Open Science

in wissenschaftlichen Einrichtungen

GEWISS Dialogforen Citizen Science | Hamburg, 04.05.2015

Heinz Pampel | Helmholtz-Gemeinschaft, Helmholtz Open Science Koordinationsbüro

HELMHOLTZ GEMEINSCHAFT

Open Science

AGENDA

- Definition und Beispiele
- Handlungsfelder
- Fokus: Open Research Data
- Herausforderungen

UNSERE MISSION

- Forschung zur **Lösung wichtiger Zukunftsfragen** von Gesellschaft, Wissenschaft und Wirtschaft – strategisch und langfristig orientiert

- Bau und Betrieb großer **Forschungsinfrastrukturen** („think big, act big“)

- Erkenntnisse zum **Nutzen** von Gesellschaft und Wirtschaft umsetzen

VON OPEN ACCESS ZU OPEN SCIENCE

Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2013). Online:http://openaccess.mpg.de/Berliner-Erklaerung

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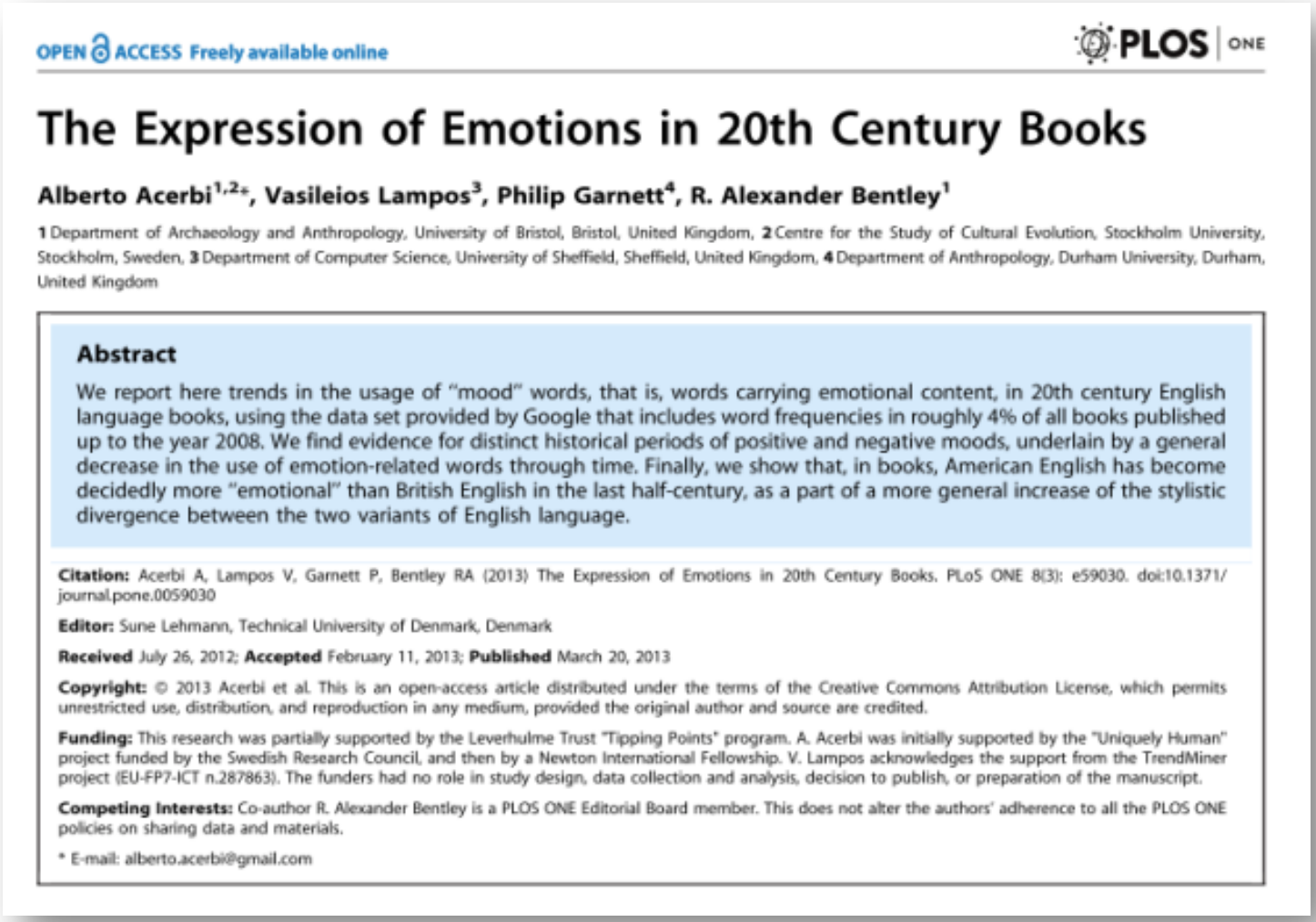
DIGITALE WISSENSCHAFT



OPEN ACCESS Freely available online

PLOS ONE

The Expression of Emotions in 20th Century Books

Alberto Acerbi[1,2*], Vasileios Lampos[3], Philip Garnett[4], R. Alexander Bentley[1]

1 Department of Archaeology and Anthropology, University of Bristol, Bristol, United Kingdom, **2** Centre for the Study of Cultural Evolution, Stockholm University, Stockholm, Sweden, **3** Department of Computer Science, University of Sheffield, Sheffield, United Kingdom, **4** Department of Anthropology, Durham University, Durham, United Kingdom

Abstract

We report here trends in the usage of "mood" words, that is, words carrying emotional content, in 20th century English language books, using the data set provided by Google that includes word frequencies in roughly 4% of all books published up to the year 2008. We find evidence for distinct historical periods of positive and negative moods, underlain by a general decrease in the use of emotion-related words through time. Finally, we show that, in books, American English has become decidedly more "emotional" than British English in the last half-century, as a part of a more general increase of the stylistic divergence between the two variants of English language.

Citation: Acerbi A, Lampos V, Garnett P, Bentley RA (2013) The Expression of Emotions in 20th Century Books. PLoS ONE 8(3): e59030. doi:10.1371/journal.pone.0059030

Editor: Sune Lehmann, Technical University of Denmark, Denmark

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Competing Interests: Co-author R. Alexander Bentley is a PLOS ONE Editorial Board member. This does not alter the authors' adherence to all the PLOS ONE policies on sharing data and materials.

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Acerbi, A., Lampos, V., Garnett, P., & Bentley, R. A. (2013). The Expression of Emotions in 20th Century Books. (S. Lehmann, Ed.)PLoS ONE, 8(3), e59030. doi:10.1371/journal.pone.0059030

