

# The TARDIS Route Map to Open Access: developing an Institutional Repository Model

Jessie M.N. Hey<sup>1,2</sup>, Pauline Simpson<sup>1</sup> and Leslie A. Carr<sup>2</sup>

<sup>1</sup>University of Southampton Libraries and <sup>2</sup>School of Electronics and Computer Science

University of Southampton, Southampton SO17 1BJ

[jmnh@ecs.soton.ac.uk](mailto:jmnh@ecs.soton.ac.uk)

[ps@noc.soton.ac.uk](mailto:ps@noc.soton.ac.uk)

[lac@ecs.soton.ac.uk](mailto:lac@ecs.soton.ac.uk)

## Abstract

Open access to peer reviewed journal articles is one of the key messages of the current international movement that is changing the paradigm of scholarly communication. Creating open access journals is one such route and creating institutional repositories containing author generated electronic text is another complementary alternative. Pioneering subject based repositories, such as arXiv, have shown the way in specific disciplines but a joined up approach is required for a broader reach. Open Access standards have given the opportunity for a variety of database models to coexist and be beneficial to authors in a variety of ways. Developments in Institutional Repositories are now happening globally and significant models are gradually emerging which demonstrate best practice and illustrate their potential. In the UK, the FAIR (Focus on Access to Institutional Resources) programme of research is based on the vision of open access. It has allowed a number of repositories, which try to address authors' needs, to be kick started and has enabled the issues to be explored in practical experiments.

The Institutional Repository agenda, however, is, in reality, rather broad. Research and teaching provide a range of scholarly outputs including research publications, the data on which the research is based and the learning objects which distil the new insights into a manageable form for the learner. This broad span involves a wide variety of issues to be solved and a number of disparate standards to be tackled head on. The TARDIS (Targeting Academic Research for Deposit and dISClosure) project at the University of Southampton in the UK targeted academic research for its Institutional Repository as its first stage as a manageable goal with key benefits for the institution. The implementation of the Southampton University Research Repository (e-Prints Soton) followed a route based on studying current practices and needs and on acting on feedback from both the institution and individual faculty members. We illustrate the series of steps which were taken to build a framework for a sustainable repository for a large multidisciplinary institution.

The institution is represented by a broad range of publication types including, but not exclusively, peer reviewed journal articles and the different disciplines have evolved different recording practices. Full text deposits may provide the opportunity for added value elements – e.g. enhanced diagrams, additional data or presentations – if the database provides the capability and we are beginning to see interesting exemplars. The repository can then provide the building blocks for enhanced collaborative e-research. Academic institutions that impose research reporting in an institutional repository require full recording of publications including those where obtaining full text is difficult or inappropriate. A practical route is, therefore, to develop an institutional repository which is 'hybrid' – containing both records and full text where achievable.

While the traditional subject repositories have often developed in STM areas the TARDIS route map is proposed as a effective model to also showcase the research of the Humanities where the range of publication types is quite different. We demonstrate the key interactions that have influenced the development and the strategic direction of the Southampton University Research Repository (e-Prints Soton) which we believe will lead to open access to research results in a sustainable way. Only with a route planner which addresses the needs of authors in a spread of disciplines can the institutional repository begin to meaningfully represent the whole. The interdisciplinary nature of research can also be illustrated by the repository and the task of depositing can be eased when multiple local authors in different disciplines work together.

Along this route, the technical and management issues eg authentication and quality assurance of the metadata generation may become more complex initially because of the increased size of the database. However the significant outcome of this approach is that the full text element can grow as the practice becomes more natural within the recording process and as copyright restrictions ease. In the UK, several factors including the Research Assessment Exercise and citation impact measures based on increasing open access could also help encourage this change. The goal of providing open access to peer reviewed research items may, therefore, come about by a more circuitous but, in the end, more effective road if the demonstrated route map is followed.

## 1 Introduction

Open access to peer reviewed journal articles is one of the key goals of the international movement that is changing the paradigm of scholarly communication (Harnad and Hey, 1995). Creating open access journals is one such route and creating institutional repositories containing author generated electronic text is another complementary alternative. Pioneering subject based repositories, such as arXiv and RePEc (Krichel and Warner, 2001), have shown the way in specific disciplines but a joined up approach is required for a broader reach. Open Access standards have given the opportunity for a variety of database models to coexist and be beneficial to authors in a variety of ways. Developments in Institutional Repositories are now happening globally and significant models are gradually emerging which demonstrate best practice and illustrate their potential. In the UK, the FAIR (Focus on Access to Institutional Resources) programme of research is based on the vision of open access. It has allowed a number of repositories, which try to address authors' needs, to be kick started and has enabled the issues to be explored in practical experiments.

