 co-owned and partner-owned journals. This industry-leading initiative enables authors and subscribers to post links to free-to-read versions of research articles anywhere, including social media platforms, repositories, websites, scholarly collaboration networks and via email.

Clicks from Nature Research author shares	Clicks from Nature Research subscriber shares	Clicks from Nature Research media shares	Clicks from Springer author shares	Clicks from Springer subscriber shares	Clicks from Springer media shares
297,021	955,519	883,849	853,807	284,583	1,346

Tech takes over – if you can't beat them, join them

https://meetthealchemist.blogspot.de/2016/09/will-technology-take-over-your-job.html

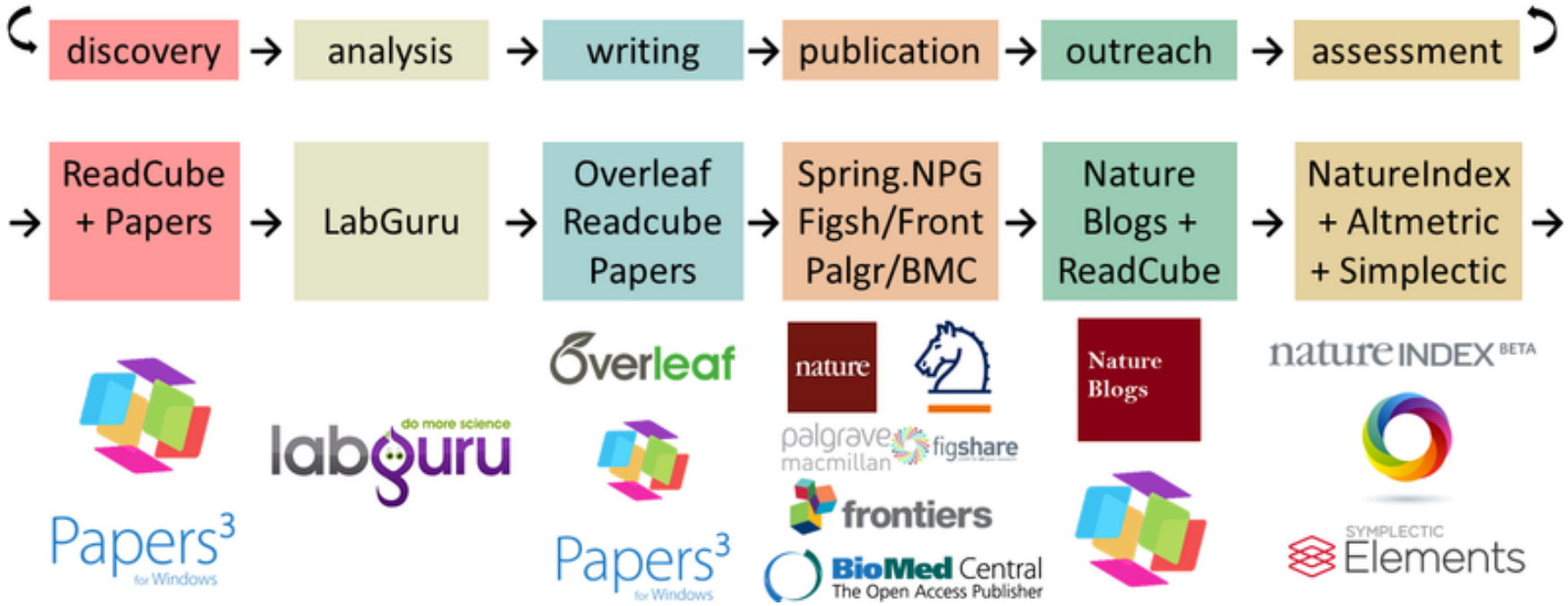
Avalanche of workflow tools



https://innoscholcomm.silk.co/
https://doi.org/10.6084/m9.figshare.5065534

Wide variety of publishing workflows

Traditional Nature / Digital Science



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EN

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Pioneering Innovation

Partnering with upcoming talent to spearhead new ideas

We work with Launchpad Meetups, an event format set up by StartupAmsterdam and The Next Web.

StartupAmsterdam are at the centre of the European startup and tech ecosystem, providing a platform for corporates like us to connect with upcoming startup talent. By pitching ideas against a current innovation challenge, startups are given the opportunity to achieve the goals they always dreamed of.