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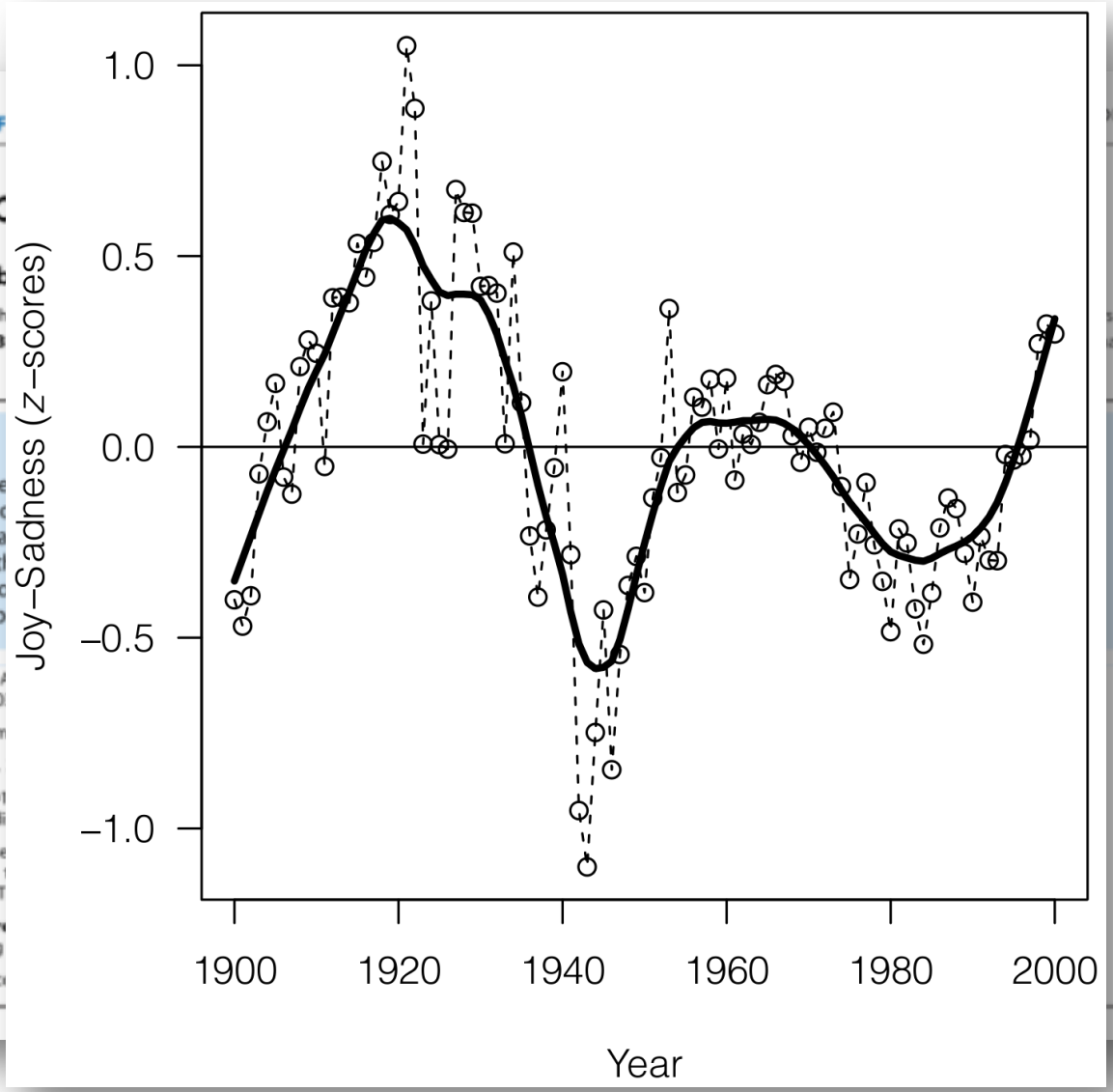

Acerbi, A., Lampos, V., Garnett, P., & Bentley, R. A. (2013). The Expression of Emotions in 20th Century Books. (S. Lehmann, Ed.)PLoS ONE, 8(3), e59030. doi:10.1371/journal.pone.0059030

DIGITALE WISSENSCHAFT

ScienceExpress | Reports

Tracking Individuals Shows Spatial Fidelity Is a Key Regulator of Ant Social Organization

Danielle P. Mersch,[1]* Alessandro Crespi,[2] Laurent Keller[1]*

[1]Department of Ecology and Evolution, University of Lausanne, Switzerland. [2]Biorobotics Laboratory, Ecole Polytechnique Fédérale de Lausanne, Switzerland.

*Corresponding author. E-mail: Danielle.Mersch@unil.ch (D.P.M.); Laurent.Keller@unil.ch (L.K.)

Ants live in organized societies with a marked division of labor among workers, but little is known about how this is generated. We use a tracking system to continuously monitor individually-tagged workers in six colonies of the ant *Camponotus fellah* over 41 days. Network analyses of over 9 million interactions revealed three distinct groups that differ in behavioral repertoires. Each group represents a functional behavioral unit with workers moving from one group to the next as they age. The rate of interactions was much higher within than between groups. The precise information on spatial and temporal distribution of all individuals permitted calculation of the expected rates of within- and between-group interactions. These values suggest that the network of interaction within colonies is primarily mediated by age-induced changes in the spatial location of workers.

Ant colonies have long fascinated human beings with their complex and

(fig. S1). The position and orientation of all individuals were recorded twice per second to reconstruct spatial movement and infer all social interactions occurring over the 41 days of the experiment. A pair of ants was considered to interact when the front end of one ant was located within the trapezoidal shape representing the other ant (12) (fig. S4). The data set obtained consisted of a total of 2,433,250,580 ant positions and 9,363,100 social interactions (movies S2 and S3).

We used this data set to first investigate whether workers organize themselves into cohesive social groups by using the Infomap community detection algorithm (13). To facilitate data analysis, we split the 41 experimental days into four periods of 11, 10, 10 and 10 days. In each of these periods we identified pairs of interacting ants. Analyses on the daily interaction networks of the first 11 days (supplementary text) revealed two robust groups to which the same set of workers was affiliated on almost all days. The first group always comprised the queen and 41 ± 12% (percentage ± SD across the six colonies, Fig. 1A) of the workers, while the

second group represented 31 ± 11% of the colony's workforce. Depend-

www.sciencemag.org on May 21, 2013

Mersch, D. P., Crespi, A., & Keller, L. (2013). Tracking Individuals Shows Spatial Fidelity Is a Key Regulator of Ant Social Organization. Science, 9(10), 735–48. doi:10.1126/science.1234316 Supplementary data: http://dx.doi.org/10.5061/dryad.8d8h7 Supplementary video: http://youtu.be/UbRRS-eDL0o

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Credit: Alessandro Crespi, http://cdn.physorg.com/newman/gfx/news/hires/2013/mersch2hr.jpg

Mersch, D. P., Crespi, A., & Keller, L. (2013). Tracking Individuals Shows Spatial Fidelity Is a Key Regulator of Ant Social Organization. Science, 9(10), 735–48. doi:10.1126/science.1234316 Supplementary data: http://dx.doi.org/10.5061/dryad.8d8h7 Supplementary video: http://youtu.be/UbRRS-eDL0o

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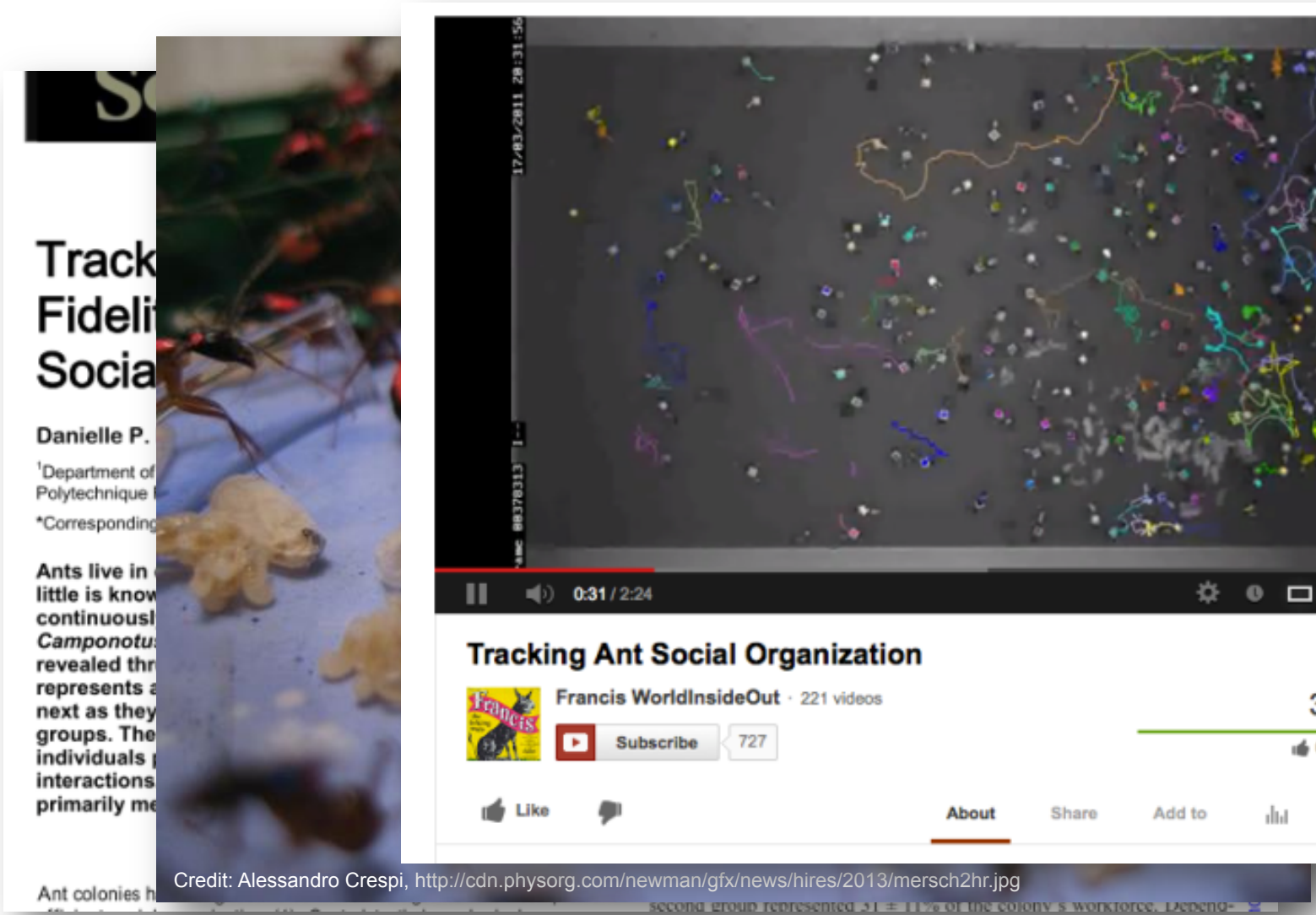

