Rationale for the proposed University of Southampton Self-Archiving Policy

(1) There exist 24,000 peer-reviewed journals (and conference proceedings) publishing 2.5 million articles per year, across all disciplines, languages and nations.

(2) No university can afford to subscribe to all or most of the journals that their researchers may need to use.

(3) This means that no article is accessible to all of its potential users.

(4) This is confirmed by recent findings, independently replicated by many investigators, that articles for which their authors have supplemented the publisher’s subscription-based access by self-archiving their own final drafts free for all on the web are cited twice as much (and downloaded three times as much) across all 12 scientific, biological, social science, and humanities disciplines analysed so far (note: *there are no discipline differences in the benefits of self-archiving, only in awareness*).

(5) The total citation counts of the departmental articles submitted to RAE are also very closely correlated with departmental RAE rankings (*despite the fact that citations are not directly counted by RAE*).

(6) Taken together, (4) and (5) mean that citation counts are (a) a robust indicator of research performance, (b) they are not currently maximised for the articles that are not self-archived and (c) those articles that are self-archived have a substantial competitive advantage over articles that are not self-archived.

(7) Of the 2.5 million articles published annually, only 15% are currently being self-archived spontaneously, worldwide.

(8) Creating an Institutional Repository (IR) and encouraging staff to self-archive their articles therein is a good first step, but *it is not sufficient to raise the self-archiving rate appreciably above the 15% baseline*.

(9) Adding library help to encourage and help staff to self-archive raises the self-archiving rate somewhat, but insufficiently.

(10) The correct measure of success in institutional self-archiving is the ratio of annual self-archived articles to the total annual article output of that institution.

(11) The only institutions that are reliably approaching a 100% annual self-archiving rate today are those that not only create an IR (8) and provide library help in self-archiving (9) but also adopt a self-archiving policy requirement or mandate.

(12) A self-archiving mandate is a simple and natural extension of the existing “publish or perish” mandate, and it is already linked to incentives by the fact that staff are promoted and salaried and funded on the basis of research performance indicators, of which citation impact is a prominent correlate.

(13) Two JISC international, cross-disciplinary surveys have polled researchers on self-archiving mandates: 95% of authors indicate that they would comply if required by their institutions and funders to self-archive (81% willingly, 14% reluctantly).

(14) The four institutions that have so far adopted self-archiving mandates (CERN in Switzerland, Queensland University of Technology in Australia, Minho University in Portugal, and the ECS Department at University of...
Southampton) have all confirmed the outcome of the JISC surveys, with self-archiving rates reliably climbing toward 100%.

(15) U. Southampton ECS was the first institution or department in the world to adopt a self-archiving mandate (in 2001); it also created the first and most widely used (open source) software for creating institutional archives (Eprints), now already used by about 200 institutions worldwide.

(16) ECS also conducted many of the studies demonstrating the citation impact advantage of self-archiving, and maintains the growing widely used bibliography of findings

(17) ECS/Eprints also maintains ROAR, the Registry of Open Access Repositories, tracking the number, size and growth of IRs and their contents worldwide

(18) ECS/Eprints also maintains ROARMAP, the Registry of Open Access Repository Material Archiving Policies, tracking the institutions worldwide that have self-archiving policies, from recommendations to full mandates

(19) ECS/Eprints also maintains the ROMEO Directory of Journal/Publisher Policies on Author Self-Archiving: 93% of the nearly 9000 journals registered to date (including all the top journals and the core ISI journals) have formally endorsed author self-archiving

(20) ECS, and others at Southampton, are also responsible for lobbying the UK Parliamentary Select Committee in 2004 to recommend mandating self-archiving, which led directly to both the RCUK proposed self-archiving mandate and the development of RAE submission mechanisms for the two principal IR softwares used worldwide (Eprints, and MIT’s Dspace, created by Southampton’s Rob Tansley after he had created Eprints)

(21) University of Southampton should now maximise its own RAE ranking and also set an example to the rest of the world by adopting a self-archiving mandate

(22) There is no need for any penalties for noncompliance with the mandate; the mandates will take care of itself, as indicated by the JISC survey and the experience of the other 4 mandating institutions

(23) What needs to be mandated is deposit of all articles immediately upon acceptance for publication

(24) The repository software permits authors to make only the bibliographic details of their article visible (hiding the full-text) or to make the article’s full-text visible (Open Access, OA). It is the stage leading to the former that should be mandated.

