Mandates and Metrics:

How Open Repositories Enable Universities to Manage, Measure and Maximise their Research Assets

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- **Sale**, Arthur (U. Tasmania)
- **Swan**, Alma (U. Southampton, EPrints, Key Perspectives)
What Is Open Access?

- Free,
- Immediate
- Permanent
- Full-Text
- On-Line
- Access
Open Access to What?

ESSENTIAL:

to all 2.5 million annual research articles

published in all 25,000 peer-reviewed journals
(and peer-reviewed conferences)
in all scholarly and scientific disciplines, worldwide

OPTIONAL:

(because these are not all author give-aways, written only for usage and impact):

1. Books
2. Textbooks
3. Magazine articles
4. Newspaper articles
5. Music
6. Video
7. Software
8. “Knowledge”

(or because author’s choice to self-archive can only be encouraged, not required in all cases):

9. Data
10. Unrefereed Preprints

FSFS Kerala 2008
There are two ways to provide OA:

Green OA Self-Archiving: Authors self-archive the articles they publish in the 25,000 peer-reviewed journals

Gold OA Publishing: authors publish in one of the c. 3000 OA journals (some still recovering costs through institutional subscriptions, others through author/institutional publication charges) [http://www.doaj.org/](http://www.doaj.org/)

**NB:** This presentation is exclusively about providing **Green OA**, through university policy reform (by mandating **Green OA Self-Archiving**).

It is **not** about **Gold OA Publishing**, which is in the hands of the publishing community, not the university community.

(*Green OA* may or may not eventually lead to **Gold OA**, but it will lead with certainty to **OA**.)
Open Access: Why?

1. To **maximise** the uptake, usage, applications and impact of the research output of your university

2. To **measure and reward** the uptake, usage, applications and impact of the research output of your university (research metrics)

3. To **collect, manage and showcase** a permanent record of the research output and impact of your university
OA maximises: research visibility
research usage
research uptake
research applications
research impact
research productivity
research progress
research funding
research manageability
research assessability

by maximising research accessibility
Open Access: How?

By mandating Green OA Self-Archiving

OA Metrics motivate OA Mandates

And OA Mandates maximize OA Metrics

• **Metrics:** Metrics of research usage and impact quantify, evaluate, navigate, propagate and reward the fruits of OA self-archiving, motivating Green OA Mandates.

• **Mandates:** Incentivized by the Metrics, Green OA self-archiving Mandates, adopted by all universities and research funding agencies, will provide OA to 100% of research output, maximizing research usage and impact, productivity and progress.

COMPETITIVE ADVANTAGE: The earlier you mandate Green OA, the sooner (and bigger) your university's competitive advantage: U. Southampton School of Electronics and Computer Science was the first in the world to adopt an OA self-archiving mandate.
Contributors to the OA Advantage

EA + QA + UA + (CA) + (QB)

- **EA: Early Advantage:** Self-archiving preprints before publication hastens and increases citations (higher-quality articles benefit more: top 20% of articles receive 80% of citations)

- **QA: Quality Advantage:** Self-archiving postprints immediately upon publication hastens and increases citations (higher-quality articles benefit more)

- **UA: Usage Advantage:** Self-archiving increases downloads (higher-quality articles benefit more)

- **(CA: Competitive Advantage):** OA/non-OA advantage (CA disappears at 100%OA, but very important today!)

- **(QB: Quality Bias):** Higher-quality articles are self-selectively self-archived more (QB disappears at 100%OA)
OA: How? Universities and funders mandate Green OA self-archiving

Deposit Where? In universities' own Institutional Repositories (IRs)

Deposit How? A few minutes of keystrokes per paper is all that stands between the world research community and 100% OA

Deposit What? Author's final, revised, peer-reviewed draft ("postprint")

Deposit When? Immediately upon acceptance for publication

1. About 25,000 peer-reviewed journals are published worldwide, in all disciplines and all languages

http://www.ulrichsweb.com/ulrichsweb/
2. They publish about 2.5 million articles per year
3. Most universities and research institutions can only afford to subscribe to a fraction of those journals.