Credit: Alessandro Crespi, http://cdn.physorg.com/newman/gfx/news/hires/2013/mersch2hr.jpg

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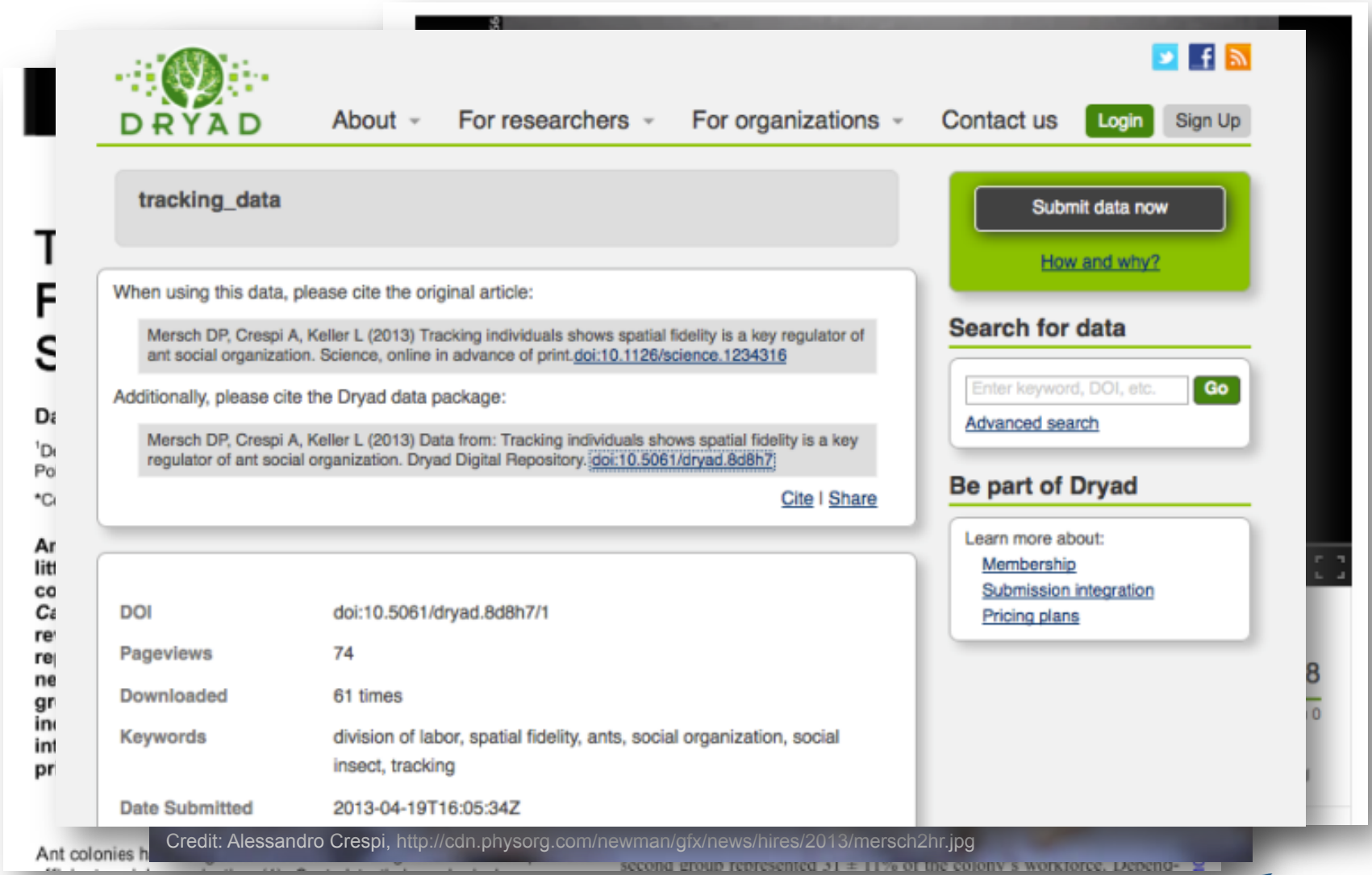

Credit: Alessandro Crespi, http://cdn.physorg.com/newman/gfx/news/hires/2013/mersch2hr.jpg

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OPEN SCIENCE

- Selbstverständnis des AK Open Science der Helmholtz-Gemeinschaft:

Der Begriff Open Science bezeichnet einen kulturellen Wandel in der wissenschaftlichen Arbeitsweise und Kommunikation. Computergestütztes Arbeiten und die digitale Kommunikation ermöglichen einen effektiveren und offeneren Informationsaustausch innerhalb der Wissenschaft und fördern den Transfer der Ergebnisse in die Gesellschaft.