(25) The OA stage need not be mandated, only encouraged; authors will do it anyway in at least 93% of cases (and for the remainder, the Eprints software makes it possible for all would-be users worldwide to request an eprint automatically, by just cut-pasting their email address and clicking; the author immediately receives the request and can instantly email the eprint with one click)

(26) Self-archiving is effortless and only takes a few minutes and a few keystrokes; library help is available too (but hardly necessary)
Southampton should not delay: 100% OA through 100% self-archiving is inevitable and optimal for research, researchers, their institutions and their funders, and the tax-paying public that supports both research and universities. Southampton is already the world leader in OA self-archiving; it should now set an example with its university-wide policy as well. RCUK is on the verge of likewise adopting a self-archiving mandate along the same lines (but Southampton, the source of much of the momentum and direction in the RCUK policy proposal, should not wait for RCUK before adopting its own mandate). Bournemouth University is currently having a repository built (by ECS) and their VC will impose a mandate as soon as it is ready for use. Southampton should be the first UK university to have a mandated self-archiving policy, but we will lose the race if we do not come up with one within a few weeks.
Why researchers publish their work

- Communicate results to peers
- Advance career
- Personal prestige
- Gain funding
- Financial reward

Key Perspectives Ltd

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

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
Maximized Research Access and Impact Through Self-Archiving

Impact cycle begins: Research is done
Researchers write pre-refereeing “Pre-Print”
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

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

New impact cycles: Self-archived research impact is greater (and faster) because access is maximized (and accelerated)

New Impact cycles: New research builds on existing research

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
Citation impact for articles in the same journal and year is consistently higher for articles that have been self-archived by their authors. (Below is a comparison for Astronomy articles that are and are not in ArXiv.)

OA vs. Non-OA Citation Impact Advantage (Astronomy & Astrophysics)

On average 20.1 journals/year (incl. self-citations) - Fr Aug 20 2003 to 16 2004
Correlations: OAA*OAP = 0.195, OAP*Year = 0.955, OAA*Year = 0.225

By discipline: total articles (OA+NOA), grey curve; percentage OA: (OA/(OA+NOA)) articles, black bars; percentage OA citation advantage: ((OA-NOA)/NOA) citations, white bars, averaged across 1992-2003 and ranked by total articles. All disciplines show an OA citation advantage.
“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/

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...

- marginal dollar value of one citation in 1986: **$50-$1300** (US), depending on field and number of citations.

- (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.)

- Updating by about 170% for inflation from 1986-2005: **$85.65-$2226.89**

- Research Councils UK (RCUK) spend £3.5 billion pounds annually.
- UK produces at least 130,000 research journal articles per year (ISI) yielding 130,000 articles x 5.6 = 761,600 citations
- Self-archiving increases citation impact 50%-250%, so far only 15% of researchers are self-archiving spontaneously.
- multiply by UK’s 85% not-yet-self-archived output as a proportion of the RCUK’s yearly £3.5bn research expenditure
- **50% x 85% x £3.5.bn =
  **
  **£1.5bn worth of loss in potential research impact**
  **(323,680 potential citations lost)**
Why an institutional repository?

- Fulfils a university’s mission to engender, encourage and disseminate scholarly work
- Enables a university to compile a complete record of its intellectual effort
- Forms a permanent record of all digital output from an institution
- Enables standardised online CVs for all researchers (e.g. RAE exercise)
- ‘Marketing’ tool for universities
- An institution can mandate self-archiving across all subject areas

JISC International Research Author Survey (Swan & Brown, Key Perspectives Ltd)

Respondent profiles I (n=1296)