http://fisher.lib.virginia.edu/cgi-local/arlbin/arl.cgi?task=setupstats
4. That means that all those articles are accessible to only a fraction of their potential users.
5. That means that research is having only a fraction of its potential usage and impact.
6. That means that research is achieving only a fraction of its potential productivity and progress.
7. In the paper era there was no way to remedy this, but in the web era there is a way:

"Open Access" (OA) provides free webwide access to research journal articles
8. Research that is freely accessible on the web has 25% - 250% greater research impact.
“Online or Invisible?” (Lawrence 2001)

“average of 336% more citations to online articles compared to offline articles published in the same venue”

http://www.neci.nec.com/~lawrence/papers/online-nature01/
Lawrence (2001) findings for computer science conference papers. More OA every year for all citation levels; higher with higher citation levels.
Open Access increases citations

Range = 36%-200%
(Data: Brody & Harnad 2004; Hajjem et al. 2005)
9. If 100% of research articles were freely accessible (OA), then the usage, impact, productivity and progress of research would be maximised.
10. There are two ways to make research Open Access.
11. The Golden way is for publishers to convert all their journals into Open Access journals.
12. The Green way is for researchers to deposit all their published journal articles in their own institution's Open Access Repository.

Here is how Green OA self-archiving works:
**Limited Access: Limited Research Impact**

**Impact cycle begins:** Research is done

Researchers write pre-refereeing “Pre-Print”

Submitted to Journal

Pre-Print reviewed by Peer Experts – “Peer-Review”

Pre-Print revised by article’s Authors

Refereed “Post-Print”
Accepted, Certified, Published by Journal

Researchers can access the Post-Print if their university has a subscription to the Journal

New impact cycles:
New research builds on existing research
Limited Access: Limited Research Impact

Impact cycle begins:
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12-18 Months

This limited subscription-based access can be supplemented by self-archiving the Postprint in the author’s own institutional repository as follows:

New impact cycles:
New research builds on existing research
Maximized Research Access and Impact Through Self-Archiving

Impact cycle begins: Research is done

Researchers write pre-refereeing “Pre-Print”

Submitted to Journal

Pre-Print reviewed by Peer Experts – “Peer-Review”

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Refereed “Post-Print” Accepted, Certified, Published by Journal

Researchers can access the Post-Print if their university has a subscription to the Journal

More impact cycles:

Post-Print is self-archived in University’s Eprint Archive

New impact cycles: New research builds on existing research

12-18 Months
13. But only about 15% of the annual 2.5 million research articles are being made freely accessible on the WWW spontaneously today.
14. **Gold** Open Access depends on the publishing community.
15. **Green** Open Access depends only on the research community.
16. The research community cannot require the publishing community to convert to Gold Open Access.
17. But the research community can itself convert to Green Open Access.
18. Southampton created the free *EPrints* software to allow all universities to create their own institutional repositories very cheaply and easily.

[http://www.eprints.org/](http://www.eprints.org/)
19. *EPrints* repositories are all compliant with the OAI Protocol for metadata harvesting.

http://www.openarchives.org/
20. This means that all those distributed repositories are interoperable:

Their metadata can be harvested and jointly searched as if their contents were all in one central repository.
21. But creating institutional repositories is only a necessary condition, not a sufficient condition, for providing 100% Open Access:
Registry of Open Access Repositories (ROAR): 1000 archives but still mostly empty!

Country
1. United States (215)
2. United Kingdom (102)
3. Germany (79)
4. Brasil (53)
5. Canada (40)
6. France (38)
7. Japan (35)
8. Sweden (34)
9. Australia (33)
10. Italy (28)

Archive Type
* Research Institutional or Departmental (467)
* Research Cross-Institution (77)
* e-Theses (84)
* e-Journal/Publication (102)
* Database (18)
* Demonstration (24)
* Other (134)

Software Archives Records Mean
DSpace 242 937833 5097
EPrints 231 323015 1489
BEPress 56 136158 2670
OPUS 26 13377 608
ETD-db 23 343840 18097
Other (various) 228

http://roar.eprints.org/
Many Repositories but few deposits because deposit mandates are still few:

