

Case Study:

Oxford University Research Archive (ORA)

<http://ora.ouls.ox.ac.uk>

1 Organisational Context

The common challenges of setting up an institutional repository for research output are magnified at an institution like the University of Oxford. This is because of the large numbers of research active staff (see box) producing many research materials, and the complexity of the collegiate institution. This is further complicated by the impressive numbers of libraries (under different jurisdictions) and a large and successful university press. This institutional model results in a mixture of autonomous groups, each with their own internal systems, procedures and values, sometimes linked by core centralised services. Good examples of this have been the lack of an institution-wide staff directory, email or central publications database.

The Collegiate system means that staff sometimes feel more strongly affiliated to their college than their department. This is exacerbated by strength of bond with their research group or even external colleagues involved in their research.

Oxford Vital Statistics

Nos. of FTE research active staff* 4313

Numbers of libraries (approx):

OULS	39
Colleges	46
Other	40

*2006 figures

From a repository manager's perspective, there is no shortage of material that could potentially be included in a repository for Oxford research materials. However, the difficulties of making such a service fit across the institution procedurally, politically and technically are immense. This is in addition to the struggle to fill the repository with content, win hearts and minds and engage academics to use the repository.

2 Building a business case

Oxford (or more accurately, Oxford University Library Services, OULS) was a partner in the original SHERPA¹ project which ran for three years, 2002 – 2005. Its role was to work with a publisher (OUP, Oxford University Press) to populate a repository with articles published by Oxford authors. Because it was a small scale project, the amount of dedicated staff time was minimal and, having installed the EPrints software, continuing technical support was minimal. The project achieved its aims and, although a handful of academics self-deposited items in what was called 'Oxford ePrints,' when the project funding ceased, so did repository activity.

In 2004 OULS commissioned a report to investigate the future of eResources at Oxford (ELISO: an electronic library and information service for the University of Oxford). One of the recommendations of that report was to create a repository for the University (see box). OULS provided the funds and expertise and the Oxford University Research Archive (ORA) implementation was born. The implementation was funded for a period of two years, 2006 – 2008. The precise future of this service is, at the time of writing, under review.

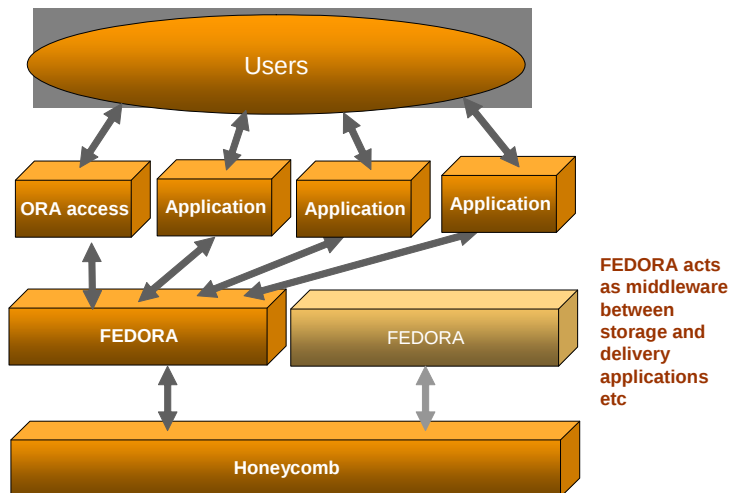
ELISO recommendation

The ELISO report recommended *'the setting up of a University wide institutional repository as a route to archiving academic output and the digital outputs of the Collegiate university.'*

It was decided to use Fedora as the underlying system for managing the repository, partly because of its support for preservation (ELISO recommendation). This decision was made, not just as the

solution for the research materials repository (ORA), but for a federated institutional repository that is being planned for Oxford. There are a number of pre-existing and potential digital collections that it is envisaged, will be interoperable and work seamlessly together. For example, there will be millions of digital images created as part of the John Johnson and other digitisation projects which will be discovered and delivered using various views so that the user is unaware of which particular part of the repository they are accessing. This large-scale plan is being overseen by the Oxford Digital Repositories Steering Groupⁱⁱ which is chaired by the Pro-Vice Chancellor for research.