<table>
<thead>
<tr>
<th>Region</th>
<th>Percentage of total respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia/New Zealand</td>
<td>7</td>
</tr>
<tr>
<td>Asia (except China and Japan)</td>
<td>4</td>
</tr>
<tr>
<td>China</td>
<td>3</td>
</tr>
<tr>
<td>Japan</td>
<td>1</td>
</tr>
<tr>
<td>Canada</td>
<td>4</td>
</tr>
<tr>
<td>USA</td>
<td>21</td>
</tr>
<tr>
<td>Central/South America</td>
<td>6</td>
</tr>
<tr>
<td>European union (except UK)</td>
<td>17</td>
</tr>
<tr>
<td>Other European countries (exc EU or UK)</td>
<td>10</td>
</tr>
<tr>
<td>UK</td>
<td>18</td>
</tr>
<tr>
<td>Middle East</td>
<td>4</td>
</tr>
<tr>
<td>Africa</td>
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</table>

Key Perspectives Ltd
## Respondent profiles II (n=1296)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Percentage of total respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture &amp; food science</td>
<td>5</td>
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<tr>
<td>Business &amp; management</td>
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</tr>
<tr>
<td>Chemistry</td>
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</tr>
<tr>
<td>Computer sciences</td>
<td>12</td>
</tr>
<tr>
<td>Earth &amp; geographical sciences</td>
<td>3</td>
</tr>
<tr>
<td>Engineering, materials science</td>
<td>8</td>
</tr>
<tr>
<td>Humanities</td>
<td>8</td>
</tr>
<tr>
<td>Law &amp; politics</td>
<td>1</td>
</tr>
<tr>
<td>Library &amp; Information science</td>
<td>6</td>
</tr>
<tr>
<td>Life sciences</td>
<td>17</td>
</tr>
<tr>
<td>Mathematics</td>
<td>6</td>
</tr>
<tr>
<td>Medical sciences</td>
<td>17</td>
</tr>
<tr>
<td>Physics</td>
<td>7</td>
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<tr>
<td>Psychology</td>
<td>9</td>
</tr>
<tr>
<td>Social sciences &amp; education</td>
<td>10</td>
</tr>
</tbody>
</table>

### Awareness of self-archiving by subject area

![Bar chart showing awareness of self-archiving by subject area](KeyPerspectivesLtd)
“If your institution and/or funder mandated self-archiving, what would you do?”

That mandating question....
Institutional Archives Registry: 388 Archives, most near empty!
http://archives.eprints.org/eprints.php

Archive Type
* Research Institutional or Departmental (259)
* Research Cross-Institution (69)
* e-Theses (60)
* e-Journal/Publication (48)
* Database (11)
* Demonstration (26)
* Other (76)

Software

<table>
<thead>
<tr>
<th>Software</th>
<th>Archives</th>
<th>Records</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPrints</td>
<td>155</td>
<td>104090</td>
<td>609</td>
</tr>
<tr>
<td>DSpace</td>
<td>116</td>
<td>148855</td>
<td>1959</td>
</tr>
<tr>
<td>ETO-db</td>
<td>21</td>
<td>257197</td>
<td>15129</td>
</tr>
<tr>
<td>OPUS</td>
<td>19</td>
<td>4984</td>
<td>277</td>
</tr>
<tr>
<td>BePress</td>
<td>16 (37)</td>
<td>35330</td>
<td>3212</td>
</tr>
<tr>
<td>BMC OpenRepos</td>
<td>8</td>
<td>99994</td>
<td>19997</td>
</tr>
<tr>
<td>CDSWare</td>
<td>4</td>
<td>368766</td>
<td>42192</td>
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<tr>
<td>ARNO</td>
<td>3</td>
<td>2927</td>
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<tr>
<td>HAL</td>
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<td>45263</td>
<td>15088</td>
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<tr>
<td>Fedora</td>
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<td>37488</td>
<td>37488</td>
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<tr>
<td>MyCoRe</td>
<td>1</td>
<td>1721</td>
<td>1721</td>
</tr>
<tr>
<td>Other</td>
<td>162</td>
<td>2463438</td>
<td>22193</td>
</tr>
</tbody>
</table>