- 15% of annual 2.5 million articles

ROARMAP (Registry of Open Access Repository Material Archiving Policies)

as recommended by the Berlin Declaration

- Register your Institutional Policy in ROARMAP
- also register your Institutional Repository in ROAR

Summary By Type

<table>
<thead>
<tr>
<th>Type</th>
<th>Count</th>
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<tr>
<td>INSTITUTIONAL Mandates</td>
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<tr>
<td>DEPARTMENTAL Mandates</td>
<td>4</td>
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<tr>
<td>FUNDER Mandates</td>
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<td>TOTAL Mandates</td>
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<td>Proposed FUNDER Mandates</td>
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<tr>
<td>TOTAL Proposed Mandates</td>
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</table>
22. Only about 15% of institutional research output is being self-archived spontaneously today.
23. It is helpful to provide incentives to self-archive, such as, download statistics, publicity, help from librarians in depositing, or even small financial incentives. But Arthur Sale’s studies have shown that incentives are not sufficient, and can only increase self-archiving to about 30%.

24. The only effective way to guarantee 100% self-archiving is for universities and research funders to make the self-archiving of published research articles an administrative requirement: a mandate
A Successful Repository: Why?
Deposit Growth since 2003
U. Southampton ECS Repository

U Minho 15 December 2008
The world’s c. 15,000 research universities and institutions produce all research output, in all disciplines, funded and unfunded

- **World’s first Green OA Mandate**: University of Southampton School of Electronics and Computer Science (UK 2003)

- **World’s first University-Wide Green OA Mandate**: Queensland University of Technology (Australia Feb 2004)

- **Europe’s First Green OA Mandate**: University of Minho (Portugal Dec 2004)
25. Universities and research funders already mandate publishing itself, as a condition of employment and funding ("publish or perish"), in order to maximise research usage and impact in the paper era.
26. A self-archiving mandate is just a natural extension of the existing publishing mandate, for the web era.
27. International surveys of researchers in all disciplines have already found that 95% of researchers would comply with a self-archiving mandate:

http://eprints.ecs.soton.ac.uk/10999/
Across all countries and disciplines, 95% of researchers report that they would comply with a self-archiving mandate from their funders and/or employers, and over 80% report that they would do so willingly. -- But only 15% self-archive spontaneously, if it not mandated.
28. Arthur Sale’s comparisons of the self-archiving percentage of institutions with

Repositories only (R -I -M)

Repositories plus Incentives (R +I -M)

Repositories plus Incentives plus a self-archiving Mandate (R+I+M)

show that Repositories and Incentives alone are insufficient: Only with Mandates are they successful in attaining 100% self-archiving.
University of Tasmania
+Repository -Incentive -Mandate

Green line: total annual output
Red line: proportion self-archived

Data courtesy of Arthur Sale
University of Queensland
+Repository +Incentive -Mandate
Green line: total annual output

Red line: proportion self-archived

Documents

Data courtesy of Arthur Sale
Queensland University of Technology

Green line: total annual output
Red line: proportion self-archived

Documents

Data courtesy of Arthur Sale
http://eprints.utas.edu.au/257/


29. Worldwide, a total of 60 Green OA self-archiving mandates have already been adopted and 11 more proposed so far:

 adopted: 30 funder mandates, 26 institutional mandates, 4 departmental mandates,
 proposed: 5 funder mandates, 2 institutional mandate, 4 multi-institutional mandates.

ROARMAP (Registry of OA Repository Mandates):
http://www.eprints.org/openaccess/policiesignup/
ROARMAP (Registry of Open Access Repository Material Archiving Policies)
as recommended by the [Berlin Declaration](http://www.alliance-openspace.org/)

Register your Institutional Policy in ROARMAP:

<table>
<thead>
<tr>
<th>Country</th>
<th>Institution</th>
<th>OA Archive(s)</th>
<th>OA Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUSTRALIA * departmental-mandate</td>
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<td>AUSTRALIA * institutional-mandate</td>
<td>University of Tasmania</td>
<td><a href="http://eprints.utas.edu.au/">growth data</a></td>
<td>Policy details</td>
</tr>
<tr>
<td>AUSTRIA</td>
<td>Foerderung der wissenschaftlichen Forschung</td>
<td><a href="http://www.fwf.ac.at/de/public_relations/oai/index.html">http://www.fwf.ac.at/de/public_relations/oai/index.html</a></td>
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</tr>
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<td>BELGIUM* institutional-mandate</td>
<td>Université de Liège</td>
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<td>Policy details</td>
</tr>
<tr>
<td>BRAZIL* proposed multi-institutional-mandate</td>
<td>Brazil, House of Representatives</td>
<td><a href="http://roar.eprints.org/">http://roar.eprints.org/</a></td>
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<td>CANADA</td>
<td>Athabasca University</td>
<td><a href="http://auspace.athabascau.ca/">growth data</a></td>
<td>Policy details</td>
</tr>
</tbody>
</table>
30. Several other important proposals to mandate Green OA self-archiving are under consideration in the USA, Europe, and elsewhere.

(The US has just adopted the NIH Green OA self-archiving mandate; + RCUK, ERC).
All European Universities should create institutional repositories and should mandate that all research publications must be deposited in them immediately upon publication (and made Open Access as soon as possible thereafter) as already mandated by RCUK, ERC, and NIH, and as recommended by EURAB.

In addition, the EUA recommends that these (funder) self-archiving mandates should also be extended to all research results arising from EU research programme/project funding.
31. It is crucial that both funders and universities mandate Green OA self-archiving, as not all research is funded.
32. Researchers are already rewarded not just in proportion to how many articles they publish, but how many times their articles are cited.
33. It is accordingly a natural step to link the self-archiving mandate to research performance assessment.
34. Research performance metrics in turn provide incentives for motivating and rewarding self-archiving.
35. Open Access will generate many rich new metrics that can be used to assess research impact:
Some Potential Metrics

- Citations (C)
- CiteRank
- Co-citations
- Downloads (D)
- C/D Correlations
- Hub/Authority index
- Chronometrics: Latency/Longevity
- Endogamy/Exogamy
- Book citation index

- Research funding
- Students
- Prizes
- h-index
- Co-authorships
- Number of articles
- Number of publishing years
- Semiometrics (latent semantic indexing, text overlap, etc.)
36. These metrics can be validated in the UK Research Assessment Exercise (RAE), discipline by discipline, through multiple regression analysis:

The metrics can be weighted by their ability to predict the rankings given by the evaluation by human peer panels:
UK’s RAE 2008 will be a parallel panel/metric exercise, making it possible to develop a rich spectrum of candidate metrics and to validate each metric against the panel rankings, discipline by discipline, through multiple regression analysis, determining and calibrating the ("beta") weights on each metric.

## RAE 2001 Rankings for Psychology

<table>
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<tr>
<th>Institution</th>
<th>Rating</th>
<th>Proportion of Staff Selected</th>
<th>Active Staff (FTE)</th>
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<td>Birkbeck College</td>
<td>5</td>
<td>B</td>
<td>18.7</td>
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<td>University of Birmingham</td>
<td>5*</td>
<td>C</td>
<td>28.7</td>
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<td>3b</td>
<td>D</td>
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<td>University of Bristol</td>
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<td>A</td>
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<td>Brunel University</td>
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<td>University College Worcester</td>
<td>2</td>
<td>D</td>
<td>7.0</td>
</tr>
<tr>
<td>University of York</td>
<td>5*</td>
<td>A</td>
<td>21.0</td>
</tr>
</tbody>
</table>
Research Assessment, Research Funding, and Citation Impact

“Correlation between RAE ratings and mean departmental citations +0.91 (1996) +0.86 (2001) (Psychology)”

“RAE and citation counting measure broadly the same thing”

“Citation counting is both more cost-effective and more transparent”

(Eysenck & Smith 2002)

http://psyserver.pc.rhbnc.ac.uk/citations.pdf
marginal dollar value of one citation in 1986:

$50 - $1300

(depending on field and number of citations)

updating by about 170% for inflation from 1986-2005:

$85.65 - $2226.89

(an increase from 0 to 1 citation is worth more than an increase from 30 to 31; most articles are in citation range 0-5)
Early Access Advantage: OA is accelerating the research access/usage/citation cycle. OA articles are being cited sooner and sooner. (Data from Physics Arxiv)
Time-Course and cycle of **Citations (red)** and **Usage (hits, green)**