DAMS: Service Oriented Architecture



A flexible service-orientated architecture has been planned for ORA. This architecture supports the business case by enabling development to suit the many and various repositories and collections that need to be integrated into what will be Oxford Digital Repositories. ORA is the first production service in this new suite of repositories. The DAMS (Digital Asset Management System) architecture has Fedora as the management layer on top of a SUN Honeycomb storage layer and is being implemented to serve multiple digital collections.

The business case for ORA is under discussion as we progress towards the end of the implementation period. The main factors in our case are:

- use for research assessment and other research management purposes
- creating a publications database for the institution
- meeting user needs and enhancing scholarly communication

In order to support the business case we have provided factual evidence for relevant committees such as figures of staffing and funding at other comparable large research-intensive universities.

3 ORA's mission

Because ORA is the first production service for the federated repositories that will form Oxford Digital Repositories, it must be constructed in such a way as to enable interoperability with other, as yet undefined, repositories. This is being done by making use of open source software, open APIs, adherence to common standards and so on. To a large extent, ORA is setting the standard.

ORA's mission is to provide a service for the preservation, management, dissemination and visibility of Oxford's research materials. Preservation and management are of equal importance to dissemination and visibility. Management includes use for research assessment and services such as providing data for departmental and other websites. The service should be robust, efficient and flexible as well as attractive and easy to use.

ORA is a repository for research materials. Although the remit at the outset of the implementation (summer 2006) was defined as a repository for ePrints and eTheses, both ORA staff experience and academic need indicated that it was vital to broaden the scope to include all types of research output such as conference materials, reports, working papers, images and so on. Use of Fedora and the web-service architecture of ORA enable the remit to be adapted as necessary ie as the situation evolves and needs change.

ORA's scope is still under discussion, particularly with regard to research data. There are a number of possible 'homes' for data at Oxford. ORA will play a part in the provision, storage and

access to data, but it has not yet been defined exactly what that role will be. The scope is being carved out by the ORA Steering Group (see below).

Many repositories are governed by their dedication to both open access and to provision of full text. This is not the case for ORA. ORA will be holding metadata only records not only for those items where the full text is not permitted, but also for items where the full text equivalent is not suitable for ORA (such as the vast terabyte grid datasets held by the Oxford eResearch Centre (OeRC) which ORA will reference) but also because it is likely that ORA will provide the University with a management tool for research materials which it does not currently have. As such, it is unlikely to obtain full text or equivalent of every item (particularly those created many years ago). ORA is also likely to be used in support of future national research assessment activities. It may not be possible or permissible to obtain and/or provide access to full text for every item.

One point to note in ORA's short history is that it was first described as a project managed by a project manager. This terminology, although strictly correct when considering the funding model, did not send out desirable messages, particularly when attempting to offer long term digital preservation. It has therefore been carefully referred to as the ORA implementation which is managed by the ORA Service & Development Manager. It was felt that members of the University would be more enthusiastic if the service didn't exude 'short-term.'

ORA's mission is being dictated by institutional needs. Although there is an overall general plan, the detail must fit with user requirements. We do not want to create a technically excellent white elephant – an impressive system but with few users. A great deal of effort is therefore being expended to investigate user needs and obtain feedback on how development should be prioritised in order to fulfil those needs. The aim is to be both proactive (ie offering innovative services) as well as reactive (managing development in collaboration with users). As in most institutions, users comprise authors/depositors, central services, teachers and probably most importantly, administrative and IT research support staff.

4 Developmental phases

4.1 Initial start-up

An initial repository went live in January 2007. It comprised a management and storage layer (Fedora) using VTLS Vital for the basic access and deposit interfaces. We decided to use MODS as the core metadata (from which DC and MARC XML are derived) and gather the richest metadata possible about each item. The level of metadata was designed for both reporting and preservation purposes: it is yet to be seen whether this is a) sustainable and b) possible to continue in all situations (eg when bulk uploading items from other databases). It is easier to lower the standard than to raise it later on. In order to simplify metadata creation, controlled vocabularies and drop-down menus were included wherever possible (eg author affiliation).