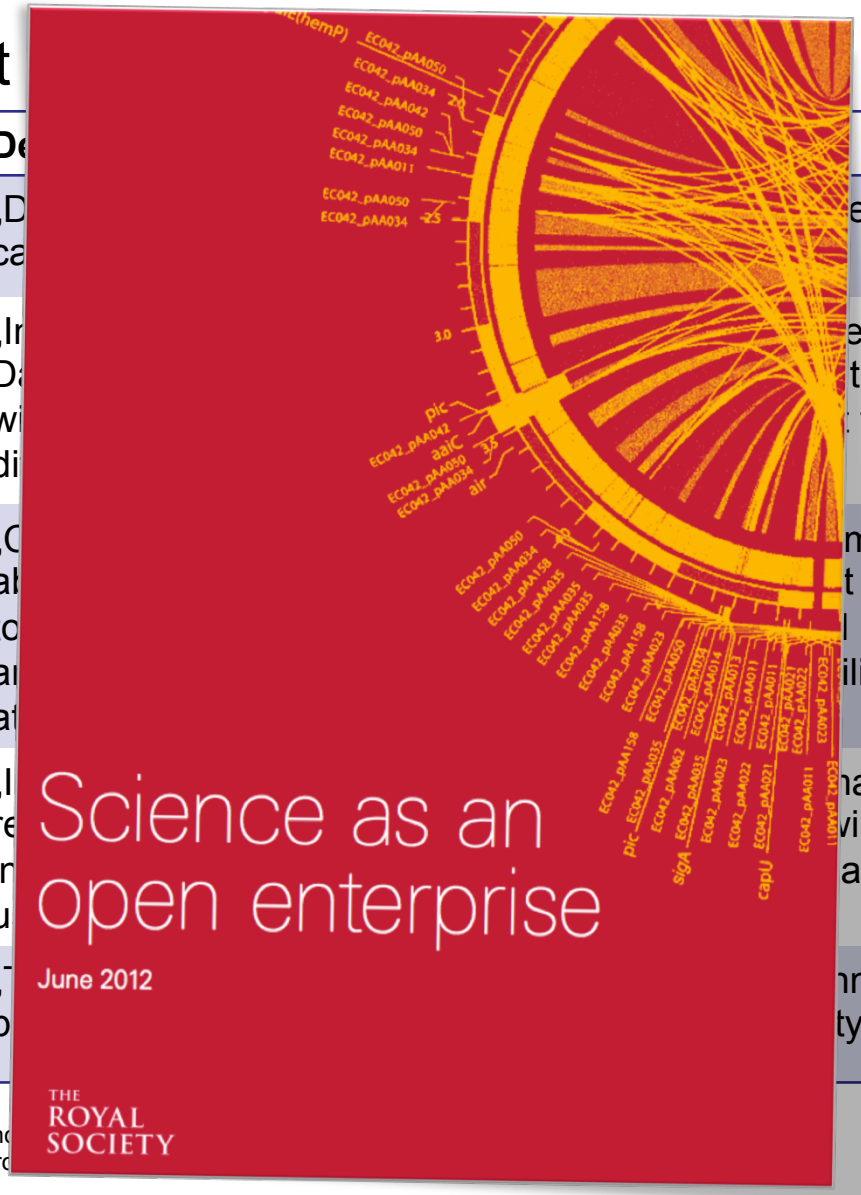
Der offene, d. h. durch möglichst wenige finanzielle, technische und rechtliche Hürden behinderte Zugang zu wissenschaftlichen Ergebnissen wie Publikationen, Forschungsdaten und wissenschaftlicher Software erweitert die Transparenz in der Wissenschaft, verbessert die Verfahren der Qualitätssicherung und erhöht durch eine verbesserte Informationsversorgung die Leistungsfähigkeit der Wissenschaft. Open Science dient somit immer auch der Verbesserung der guten wissenschaftlichen Praxis. Darüber hinaus fördert Open Science den Wissenstransfer in Gesellschaft, Wirtschaft und Politik.

Arbeitskreises Open Science in der Helmholtz-Gemeinschaft (2015): Open Science – Chancen, Herausforderungen und Handlungsfelder. Online: http://oa.helmholtz.de/fileadmin/user_upload/redakteur/Dokumente/helmholtz_open_science_definition_open_science.pdf

OPEN SCIENCE

- „Intelligent

Terms	De	
Accessible *Zugänglichkeit*	„D ca	eadily be found and in a form that
Assessable *Verständlichkeit*	„In D wi di	e data or information's reliability. tific work that is intelligible to those therefore be differentiated for
Intelligible *Bewertbarkeit*	„C ab to ar at	mething. Audiences need to be t is communicated. They will need l be able to judge the competence ility also includes the disclosure of
Useable *Nachnutzbarkeit*	„I re in u	nation. Data should be able to be vill require proper background also depend on those who wish to
Boundaries *Grenzen*	„ p	nmust be maintained in order to ty.“



The Royal Society. (2012). Scienc
Royal_Society_Content/policy/pro

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OPEN SCIENCE

- „Intelligent Openness“

Terms	Definition
Accessible *Zugänglichkeit*	„Data must be located in such a manner that it can readily be found and in a form that can be used.“
Assessable *Verständlichkeit*	„In a state in which judgments can be made as to the data or information’s reliability. Data must provide an account of the results of scientific work that is intelligible to those wishing to understand or scrutinise them. Data must therefore be differentiated for different audiences.“
Intelligible *Bewertbarkeit*	„Comprehensive for those who wish to scrutinise something. Audiences need to be able to make some judgment or assessment of what is communicated. They will need to judge the nature of the claims made. They should be able to judge the competence and reliability of those making the claims. Assessability also includes the disclosure of attendant factors that might influence public trust.“
Useable *Nachnutzbarkeit*	„In a format where others can use the data or information. Data should be able to be reused, often for different purposes, and therefore will require proper background information and metadata. The usability of data will also depend on those who wish to use them.“
Boundaries *Grenzen*	„There are legitimate boundaries of openness whichmust be maintained in order to protect commercialvalue, privacy, safety and security.“

The Royal Society. (2012). Science as an open enterprise. Online: http://royalsociety.org/uploadedFiles/Royal_Society_Content/policy/projects/sape/2012-06-20-SAOE.pdf

HANDLUNGSFELDER

- Open Access – Zugang und Nachnutzung zu textuellen Publikationen
- Open Research Data – Zugang und Nachnutzung zu Forschungsdaten
- Open Research Software – Zugang und Nachnutzung zu wissenschaftlicher Software
- Nationale und internationale Vernetzung zum Thema Open Science

Arbeitskreises Open Science in der Helmholtz-Gemeinschaft (2015): Open Science – Chancen, Herausforderungen und Handlungsfelder. Online: http://oa.helmholtz.de/fileadmin/user_upload/redakteur/Dokumente/helmholtz_open_science_definition_open_science.pdf

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WISSENSCHAFTSPOLITISCHER RAHMEN

- DFG: „Vorschläge zur Sicherung guter wissenschaftlicher Praxis“, 1997
- Allianz: „Berliner Erklärung über offenen Zugang zu wissenschaftlichem Wissen“, 2003
- OECD: „Principles and Guidelines for Access to Research Data from Public Funding“, 2007
- EC-Report: „Riding the Wave“, 2010
- Allianz: „Grundsätze zum Umgang mit Forschungsdaten“, 2010
- The Royal Society: „Science as an open enterprise“, 2012
- USA: OSTP Public Access Memo, 2013
- G8: Science Ministers Statement , 2013
- EC: Open Research Data Pilot 2020, 2014-
- Open-Access-Strategie der Bundesregierung, 2014-

WISSENSCHAFTSPOLITISCHER RAHMEN

- DFG: „Vorschläge zur Sicherung guter wissenschaftlicher

> Wir werden eine Strategie für den digitalen Wandel in der Wissenschaft initiieren, z. B. um Zugang und Nutzbarkeit von komplexen Forschungsdaten zu verbessern. Gemeinsam mit den Ländern werden wir einen Rat für Informationsinfrastrukturen gründen, in dem sich die Akteure des Wissenschaftssystems über die Erarbeitung disziplinen- und institutionenübergreifender Strategien und Standards verständigen. Zudem wollen wir virtuelle Forschungsumgebungen stärken, die es Forscherinnen

10

- Open-Access-Strategie der Bundesregierung, 2014-

Deutschlands Zukunft gestalten. Koalitionsvertrag zwischen CDU, CSU und SPD. 18. Legislaturperiode. Retrieved from https://www.cdu.de/sites/default/files/media/dokumente/koalitionsvertrag.pdf

RELEVANZ DES THEMAS

- Data Policies von Förderorganisationen
  - Beispiel: DFG

Wenn aus Projektmitteln systematisch Forschungsdaten oder Informationen gewonnen werden, die für die Nachnutzung durch andere Wissenschaftlerinnen und Wissenschaftler geeignet sind, legen Sie bitte dar, ob und auf welche Weise diese für andere zur Verfügung gestellt werden. Bitte berücksichtigen Sie dabei auch - sofern vorhanden - die in Ihrer Fachdisziplin existierenden Standards und die Angebote existierender Datenrepositorien oder Archive.

DFG. (2014). Leitfaden für die Antragstellung - Projektanträge [06/14]. Retrieved from http://www.dfg.de/formulare/54_01/54_01_de.pdf

RELEVANZ DES THEMAS

- Data Policies von Förderorganisationen
  - Beispiel: European Commisson

29.3 Open access to research data

***[OPTION for actions participating in the open Research Data Pilot**: Regarding the digital research data generated in the action (‘**data**’), the beneficiaries must:*

(a) deposit in a research data repository and take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate — free of charge for any user — the following:

(i) the data, including associated metadata, needed to validate the results presented in scientific publications as soon as possible;

*(ii) other data, including associated metadata, as specified and within the deadlines laid down in the ‘**data management plan**’ (see Annex 1);*

(b) provide information — via the repository — about tools and instruments at the disposal of the beneficiaries and necessary for validating the results (and — where possible — provide the tools and instruments themselves).