## 2 Involving the Institution as Key Stakeholder

The Institutional Repository agenda, however, is, in reality, rather broad (Lynch, 2003). Research and teaching provide a range of scholarly outputs including research publications, the data on which the research is based and the learning objects which distil the new insights into a manageable form for the learner. This broad span involves a wide variety of issues to be solved and a number of disparate standards to be tackled head on. The TARDis (Targeting Academic Research for Deposit and dISclosure) project at the University of Southampton in the UK targeted academic research for its Institutional Repository as its first stage as a manageable goal with key benefits for the institution. The implementation of the Southampton University Research Repository (e-Prints Soton) followed a route based on studying current practices and needs and on acting on feedback from both the institution and individual faculty members (Hey 2004). A number of institutions have reported their experience of initiating an institutional repository to build on their own practices (Chan, 2004; Gibbons, 2004; Mascord et al, 2004). The closest in concept is the latter – the CCLRC's scientific repository – here the emphasis is on including open access to full text of internal publications and linking to publisher full text for others. We illustrate the series of steps which were taken at the University of Southampton to build a framework for a sustainable repository for a large multidisciplinary institution.

## 3 The Evolution of the TARDis Route

The institution is represented by a broad range of publication types including, but not exclusively, peer reviewed journal articles and the different disciplines have evolved different recording practices. Full text deposits may provide the opportunity for added value elements – e.g. enhanced diagrams, additional data or presentations – if the database provides the capability and we are beginning to see interesting exemplars. The repository can then provide the building blocks for enhanced collaborative e-research. Academic institutions that impose research reporting in an institutional repository require full recording of publications including those where obtaining full text is difficult or inappropriate. A practical route is, therefore, to develop an institutional repository which is 'hybrid' – containing both records and full text where achievable.

The original intent at Southampton was to provide a full text publications database in the spirit of open access following the pioneering work already done at Southampton and as envisioned by the FAIR programme. The pilot was set up and demonstrated and current practices investigated. The university, however, had a tradition of recording publications for research assessment and for promotion of the university. Although there was a need to update the mechanism for obtaining this metadata it was made evident that the university would encourage the 'eprints' principle provided the publications recording could be improved and authors would not have to make duplicate effort. This led to a distinct change in policy to create a publications database with the

capacity to add full text as academics felt comfortable with copyright and became familiar with the deposit process. Thus the development moved from the 1<sup>st</sup> quadrant to the 2<sup>nd</sup> quadrant of the circle in Figure 1. below.

The next phase involved more targeted advocacy so that the model was developed with the specific needs of the different 'schools' in mind. They ranged from the world renowned Optoelectronics Research Centre with its own well managed database - sometimes with full text going back more than 30 years - to the School of Education with a strong incentive to improve the research ratings of its groups. As a bonus it had a research office to help manage its research recording. The result was a close dialogue and continued interaction on both technical and advocacy matters. In Education it was then the research office which continued the advocacy with academics from heads of groups to individuals and supported it with training. A key advantage was engaging someone who knew the school well.

The 3<sup>rd</sup> phase involves more detailed thinking about research reporting whether at individual or group level or university and national level. The Research Assessment Exercise (RAE) – so core to the UK environment – was likely to be of particular importance. There was a fundamental need to improve a process which in the past had produced warehouses full of papers which first had to be gathered (Day, 2004). The next stage was to demonstrate on a pilot database the input of publications which could be selected or deselected along with measures of esteem such as involvement in conferences. Pending further work this can then be made available to departments to manage their own publications and priorities.

Depositing metadata and preferably full text where possible for the Research Assessment gives a strong incentive to authors and encourages familiarity with the process of deposit. Groups who were asked to do this then frequently began to add other material. Along with an ever more positive external environment and other universities creating their own repositories we have an appropriate climate to build up a practice of open access in a sustainable fashion, In December 2004, the university issued a press release to announce a decision by the University to provide core funding for its Institutional Repository. This establishes it as a central part of its research infrastructure.