Country

<table>
<thead>
<tr>
<th>Country</th>
<th>Archives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 United States</td>
<td>154</td>
</tr>
<tr>
<td>2 United Kingdom</td>
<td>85</td>
</tr>
<tr>
<td>3 Germany</td>
<td>53</td>
</tr>
<tr>
<td>4 Canada</td>
<td>31</td>
</tr>
<tr>
<td>5 Brazil</td>
<td>30</td>
</tr>
<tr>
<td>6 France</td>
<td>26</td>
</tr>
<tr>
<td>7 Italy</td>
<td>20</td>
</tr>
<tr>
<td>8 Australia</td>
<td>19</td>
</tr>
<tr>
<td>9 Netherlands</td>
<td>18</td>
</tr>
<tr>
<td>10 Sweden</td>
<td>14</td>
</tr>
<tr>
<td>11 India</td>
<td>13</td>
</tr>
</tbody>
</table>

- Spain (9)
- Belgium (9)
- Japan (6)
- Denmark (6)
- China (5)
- Mexico (5)
- Finland (4)
- Switzerland (4)
- Portugal (4)
- Hungary (4)
- Portugal (4)
- South Africa (4)
- Chile (3)
- Austria (3)
- Colombia (3)
- Singapore (2)
- Ireland (2)
- Norway (2)
- Russia (2)
- Greece (2)
- Turkey (1)
- Argentina (1)
- Israel (1)
- Slovenia (1)
- Croatia (1)
- Namibia (1)
- Peru (1)
- Taiwan (1)
- Pakistan (1)
- New Zealand (1)
- Costa Rica

Example 1 (U of T):
+1: Incentives (visible impact statistics for authors) -2: No library activism -3: No mandate
Annual research deposit growth relative to annual research output is slow and weak
Example 2 (UQ):
+1: Incentives (visible impact statistics for authors) +2: Library activism, -3: No mandate
Annual research deposit growth relative to annual research output better, but still too slow and weak

Example 3 (QUT):
+1: Incentives (visible impact statistics for authors) +2: Library activism, +3: Mandate
Annual research deposit growth relative to annual research output matched
## Registry of Institutional Open Access Provision Policies


Universities and research institutions who officially commit themselves to implementing the Berlin Declaration by adopting a systematic institutional self-archiving policy for their own peer-reviewed research output are invited to describe their policy in this Registry so that other institutions can follow their example.

*Self-archive unto others as ye would have them self-archive unto you...*

<table>
<thead>
<tr>
<th>Institution</th>
<th>OA Archive(s)</th>
<th>OA Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>GERMANY: University of Hamburg</td>
<td><a href="http://www.rz.uni-hamburg.de/EZH/Archiv.html">http://www.rz.uni-hamburg.de/EZH/Archiv.html</a></td>
<td>Policy</td>
</tr>
<tr>
<td>GERMANY: Bielefeld University</td>
<td><a href="http://dse.rub.uni-bielefeld.de/index.php">http://dse.rub.uni-bielefeld.de/index.php</a></td>
<td>Policy</td>
</tr>
<tr>
<td>GERMANY: University of Bremen</td>
<td><a href="http://elib.suub.uni-bremen.de/">http://elib.suub.uni-bremen.de/</a></td>
<td>Policy</td>
</tr>
<tr>
<td><em>SWITZERLAND: University of Zurich</em></td>
<td><a href="http://eprints.uzh.ch/">http://eprints.uzh.ch/</a></td>
<td>Policy</td>
</tr>
<tr>
<td><em>UK: Southampton Univ. Electronics/Computer Science</em></td>
<td><a href="https://repositorium.sdum.uminho.pt">https://repositorium.sdum.uminho.pt</a></td>
<td>Policy</td>
</tr>
<tr>
<td><em>PORTUGAL: Universidade do Minho, Portugal</em></td>
<td><a href="http://eprints.soton.ac.uk/">http://eprints.soton.ac.uk/</a></td>
<td>Policy</td>
</tr>
<tr>
<td>UK: University of Southampton</td>
<td><a href="http://eprints.soton.ac.uk/">http://eprints.soton.ac.uk/</a></td>
<td>Policy</td>
</tr>
<tr>
<td>US: University of Kansas</td>
<td><a href="http://scholarworks.ksum.edu/">http://scholarworks.ksum.edu/</a></td>
<td>Policy</td>
</tr>
</tbody>
</table>