European Commisson. (2014). Horizon 2020 Annotated Model Grant Agreements. Version 1.6.2 .Retrieved from http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf

RELEVANZ DES THEMAS

- Data Policies von Journals
  - Beispiel: Nature Publishing Group
    - „[...] authors are required to make materials, data and associated protocols promptly available to readers without undue qualifications.“
  - Beispiel: PLOS
    - „PLOS journals require authors to make all data underlying the findings described in their manuscript fully available without restriction, with rare exception.“

NPG (2013). Availability of data and materials. Retrieved from http://www.nature.com/authors/policies/availability.html
PLOS (2014). PLOS Editorial and Publishing Policies. Retrieved from http://www.plosone.org/static/policies.action

SICHT DER WISSENSCHAFT

- Mangelnde Zugänglichkeit und fehlende Möglichkeiten der Nachnutzung von Forschungsdaten werden bemängelt
- Potenzial offener Forschungsdaten wird betont
- „Data Sharing“ ist jedoch mehrheitlich nicht etabliert
- Vorbehalte
  - „legal issues“
  - „misuse of data“
  - „incompatible data types“
  - „insufficient time“
  - „lack of funding“

Kuipers, T., & Van der Hoeven, J. (2009). Insight into digital preservation of research output in Europe. Survey Report. Retrieved from http://www.parse-insight.eu/downloads/PARSE-Insight_D3-4_SurveyReport_final_hq.pdf

Tenopir, C. et al. (2011). Data Sharing by Scientists: Practices and Perceptions. PLoS ONE, 6(6), e21101. doi:10.1371/journal.pone.0021101

SICHT DER WISSENSCHAFT

- Fehlende Anreize

EDITORIAL

nature biotechnology

Credit where credit is overdue

A universal tagging system that links data sets with the author(s) that generated them is essential to promote data sharing within the proteomics and other research communities.

Science progresses most rapidly when researchers provide access to their data. This is not only good scientific practice. It facilitates

But data quality is only part of the problem in overcoming the community's reticence about disclosure. For many researchers, the software

Nature Biotechnology. (2009). Credit where credit is overdue. Nature Biotechnology, 27(7), 579. doi:10.1038/nbt0709-579

SICHT DER WISSENSCHAFT

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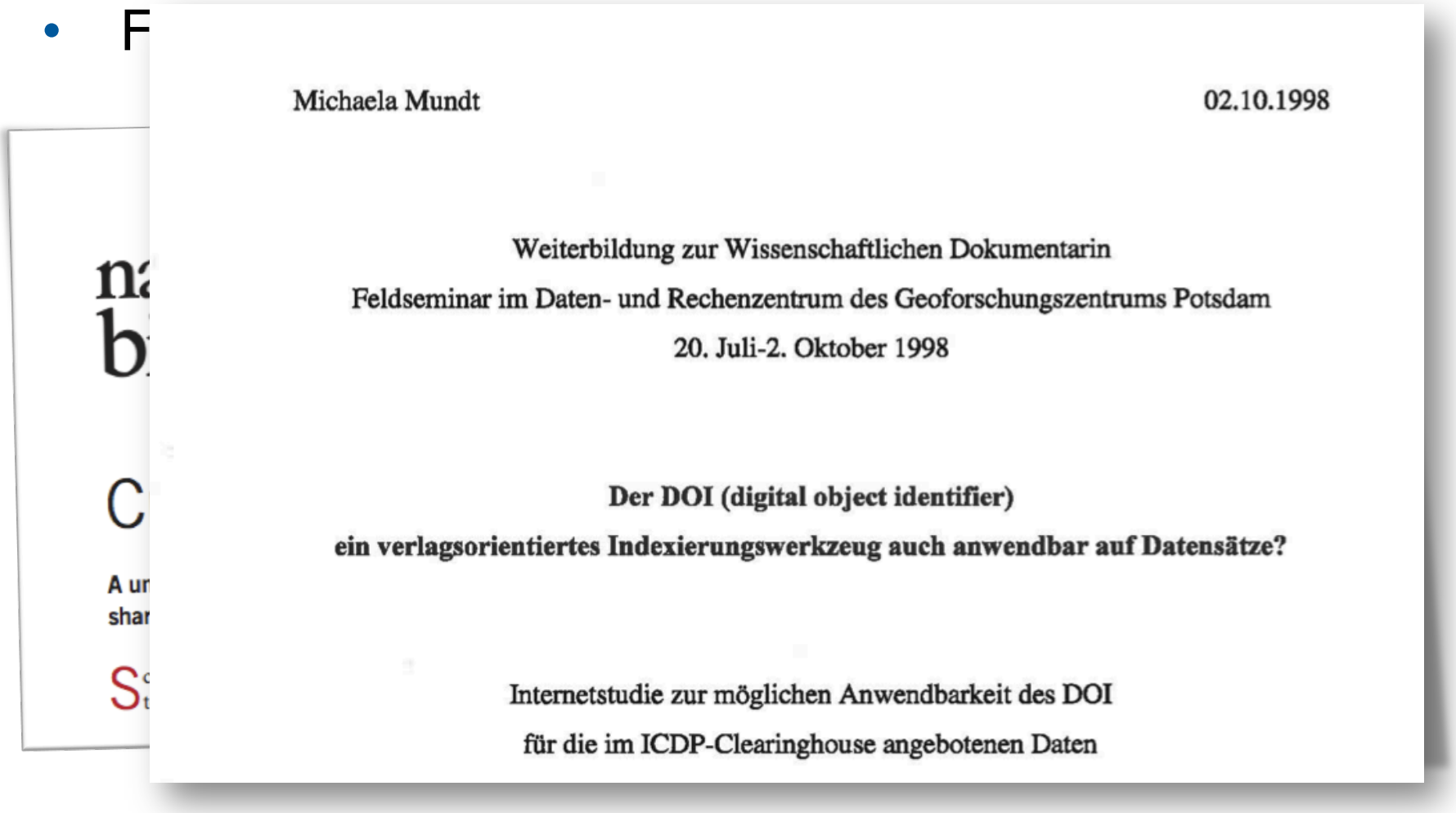


Michaela Mundt 02.10.1998

Weiterbildung zur Wissenschaftlichen Dokumentarin

Feldseminar im Daten- und Rechenzentrum des Geoforschungszentrums Potsdam

20. Juli-2. Oktober 1998

Der DOI (digital object identifier)

ein verlagsorientiertes Indexierungswerkzeug auch anwendbar auf Datensätze?

Internetstudie zur möglichen Anwendbarkeit des DOI

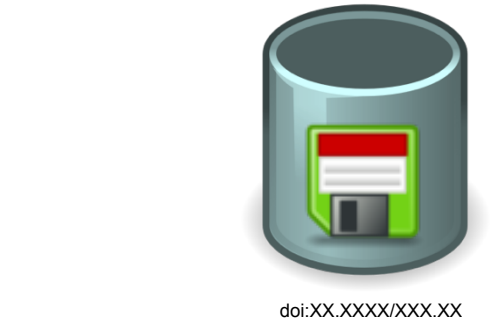
für die im ICDP-Clearinghouse angebotenen Daten

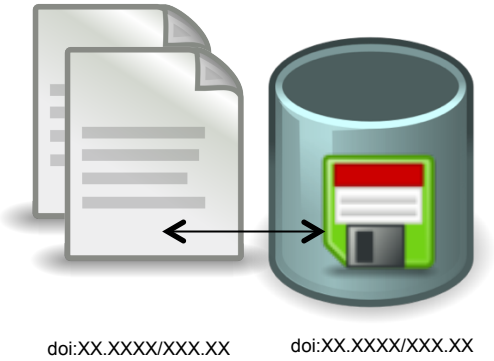
Nature Biotechnology. (2009). Credit where credit is overdue. Nature Biotechnology, 27(7), 579. doi:10.1038/nbt0709-579