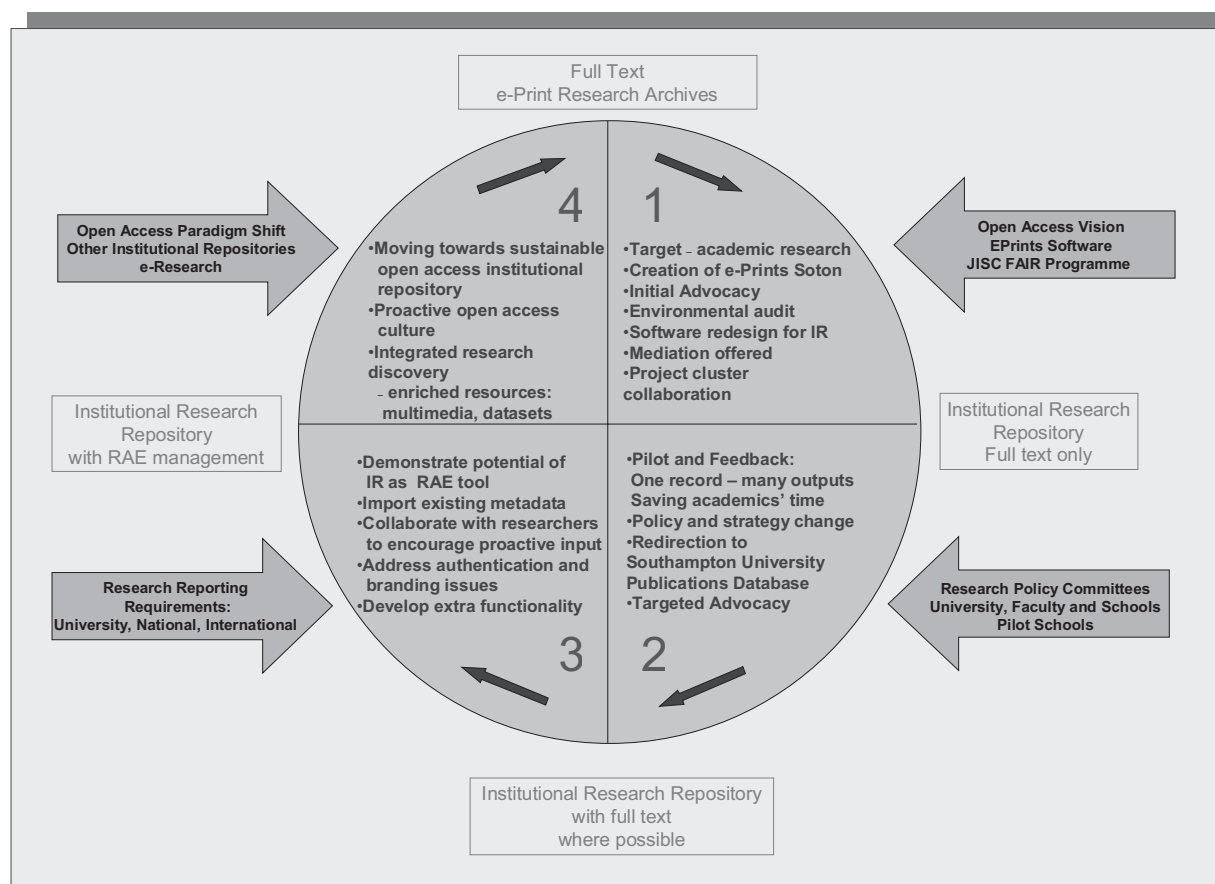


Figure 1. The TARDIS Route Map for a sustainable Institutional Research Repository

## 4 The TARDis Route Map

The TARDis Route Map demonstrates a practical method of managing both recording and deposit of research publications in an ever more progressive environment. In saving time and duplication for academics it provides a mechanism they will appreciate. More services can be added to provide more sophisticated promotional opportunities for groups at a later stage. The TARDis model also illustrates options for additional linking to a publisher's own text to both showcase the research undertaken in the institution to the widest audience and reference the associated published work. This is an extension of what already happens in the Physics community.

## 5 Implications for the Future

While the traditional subject repositories have often developed in STM areas the TARDis route map is proposed as a effective model to also showcase the research of the Humanities where the range of publication types is quite different. We have demonstrated the key interactions that have influenced the development and the strategic direction of the Southampton University Research Repository (e-Prints Soton) which we believe will lead to open access to research results in a sustainable way. Only with a route planner which addresses the needs of authors in a spread of disciplines can the institutional repository begin to meaningfully represent the whole. The interdisciplinary nature of research can also be illustrated very powerfully by the repository (e.g. one chemist working with Statistics and Computer Science; another working with the Textile Conservation Centre in the Arts Faculty). Of crucial importance to author buy-in is that the task of depositing can be eased when multiple local authors in different disciplines work together (Carr and Harnad, 2005). Whereas in individual departmental archives, a joint paper must be entered by each author, in the institutional archive it need only be entered once to represent all the authors (provided their schools are recorded by the depositing author) thus saving significant time and effort.

Along this route, the technical and management issues eg authentication and quality assurance of the metadata generation may become considerably more complex initially because of the increased size of the database. Adding legacy data promotes both population and continuity but provides big challenges of variety of practice and variable quality. To scale successfully to a full scale repository the archive should, preferably, be linked to the 'people' database to save individual registration with its associated problems. The archive also needs efficient editing authorisations so that authors and administrators can edit, enrich and also modify when an item is published.