---

### Institutional-level mandates

- **QUT**: introduced a mandate to self-archive at the beginning of 2004
- **Southampton University School of Electronics & Computer Science, Jan 2004**
- **CERN**
- **University of Minho, Portugal**
- **University of Zurich**

---

*Key Perspectives Ltd*
CERN Self-archiving as percentage of annual output
Percentage full-text by year

Example 4 (Soton-ECS):
+1: Incentives (visible impact statistics for authors) +3: Mandate
Annual research deposit growth relative to annual research output matched

University of Southampton Department of Electronics and Computer Science
http://eprints.ecs.soton.ac.uk/

Registry of Open Access Repositories (ROAR)
Generated by http://roar.mimas.org/
UK House of Commons Science and Technology Committee
Recommendation to Mandate Institutional Self-Archiving
http://www.publications.parliament.uk/pa/cm200304/cmselect/cmsctech/399/39903.htm

*This Report recommends that all UK higher education institutions establish institutional repositories on which their published output can be stored and from which it can be read, free of charge, online.

*It also recommends that Research Councils and other Government Funders mandate their funded researchers to deposit a copy of all of their articles in this way.

[The Report also recommends funding to encourage further experimentation with the "author pays" OA journal publishing model.]

US House of Representatives Appropriations Committee
Recommendation that the NIH should mandate self-archiving
http://thomas.loc.gov/cgi-bin/query/?&d_id=cp108&e(rnt=hr636.108&s=TOC.338641&

*The Committee... recommends NIH develop a policy requiring that a complete electronic copy of any manuscript reporting work supported by NIH grants be provided to PMC upon acceptance... for publication... [and made] freely and continuously available six months after publication, or immediately [if]... publication costs are paid with NIH grant funds.

(since passed by both House and Senate, then weakened by NIH to “encourage” rather than require, and within 12 months rather than 6; publication charge not dropped; delay/embargo period up to author; encouraged to self-archive as soon as possible)

Research Councils UK (RCUK) OA Policy Proposal
Berlin Declaration OA Policy Proposal
JISC International Author Survey

RESEARCH COUNCILS UK (RCUK) will require for all grants awarded from [date TBA] that... a copy of any resultant published journal articles or conference proceedings should be deposited in an appropriate e-print repository.... Deposit should take place at the earliest opportunity, wherever possible at or around the time of publication.
http://www.rcuk.ac.uk/access/index.asp

INSTITUTIONAL OPEN-ACCESS PROVISION POLICY: Our institution hereby commits itself to adopting an official institutional policy of providing open access to our own peer-reviewed research output -- i.e., toll-free, full-text online access, for all would-be users webwide -- in accordance with the Budapest Open Access Initiative and the Berlin Declaration:

All articles are to be deposited in our own Open Access Institutional Repository immediately upon acceptance for publication
http://www.eprints.org/signup/sign.php

JISC INTERNATIONAL AUTHOR SURVEY (Swan & Brown 2005) "asked authors how they would feel if their employer or funding body required them to deposit copies of their published articles in one or more... repositories. The vast majority [95%]... reported that they would comply." http://eprints.ecs.soton.ac.uk/11005/
Current Journal Tally: 93% of journals have already given their official green light to self-archiving

FULL-GREEN = Postprint 68%
PALE-GREEN = Preprint 25%
GRAY = neither yet 7%

Publishers to date: 129
Journals processed so far: 8698
http://romeo.eprints.org/stats.php
Southampton (ECS) Bureaucratic “Keystroke” Policy: The Nth (OA) Keystroke

The metadata and full-text need merely be **deposited**, for the bureaucratic functions (for record-keeping and performance evaluation purposes).

The Nth (OA) Keystroke is strongly encouraged (for both preprints and postprints) but it is **up to you**.

**Quo usque tandem patientia nostra...?**

*How long will we go on letting our cumulative daily/monthly/yearly research-impact losses grow, now that the online medium has at last made this all preventable?*

---

**Our cumulative yearly/monthly/daily impact losses as long as we keep delaying Open Access**

(assuming even only a minimal 50% OA advantage)