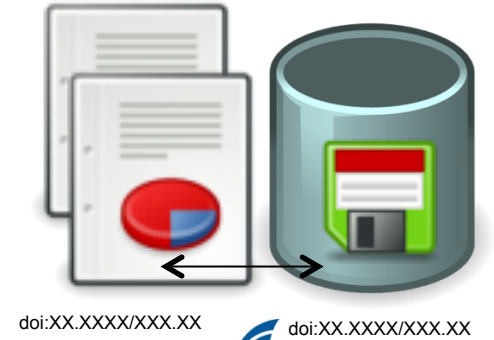
Mundt, M. (1998). Der DOI (digital object identifier) ein verlagsorientiertes Indexierungswerkzeug auch anwendbar auf Datensätze? : Internetstudie zur möglichen Anwendbarkeit des DOI für die im ICDP-Clearinghouse angebotenen Daten. Potsdam. doi:10.2312/GFZ.misc.370184

VERÖFFENTLICHUNGSSTRATEGIEN

- Veröffentlichung der Forschungsdaten als eigenständiges Informationsobjekt in einem Daten-Repositorium
- Veröffentlichung der Forschungsdaten als textuelle Dokumentation im Rahmen eines begutachteten „Data Papers“
- Veröffentlichung der Forschungsdaten als Ergänzung zu einem begutachteten Artikel („enriched publication“)







Pampel, H., & Dallmeier-Tiessen, S. (2014). Open Research Data: From Vision to Practice. In S. Bartling & S. Friesike (Eds.), Opening Science. The Evolving Guide on How the Internet is Changing Research, Collaboration and Scholarly Publishing (pp. 213–224). Heidelberg: Springer. doi:10.1007/978-3-319-00026-8

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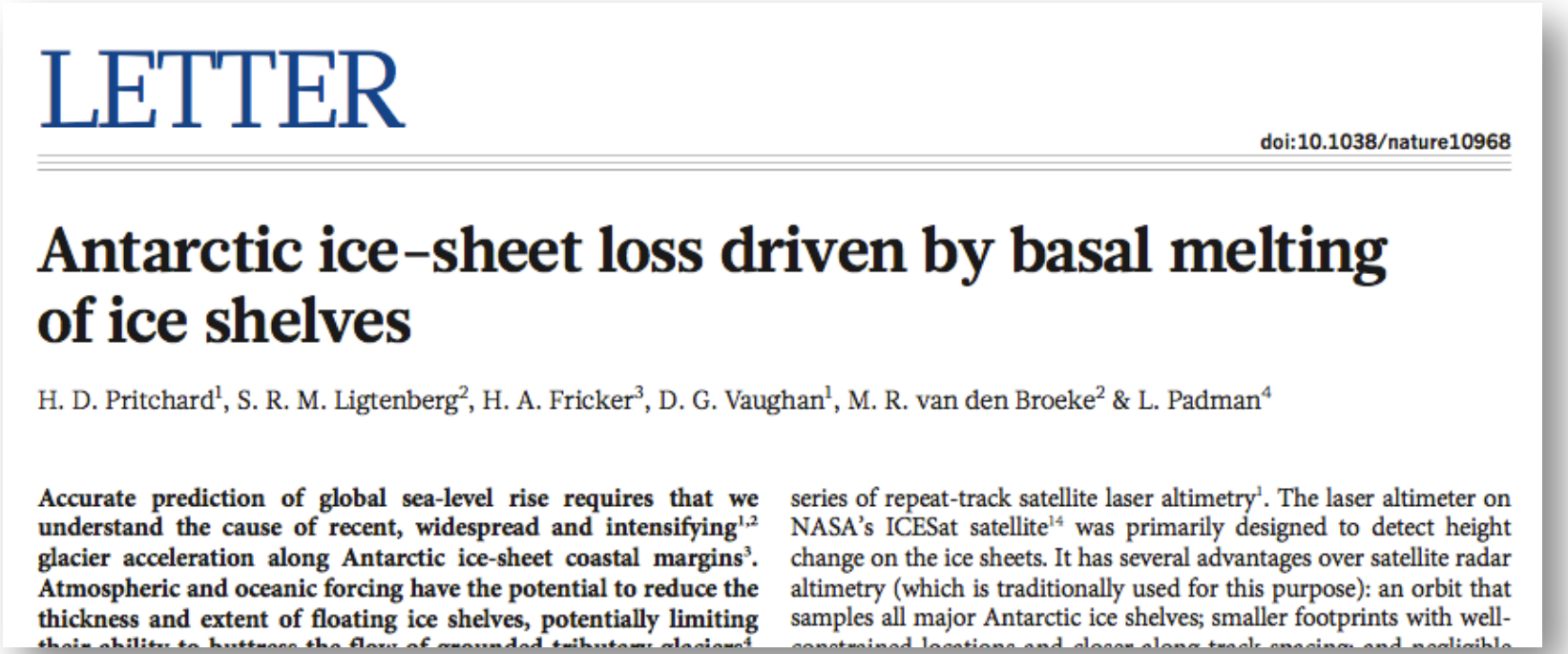
VERÖFFENTLICHUNGSSTRATEGIEN

- Beispiel 1:



LETTER

doi:10.1038/nature10968

Antarctic ice–sheet loss driven by basal melting of ice shelves

H. D. Pritchard[1], S. R. M. Ligtenberg[2], H. A. Fricker[3], D. G. Vaughan[1], M. R. van den Broeke[2] & L. Padman[4]

Accurate prediction of global sea-level rise requires that we understand the cause of recent, widespread and intensifying[1,2] glacier acceleration along Antarctic ice-sheet coastal margins[3]. Atmospheric and oceanic forcing have the potential to reduce the thickness and extent of floating ice shelves, potentially limiting

series of repeat-track satellite laser altimetry[1]. The laser altimeter on NASA's ICESat satellite[14] was primarily designed to detect height change on the ice sheets. It has several advantages over satellite radar altimetry (which is traditionally used for this purpose): an orbit that samples all major Antarctic ice shelves; smaller footprints with well-

Pritchard, H. D., Ligtenberg, S. R. M., Fricker, H. A., Vaughan, D. G., van den Broeke, M. R., & Padman, L. (2012). Antarctic ice-sheet loss driven by basal melting of ice shelves. Nature, 484(7395), 502–5. doi:10.1038/nature10968