Martijn Roelandse
Head of Publishing Innovation
martijn.roelandse@springer.com

Join our next Launchpad Meetup on May 24, 2018

Our challenge:

How can we help researchers get more from their experimental research data, through faster, easier routes of discovery, organization or sharing of data?

http://www.launchpadmeetups.com/meetups/springer-nature-1

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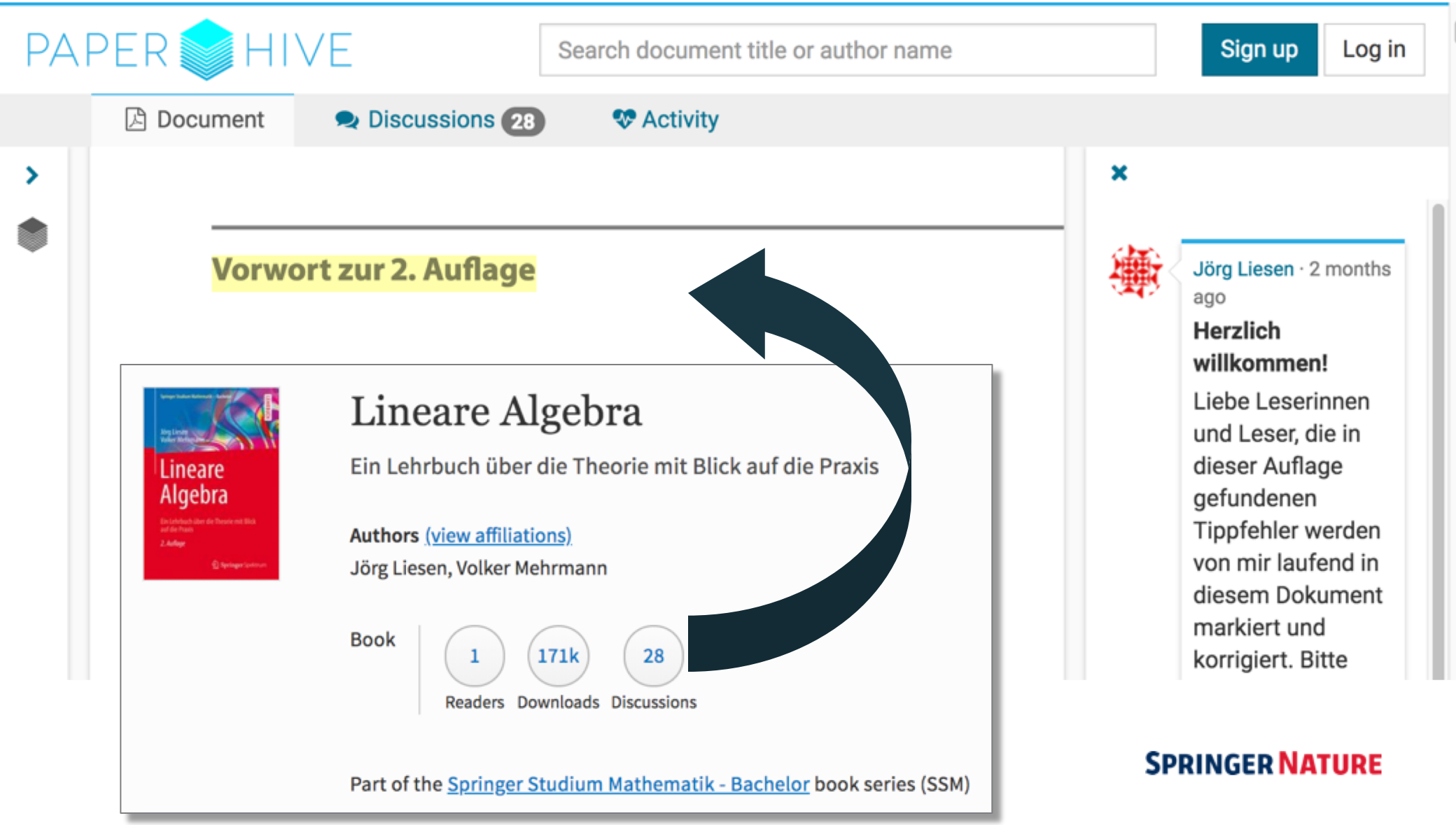
Making high-quality academic literature stand out

In-document discussions & rich-media annotations



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Can Blockchain help solve trust issues?

Peer review crisis: transparency & recognition

1. Difficulty identifying suitable and available reviewers
2. Lack of reviewer recognition
3. Fraud and manipulation
4. Overall lack of transparency & trust in the process

The Crisis Of Peer Review

Geoffrey Kabat, CONTRIBUTOR

FULL BIO

Opinions expressed by Forbes Contributors are their own.

"If peer review were a drug, it would never get on the market."

are published each year in the
he number of papers published
"peer-review" journal is a
in one's career as a scientist,
dge, quantity (i.e., number of
metric.

Peer review is in crisis, but should be fixed, not abolished

November 15, 2016 2.54am GMT

More is less in the world of research publications. Desktop image via www.shutterstock.com.

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The solution

Towards a fairer and more transparent peer review ecosystem

Review activities across publishers stored on a safe and neutral place, fully complying to demands around confidentiality and privacy. With this:

- ✓ The process can be **independently verified**
- ✓ Information can be used to build **better reviewer finding tools**, and **fraudulent reviewers can be flagged**
- ✓ Reviewers could be **properly recognized** for their work
- ✓ **Trust in the process** (and publishers in general) could be increased?