1. Preprint or Postprint appears.
2. It is downloaded (and sometimes read).
3. Next, citations may follow (for more important papers)...
4. This generates more downloads...
5. More citations...
Earlier download metrics correlated with later citation metrics

Data from arXiv

Downloads ("hits") in the first 6 months correlate with citations 2 years later

Most articles are not cited at all

37. The mandate should be to

• deposit all articles
• in the Institutional Repository
• immediately upon acceptance for publication.
38. The optimal Green OA mandate is to require *immediate deposit* and *immediate* Open Access.
39. But if there is any delay or opposition to an Immediate-Deposit/Immediate-OA mandate, then the compromise

*Immediate-Deposit/Delayed-Open-Access (ID/OA)*

mandate should be adopted:
40. The author's final, peer-reviewed draft must be deposited immediately upon acceptance for publication.

But access to it can be set as either Open Access or Closed Access (for a limited period, preferably no more than 6 months).
41. The majority of journals (63%) already endorse immediate Green Open Access Self-Archiving

What About Copyright?

Mandate **ID/OA: Immediate Deposit, Optional Access:**
All articles must be **deposited** immediately upon acceptance for publication. **Publishers have no say over institution-internal record-keeping.**

Embargoed articles can be made **Closed Access** instead of **Open Access.**

63% of journals are Green (already endorse immediate OA)

**ROMEO/EPRINTS** (Directory of Journal Policies on author OA Self-Archiving):
[http://romeo.eprints.org/](http://romeo.eprints.org/)
42. For the articles in the 37% of journals that have an embargo policy, the free EPrints institutional Repository-creating software has an "Eprint Request" Button:

![Request a copy](image)

The user who reaches the metadata for a Closed Access article puts his email in a box and clicks.

This sends an automatic email to the author, with a URL on which the author clicks to automatically email the eprint to the requester.
The ID/OA mandate applies (with no exceptions or delays) to the deposit of the author’s final, peer-reviewed draft (“postprint”).

This must be deposited immediately upon acceptance for publication, but the deposit need not be made Open Access.

Where access is embargoed (38%), the deposit can be made Closed Access.

During the embargo period, the Institutional Repository’s Button provides Almost-Instant, Almost-OA, for just a few extra keystrokes, as follows:
Almost-Instant, Almost-OA, STEP I:

First, suppose a potential user anywhere on the web sees the metadata (author, date, title, journal) for a document they need (from searching with Google or Google Scholar, or Citebase, or OAIster or any other search engine).

If that document is not Open Access, but Closed Access, then the Institutional Repository link will reach the following page, showing the document’s metadata with the Request a copy Button:
Open Access Mandates and Metrics


Plain Text (embargoed article) - Repository staff only until 27 July 2008
40Kb

Request a copy

Official URL: http://www.councilscienceeditors.org/publications/cbeviews.cfm

Abstract

Open Access is optimal and inevitable for research, researchers, their institutions and funders, the vast R&D industry, and the tax-paying public that funds research. OA Scientometrics is now poised to usher in the OA era at long last.

Item Type: Article

Uncontrolled Keywords: open access, research impact, research assessment, scientometrics, self-archiving

Subjects: A General Works > AZ History of Scholarship The Humanities

ID Code: 849

Deposited By: user with email user@ecs.soton.ac.uk

Deposited On: 28 Jul 2007 05:28

Last Modified: 28 Jul 2007 05:28
Almost-Instant, Almost-OA, STEP II:

The eprint requester then presses the Button, (1 requester keystroke) which immediately generates a box that allows the requester to cut/paste his email address into it and then click (3 requester keystrokes)

(in addition, optionally, requesters may also identify themselves if they wish, and/or specify for the author why they need the eprint):

Plain Text (embargoed articles) - Repository staff only until 27 July 2008
40Kb

Email address
Enter your email address.
myemail@wherever.edu

Reason
You may enter a rationale for requesting this document.
Please send me a copy for research purposes

Request a copy
Almost-Instant, Almost-OA, STEP III:

The author instantly receives the following email, to which he can reply with one click either to accept or to reject the eprint request (1 author keystroke).