## 6 Conclusions

So can we reach the goal of high visibility for research articles through the provision of the open access to full text we set out to achieve? With a sustainable institutional repository model we can get much closer. The external climate has dramatically changed since the University of Southampton Institutional Research Repository was first envisaged and copyright restrictions have eased considerably. The rise of institutional repositories globally has even necessitated the creation of a Directory of Open Access Repositories (DOAR), building on the foundation of the Institutional Archives Registry maintained by EPrints. This new directory will complement the Directory of Open Access Journals which currently also points to over 72.000 full text articles.

The 'hybrid' publications database portrayed in the TARDis route map plays a dual function in both providing a tool for recording all research and giving the opportunity for full text deposits to gradually become the natural way for authors to manage their research dissemination. Indeed enhanced versions of papers may become a reason to prefer the institutional copy of a paper, at times, to the publisher's version. The humanities, in particular, can benefit from the exposure of all their work even where full text deposit remains problematic or inappropriate. Added value services such as links to booksellers or eye-catching bookcovers can round out the contribution. The repository can then begin to be truly representative of the whole multidisciplinary institution and its research profile. Academics often push out the envelope with ideas for new kinds of deposits, whether research or teaching oriented or both. The goal of providing open access to peer reviewed research items may come about by a more circuitous but, in the end, more effective road if the demonstrated route map is followed. Building on these firm foundations we can envisage the day when the institutional repository will, indeed, reflect all the intellectual life of the organisation in new and more powerful ways.

## 7 Acknowledgements

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## References

- Carr, L. and Harnad, S. (2005) Keystroke Economy: A Study of the Time and Effort Involved in Self-Archiving. University of Southampton, School of Electronics and Computer Science. from <http://eprints.ecs.soton.ac.uk/10688/> 1/5/05
- Chan, L. (2004). Supporting and Enhancing Scholarship in the Digital Age: the Role of Open-Access Institutional Repositories. *Canadian Journal of Communication*, 29, 277-300. from <http://hdl.handle.net/1807/2786> 1/5/05
- Day, M. (2004). Institutional Repositories and Research Assessment. Supporting Study no. 4. ePrints UK. from <http://www.rdn.ac.uk/projects/eprints-uk/docs/studies/rae/rae-study.pdf> 1/5/05
- Harnad, S. and Hey, J. (1995) Esoteric Knowledge: the Scholar and Scholarly Publishing on the Net. In: L. Dempsey, D. Law and I. Mowat, (Eds.), *Networking and the future of libraries 2: managing the intellectual record* (pp. 110-116) London, Library Association Publishing.
- Hey, J.M.N. (2004) Targeting Academic Research: Southampton's Institutional Repository. In J.Lewis, (Ed.), *Proceedings of Online Information 2004, 30th November-2nd December 2004* (pp 127-13) Learned Information Ltd. from <http://eprints.soton.ac.uk/13598/> 1/5/05
- Gibbons, S. (2004) Establishing an Institutional Repository. *Library Technology News*, 40(4), 68pp.
- Kritchell, T. and Warner, S. (2001). Disintermediation of Academic Publishing through the Internet: An Intermediate Report from the Front Line. In A. Hübler et al. (Eds.) *Electronic Publishing '01* (pp. 194-205) Amsterdam, IOS Press. from <http://openlib.org/home/kritchell/sants.html> 1/05/05
- Lynch, C. A. (2003). Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age, *ARL BiMonthly Report*, No. 226, 1-7. from <http://www.arl.org/newsltr/226/ir.html> 1/5/05
- Mascord, M, Jones, C. and Lambert, S. ( 2004). Experience in Creating an Electronic Publications Archive at a National Scientific Laboratory. In A. Nase and G. Van Grootel (Eds.), *Proc. 7th International Conference on Current Research Information Systems: Putting the Sparkle in the Knowledge Society (CRIS 2004), Antwerp, Belgium, 13-15 May 2004* (pp. 103-112). Leuven, Leuven University Press. from <http://epubs.cclrc.ac.uk/work-details?w=30080> 1/5/05

### Relevant websites:

Directory of Open Access Journals <http://www.doaj.org/>  
 Directory of Open Access Repositories <http://www.openoar.org/>  
 FAIR (Focusing on Access to Institutional Resources) programme  
[http://www.jisc.ac.uk/index.cfm?name=programme\\_fair](http://www.jisc.ac.uk/index.cfm?name=programme_fair)  
 Institutional Archives Registry <http://archives.eprints.org/>  
 TARDis (Targeting Academic Research for Deposit and Disclosure) project <http://tardis.eprints.org/>