Blockchain for Peer Review

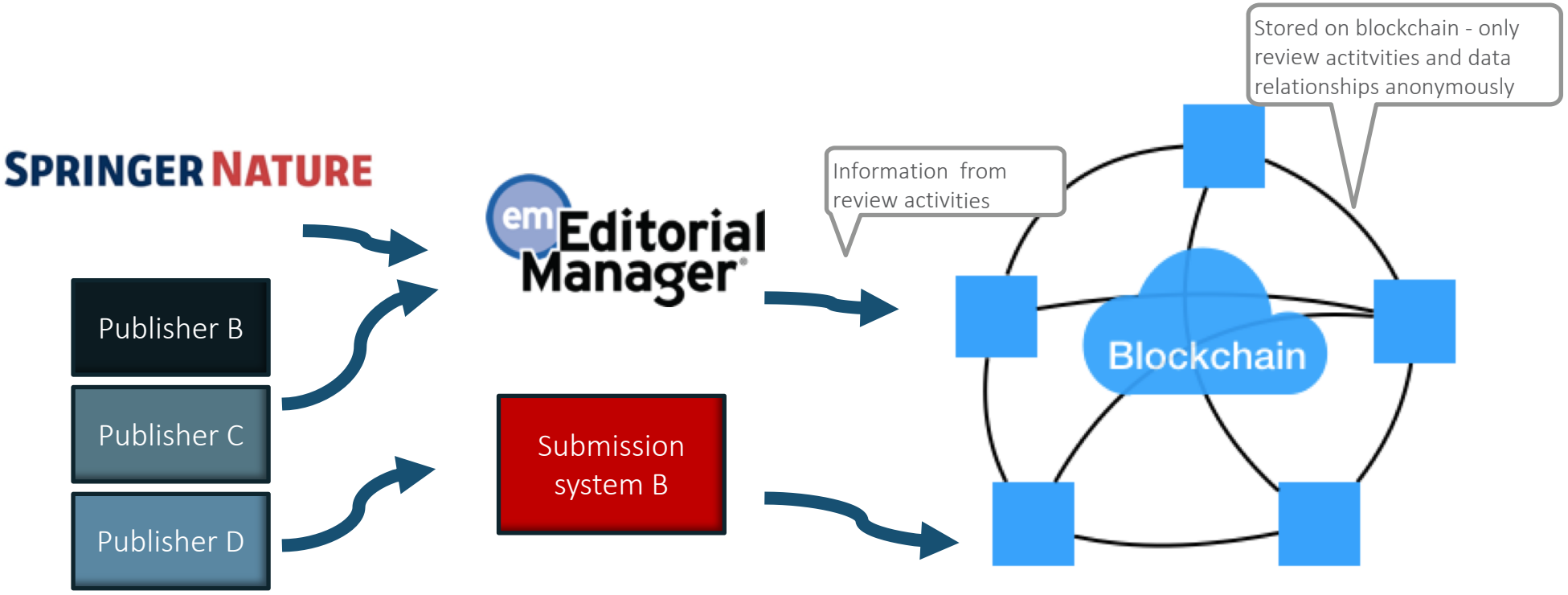
https://www.blockchainpeerreview.org/

The Blockchain can achieve that

- **Decentralized**: no single (commercial) owner or governance
- **Distributed**: everyone can host a copy of the data store
- **Transparent but pseudonymous**: Encryption can obfuscate identities and information where needed

Blockchain for Peer Review

The review blockchain architecture: input



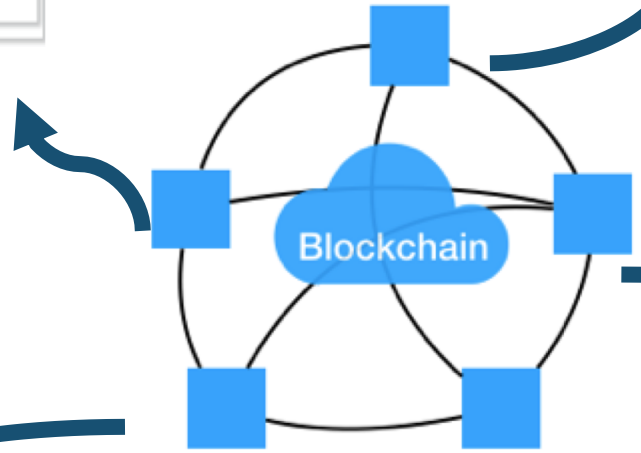
Information on review activities is fed from publishers, via submission systems, to the blockchain

Blockchain for Peer Review

The review blockchain architecture: output

Validated information can be sent to platforms recognizing reviewer work, such as researcher profile pages on ORCID.

Review activity on journals and article level can be independently verified, giving stamp of quality to legitimate scientific content



Publishers, reviewers, editors have access to their part of the content

With information stored on blockchain, sophisticated tools can be built to find and validate reviewers across publishers. Fraudulent reviewers can be flagged.

Blockchain for Peer Review

Thank you!

Dr. Martijn Roelandse

Head of Publishing Innovation

martijn.roelandse@springernature.com / @mathein

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