VERÖFFENTLICHUNGSSTRATEGIEN

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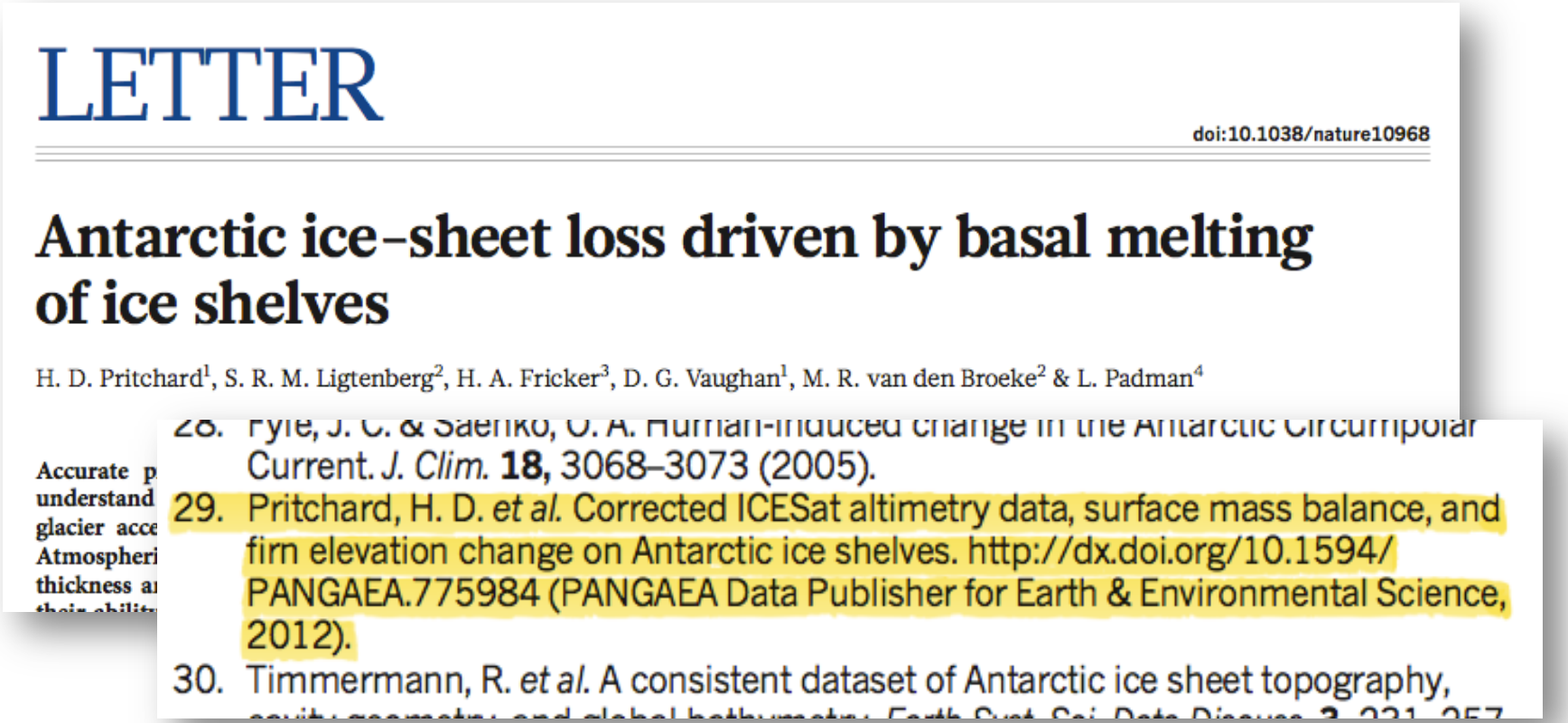

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28. Fyfe, J. C. & Saenko, O. A. Human-induced change in the Antarctic Circumpolar Current. *J. Clim.* **18,** 3068–3073 (2005).
29. Pritchard, H. D. *et al.* Corrected ICESat altimetry data, surface mass balance, and firn elevation change on Antarctic ice shelves. http://dx.doi.org/10.1594/PANGAEA.775984 (PANGAEA Data Publisher for Earth & Environmental Science, 2012).
30. Timmermann, R. *et al.* A consistent dataset of Antarctic ice sheet topography,

Pritchard, H. D., Ligtenberg, S. R. M., Fricker, H. A., Vaughan, D. G., van den Broeke, M. R., & Padman, L. (2012). Antarctic ice-sheet loss driven by basal melting of ice shelves. Nature, 484(7395), 502–5. doi:10.1038/nature10968

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Always quote citation when using data!

Data Description — Show Map | Google Earth

Citation: **Pritchard, Hamish; Ligtenberg, Stefan R M; Fricker, Helen; van den Broeke, Michiel R; Vaughan, David G; Padman, Laurie (2012):** Corrected ICESat altimetry data, surface mass balance, and firn elevation change on Antarctic ice shelves. doi:10.1594/PANGAEA.775984

Abstract: Accurate prediction of global sea-level rise requires that we understand the cause of recent, widespread and intensifying glacier acceleration along Antarctic ice-sheet coastal margins. Floating ice shelves buttress the flow of grounded tributary glaciers and their thickness and extent are particularly susceptible to changes in both climate and ocean forcing. Recent ice-shelf collapse led to retreat and acceleration of several glaciers on the Antarctic Peninsula. However, the extent and magnitude of ice-shelf thickness change, its causes and its link to glacier flow rate are so poorly understood that its influence on the future of the ice sheets cannot yet be predicted. Here we use satellite laser altimetry and modelling of the surface firn layer to reveal for the first time the circum-Antarctic pattern of ice-shelf thinning through increased basal melt. We deduce that this increased melt is the primary driver of Antarctic ice-sheet loss, through a reduction in buttressing of the adjacent ice sheet that has led to accelerated glacier flow. The highest thinning rates (~7 m/a) occur where warm water at depth can access thick ice shelves via submarine troughs crossing the continental shelf. Wind forcing could explain the dominant patterns of both basal melting and the surface melting and collapse of Antarctic ice shelves, through ocean upwelling in the Amundsen and Bellingshausen Seas and atmospheric warming on the Antarctic Peninsula. This implies that climate forcing through changing winds influences Antarctic Ice Sheet mass balance, and hence global sea-level, on annual to decadal timescales.

Related to: **Pritchard, Hamish; Ligtenberg, Stefan R M; Fricker, Helen; van den Broeke, Michiel R; Vaughan, David G; Padman, Laurie (2012):** Antarctic ice sheet loss driven by basal melting of ice shelves. *(PDI-1401), Nature*, **submitted**

Project(s): **ice2sea** (ice2sea)

Coverage: *Median Latitude:* -71.800000 * *Median Longitude:* -175.100000 * *South-bound Latitude:* -80.800000 * *West-bound Longitude:* 53.000000 * *North-bound Latitude:* -66.300000 * *East-bound Longitude:* -5.900000

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Size: 2 datasets

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- Beispiel 2:

http://dx.doi.org/10.3334/CDIAC/GCP_V2012

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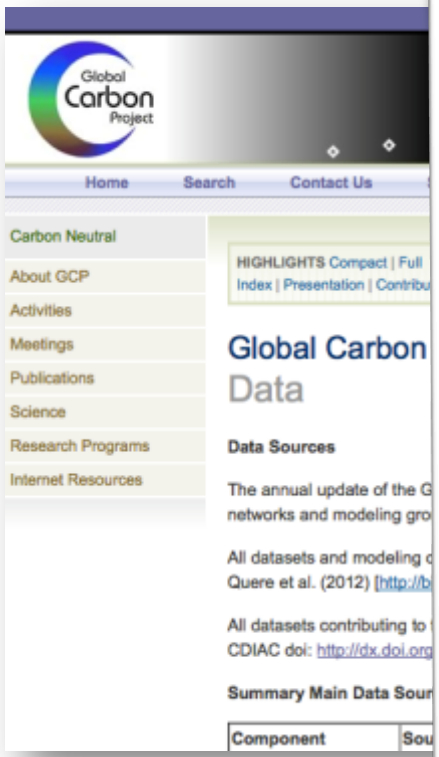
- Beispiel



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Earth Syst. Sci. Data, 5, 165–185, 2013
www.earth-syst-sci-data.net/5/165/2013/
doi:10.5194/essd-5-165-2013
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Earth System Science Data

The global carbon budget 1959–2011

C. Le Quéré[1], R. J. Andres[2], T. Boden[2], T. Conway[3], R. A. Houghton[4], J. I. House[5], G. Marland[6], G. P. Peters[7], G. R. van der Werf[8], A. Ahlström[9], R. M. Andrew[7], L. Bopp[10], J. G. Canadell[11], P. Ciais[10], S. C. Doney[12], C. Enright[5], P. Friedlingstein[13], C. Huntingford[14], A. K. Jain[15], C. Jourdain[1,*], E. Kato[16], R. F. Keeling[17], K. Klein Goldewijk[18,19,20], S. Levis[21], P. Levy[14], M. Lomas[22], B. Poulter[10], M. R. Raupach[11], J. Schwinger[23,24], S. Sitch[25], B. D. Stocker[26,27], N. Viovy[10], S. Zaehle[28], and N. Zeng[29]