(If the author accepts, one copy of the eprint is instantly emailed to the requester by the Institutional Repository software.)
From: DemoPrints XXX@ecs.soton.ac.uk
Date: July 28, 2007 12:51:43 AM EDT (CA)
To: XXX@ecs.soton.ac.uk
Subject: Request for "Open Access Mandates and Metrics"

The following item:


has been requested from DemoPrints by:

   myemail@wherever.edu

The following reason was given:

   "Please send me a copy for research purposes."

Please respond by clicking one of the following:

   Accept the request (eprint will be emailed automatically)
   Reject the request (request will be declined)

(Please also consider removing the access restrictions so that your eprint is directly available to users without the need for these extra keystrokes.)

DemoPrints http://demoprints3.eprints.org/
The author has already done the N keystrokes needed to deposit the document in his IR in the first place, immediately upon acceptance for publication.

For 62% of deposits, the author can immediately set access as Open Access, with the publisher’s blessing.

For the 38% of deposits where access is embargoed by the publisher, the author does one extra keystroke per request -- considerably less that he did in paper reprint request days, when reprints had to be mailed and the turnaround time was weeks rather than minutes.

With the ID/OA mandate universally adopted, the embargoes will soon become obsolete, under growing OA pressure worldwide.

Carr & Harnad (2005)
Keystroke Economy: A Study of the Time and Effort Involved in Self-Archiving.
http://eprints.ecs.soton.ac.uk/10688/
The free EPrints University Repository Software generates rich (and potentially even richer) usage metrics. It can be used for showcasing, navigating, comparing and assessing.

Here is a sample of University Repository usage metrics for Southampton author Tim Berners-Lee:

http://stats.eprints.ecs.soton.ac.uk/cgi-bin/irstats.cgi?
This page allows you to generate graphs and tables of data summarising the usage data for eprints in the repository. Select the data you want to graph in 'Set of Eprints', choose the date range to process in 'Date Range', select the type of analysis to make in 'Choice of View' and then click 'Generate'.

---

**Set of Eprints**

You can choose to only include data for particular sets (e.g. eprints deposited by a named author) or show data for only a single eprint.

- All
- Research Group
- Creators Name
- Berners-Lee, T. (7113)
- Eprint ID

---

**Date Range**

Change the period of access log data included based on when the request was made. Warning! The more data you include the longer it will take to generate the results.

- Period: Last Quarter
- From date: 1 January 2005
- Until date: 31 January 2005
The view determines how data is rendered and may provide additional data refinements (for example showing a summary for authors).

Summary Data
- MonthlyDownloadsGraph
- DailyDownloadsGraph
- MonthlyUniqueVisitorsGraph
- AllMonthlyDownloadsGraph
- DownloadCountHTML

Simple Analyses
- TopTenTable
- ReferrerGraph
- SearchEngineGraph
- TopCountriesTable
- TopTenAcademies

Complex Analyses
- TopTenMonthlyDownloadsGraph
- TopTenAuthorsTable
- TopTenTableDashLinked
- HighestClimbersTable
- MonthlyDownloadsByGroupGraph
- TopTenNonSearchReferrers
- RandomFromTopTenHTML
Some EPrints download metrics for top deposits by Southampton author Tim Berners-Lee.
These Local EPrints University Repository Usage metrics are complemented by CITEBASE, which provides global Citation, Download, Citation, Co-citation, Hub/Authority and time-course metrics:

http://stats.eprints.ecs.soton.ac.uk/cgi-bin/irstats.cgi
Citebase is currently only an experimental demonstration. Users are cautioned not to use it for academic evaluation yet. Citation coverage and analysis is incomplete and hit coverage and analysis is both incomplete and noisy.
Search Result Rank-Ordering
The ranking controls the order in which results are shown.

Search Score
For author and keyword queries this is the relevance score returned by Xapian (the text-search tool).

Creation Date
The date the record first appeared. Based on the source archive’s policy (archive dependent, can be a date given by the author or the date the record was added to the archive).