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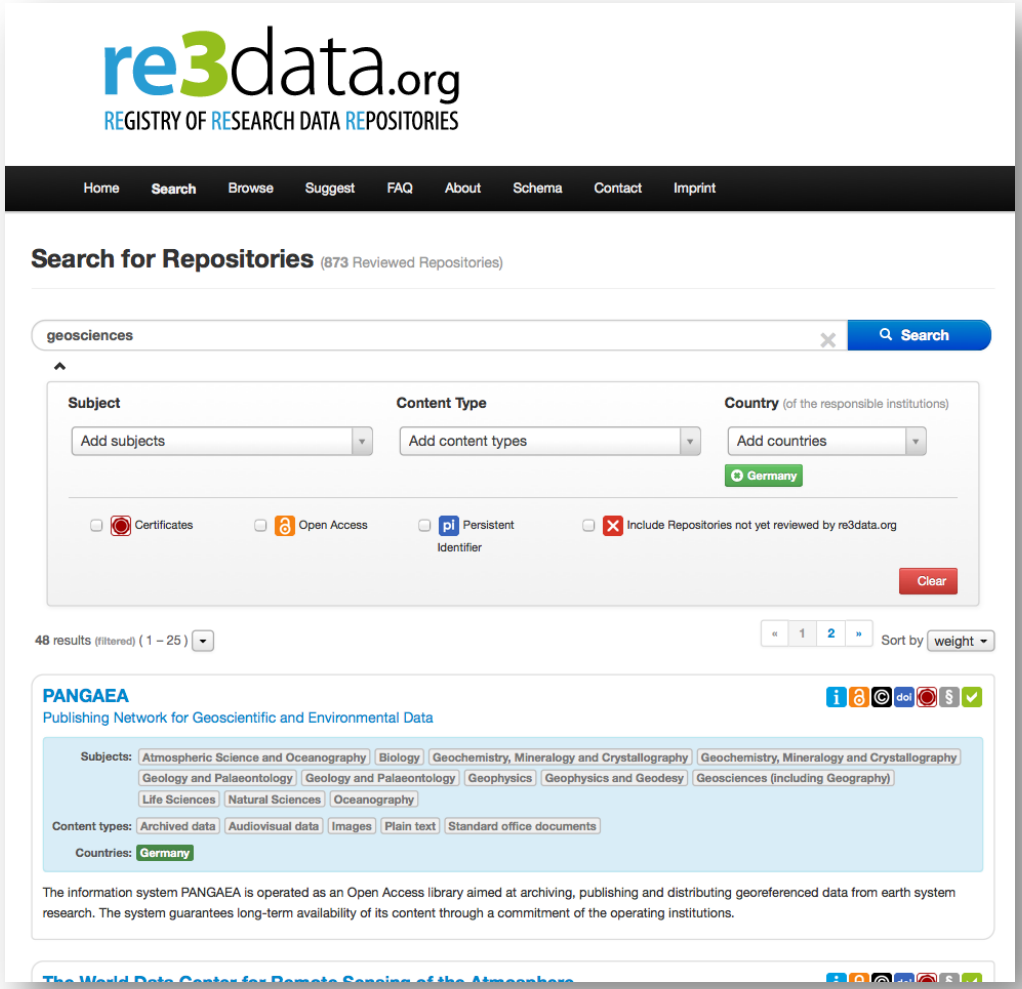

Pampel, H. et al. (2013). Making Research Data Repositories Visible: The re3data.org Registry. PLOS ONE, 8(11), e78080. doi:10.1371/journal.pone.0078080

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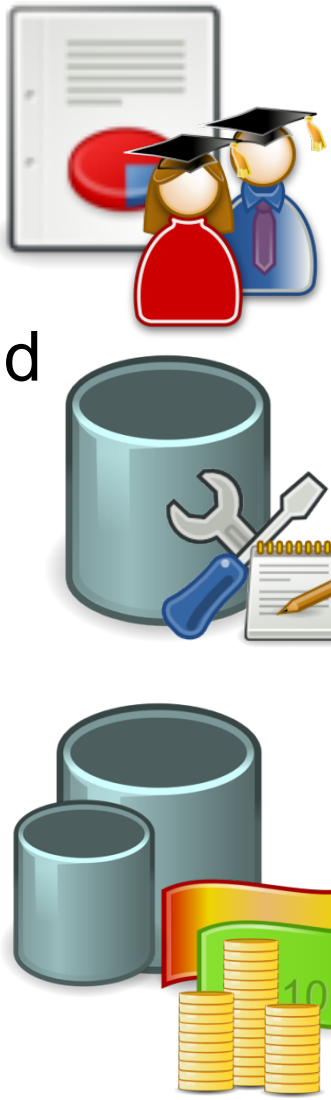

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Danke für Ihre Aufmerksamkeit!

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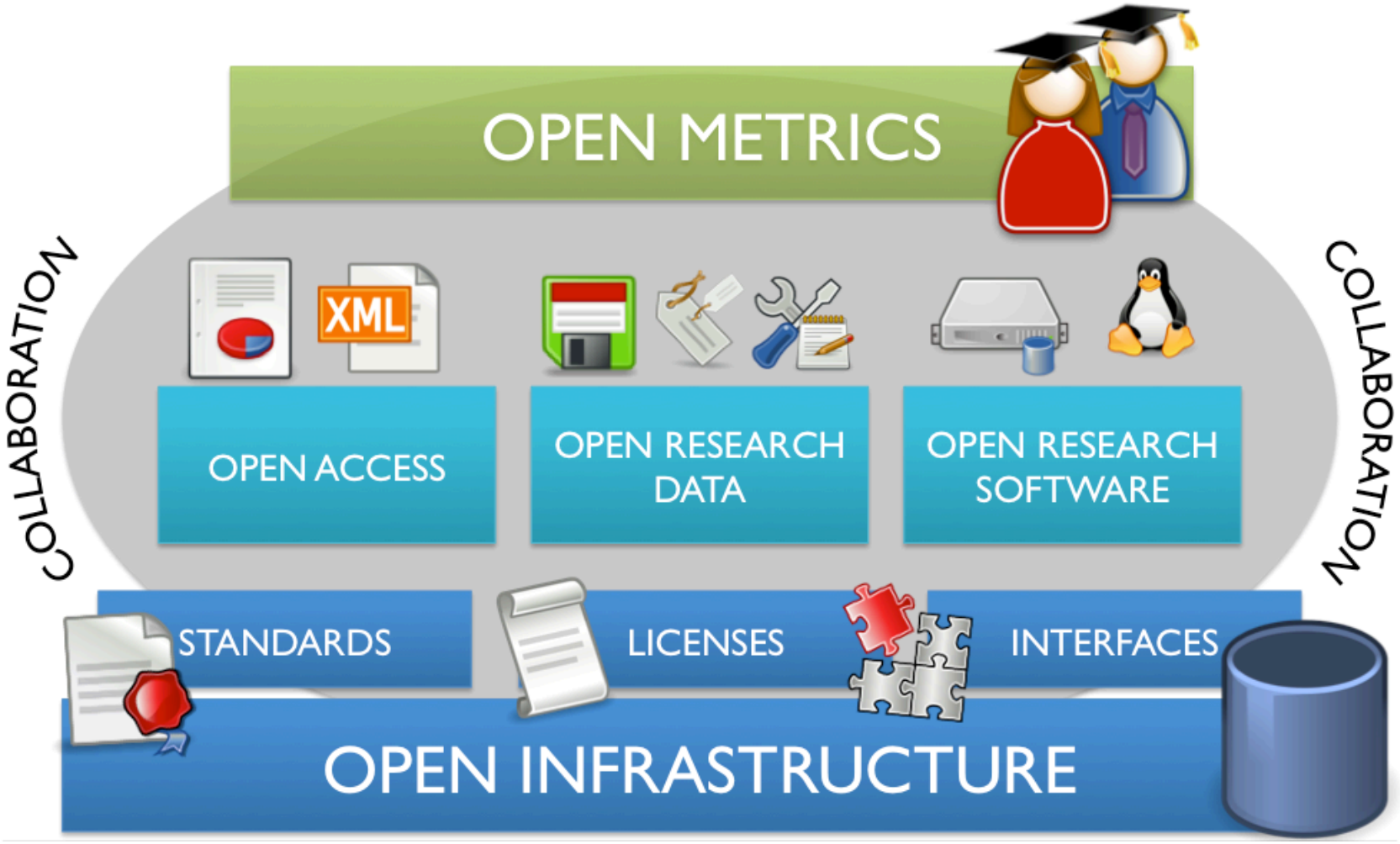

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