Last Update
The last time a change was made to the record (not necessarily the actual paper). Based on the source archive's policy.

Paper Citations - Caution
The total number of citations identified by Citebase to a paper.

Author Citations - Caution
The author impact of a paper is the mean author impact of that paper's named authors. Author impact is the total number of citations identified by Citebase to papers that the author is named on, divided by the number of papers that same author is named on.

Paper Hits - Caution
The total number of web requests made for this paper. Web log usage data ("hits") (1) currently cover only from August 1999 to the present and (2) are based only on the UK arXiv.org mirror-site usage (the other 17 international mirror-sites, including the main one in the US are not currently covered).

Author Hits - Caution
The author hits of a paper is the mean author hits of that paper's named authors. Author hits is calculated as the total number of hits to papers that the author is named on, divided by the number of papers that same author is named on.

Hub/Authority Scores
These are experimental metrics.

Co-citedness
The degree to which two articles are related according to the co-occurrence of citations.
The Symbol Grounding Problem

69 Harnad, Stevan (1999-06-01) In PHYSICA D 42 335 (1999)
How can the semantic interpretation of a formal symbol system be made intrinsic to the system, rather than just parasitic on the meanings in our heads? How can the meanings of the meaningless symbol tokens, manipulated solely on the basis of their (arbitrary) shapes, be grounded in anything but other ...

Minds, Machines and Searle

Searle's celebrated Chinese Room Argument has shaken the foundations of Artificial Intelligence. Many refutations have been attempted, but none seem convincing. This paper is an attempt to sort out explicitly the assumptions and the logical, methodological and empirical points of disagreement. Searle is ...

Other bodies, Other minds: A machine incarnation of an old philosophical problem

Explaining the mind by building machines with minds runs into the other-minds problem: How can we tell whether any body other than our own has a mind when the only way to know is by being the other body? In practice we all use some form of Turing Test: If it can do everything a body with a mind can do ...

Consciousness: An afterthought

26 Harnad, Stevan (1982-01-01) In AN AFTERTHOUGHT.COGNITION AND BRAIN THEORY 5 29 (1982)
Our sense that we do something deliberately may be an afterthought that arises after our brains have already triggered our action unconsciously. Consciousness itself may be a similar illusory afterthought, with ...
Free at Last: The Future of Peer-Reviewed Journals [Abstract, 14 Cites, \( \sqrt{} \)]
I don't think there is any doubt in anyone's mind as to what the optimal and inevitable outcome of all this will be: The Give-Away literature will be free at last online, in one global, interconnected virtual library (see <http://www.cogsci.soton.ac.uk/~harnad/citation.html>), and its QC/C ...

Behavioral and Brain Sciences [Abstract]
3319 Harnad, Stevan oai:epubs.ecs.soton.ac.uk:2625

2685 Harnad, Stevan (1996-01-01) oai:cogprints.soton.ac.uk:1692
Electronic networks have made it possible for scholarly periodical publishing to shift from a trade model, in which the author sells his words through the mediation of the expensive and inefficient technology of paper, to a collaborative model, in which the much lower real costs and much broader reach of ...

Artificial Life: Synthetic Versus Virtual [Abstract]
2419 Harnad, Stevan (1993-01-01) In SYNTHETIC VERSUS VIRTUAL.SANTA FE INSTITUTE STUDIES IN THE SCIEN 16 593 (1993)
Artificial life can take two forms: synthetic and virtual. In principle, the materials and properties of synthetic living systems could differ radically from those of natural living systems yet still resemble them enough to be really alive if they are grounded in the relevant causal interactions with the ...

Searle's Chinese Room Argument [Abstract]
Summary of Searle's "Chinese Room Argument" showing that cognition cannot be just computation. Searle implements a computer programme that can pass the Turing Test in Chinese. Searle does not understand Chinese in doing so, hence neither does the computer.
Sample citation and download growth with time. *(Downloads only start in 2005 because that is when this paper was deposited.)* Early growth rate and late decay metrics for downloads and citations can also be derived.
SUMMARY:

**OA: How?** Universities and funders mandate Green OA self-archiving

**Deposit Where?** In universities' own Institutional Repositories (IRs)

**Deposit How?** A few minutes of keystrokes per paper is all that stands between the world research community and 100% OA

**Deposit What?** Author's final, revised, peer-reviewed draft ("postprint")

**Deposit When?** Immediately upon acceptance for publication

Open Access: How?

Universities adopt the ID/OA mandate:

Immediate Deposit
+
Optional Access
+
Open Access: Why?

1. To maximise the uptake, usage, applications and impact of the research output of your university

2. To measure and reward the uptake, usage, applications and impact of the research output of your university (research metrics)

3. To collect (and showcase and manage) a permanent record of the research output and impact of your university
Sample of candidate OA-era metrics:

- Citations (C)
- CiteRank (like Google)
- Co-citations
- Downloads (D)
- C/D Correlations
- Hub/Authority index
- Chronometrics:
  - Latency/Longevity
- Endogamy/Exogamy
- Book citation index
- Links
- Tags
- Commentaries
- Journal Impact Factor

- h-index (and variants)
- Co-authorships
- Publication counts
- Number of publishing years
- Semiometrics (latent semantic indexing, text overlap, etc.)
- Research funding
- Students
- Prizes
Open Access (OA)
Free/Open Software (fs)
Open Data (od)
Creative Commons Licensing (cc)
Wikipedia (wp)

The Commonalities and Distinctions

http://openaccess.eprints.org/index.php/?/archives/497-guid.html

(1) Exception-Free Creator Give-Away? OA wp
(2) Peer-Reviewed? OA
(3) Published? OA
(4) Publicly Funded? (OA) (od)
(5) Copyright Barrier? (OA) (od)
(6) Access to code? OA fs od cc wp
(7) Modifying/Remixing/"re-using" code? fs od cc wp
(8) Republishing Code? fs od cc wp

FSFS Kerala 2008
Author’s URLs (UQAM & Southampton):
http://www.crsc.uqam.ca/
http://users.ecs.soton.ac.uk/harnad/

BIBLIOGRAPHY ON OA IMPACT ADVANTAGE:
http://opcit.eprints.org/oacitation-biblio.html

BOAI Self-Archiving FAQ: http://www.eprints.org/self-faq/

CITEBASE (scientometric engine): http://citebase.eprints.org/

EPRINTS: http://www.eprints.org/

OA ARCHIVANGELISM: http://openaccess.eprints.org/

ROAR (Registry of OA Repositories): http://roar.eprints.org/

ROARMAP (Registry of OA Repository Mandates):
http://www.eprints.org/openaccess/policysignup/


2001: Research access, impact and assessment THES 1487 http://cogprints.org/1683/
The Self-Archiving Initiative Nature 410 http://www.nature.com/nature/debates/e-access/Articles/harnad.html
Measuring and Maximising UK Research Impact THES http://eprints.ecs.soton.ac.uk/7728/
Mandated online RAE CVs Linked to University Eprint Archives. Ariadne 35 http://www.ecs.soton.ac.uk/~harnad/Temp/Ariadne-RAE.htm


2005: Journal publishing and author self-archiving: Peaceful Co-Existence Berners-Lee et al http://eprints.ecs.soton.ac.uk/11160/
Ten-Year Cross-Disciplinary Comparison of the Growth of Open Access and Research Citation Impact. Hajjem et al IEEE Data Engineering Bulletin 28 http://eprints.ecs.soton.ac.uk/11688/
Making the case for web-based self-archiving Research Money 19 http://eprints.ecs.soton.ac.uk/11534/

2006: Self-archiving should be mandatory 2006 Research Information http://eprints.ecs.soton.ac.uk/12738/
The Open Research Web: A Preview of the Optimal and the Inevitable Shadbolt et al in Open Access: Key Strategic, Technical and Economic Aspects http://eprints.ecs.soton.ac.uk/12453/

Time to Convert to Metrics Brody et al Research Fortnight 17 http://eprints.ecs.soton.ac.uk/14329/
Incentivizing the Open Access Research Web: Publication-, Data-Archiving and Scientometrics. Brody et al CTWatch Quarterly 3(3). http://eprints.ecs.soton.ac.uk/14418/