In a short time it became clear that the original plans and milestones would have to be amended. This was due to the situation with theses moving so quickly and the need to extend the remit to other forms of grey literature. We started to add new content types such as conferences and conference papers and, as a quick fix to being able to include any item types, added a *General* type.

During this initial period there was a lot of work on the legal aspects of ORA: the grant of non-exclusive licence (deposit agreement), copyright guidance and so on. We also began to write ORA policies. A help and information websiteⁱⁱⁱ was created and literature produced. A number of contacts within departments (academic and administrative) were made and information was made available to Library staff. A simple access statistics log system was put in place (although we had not yet registered with external services such as OAlster^{iv}) and we began to gather deposit statistics

4.2 Web-service architecture

It became clear that development at Oxford was going to have to be rapid. We have expert software development skills in-house, and by late summer 2007 had discovered the features and services that would have to be implemented to provide core services for a robust system. This situation coincided with seismic changes in the Fedora development community (an injection of funding and the birth of Fedora Commons) and the growth of the Fedora UK & Ireland user group. Another incident was the formation CRIG (Common Repositories Interfaces Working Group)^v that encourages innovation in the repository developers' community. The whole situation has been strongly influenced by a constant awareness of the limited implementation period and that we have to prove ourselves by the end of that time. The enormity of the task is now crystal clear and efficient means of deposit are going to be crucial.

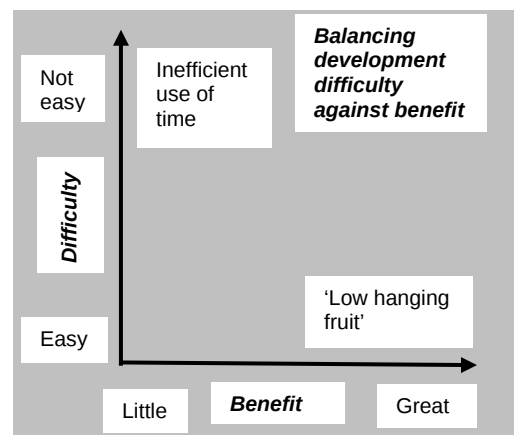
The architecture is based on Fedora with independent modular web services built on top. Building the repository in this way means that each service/module can be upgraded or changed without affecting the whole system providing the APIs are compatible. A fresh instance of Fedora (version 2.2) was installed and the transfer to this included the adoption of UUIDs (Universally Unique Identifiers) for each item. A flexible and fast search service was installed (Lucene SOLR) which provides advanced search features and faceted searching. Users can use remote custom searches (eg the Department of Philosophy can use a link that retrieves only philosophy items) and the search can be embedded in other websites. The new version of Fedora also means we can register with directories such as OpenDOAR^{vi} and OIAster.

The new architecture (initial phase) is due to be fully implemented by Summer 2008. It includes services such as full text extraction (for indexing and preservation), Darwin calendar (for recording and scheduling events such as registering an edit or running virus scans and other preservation events), RSS feeds and bookmarks (public and private). We have chosen not to use wrappers like METS apart from Fedora's in-built FOXML (Fedora Object XML). We are working closely with the webmaster in the Medical Sciences Division on the development of author profiles and sharing data using RDF. The implementation of the SUN Honeycomb storage layer is progressing and the ORA and mass ingest software engineers are working closely together. There is close liaison with staff working on the PARADIGM/CAIRO^{vii} project (also using Fedora)

Work with JISC-funded projects continues and feeds into our development: PRESERV2^{viii} (preservation), BID (Bridging the Interoperability Divide)^{ix} (combine harvester and metadata), DataShare (datasets), OARS (Open Access Repository System)^x (web services and images) and ImageWeb^{xi}.

4.3 Future plans

The possibilities offered by Fedora mean that we can create a technically advanced and flexible system. However, it is imperative to balance the excitement for offering functions 'because we can' with in-depth understanding of what users want. To this end we have planned developments in consultation with the Oxford research community. We gathered some idea of priorities as a result of the ORA seminar held in January 2008. We have more ideas for development that are being investigated and are focused on simplification, efficiency and usefulness. Some of these improvements will be difficult to achieve, so input from users helps to balance difficulty versus benefits (see diagram). There are some challenging decisions ahead.



The SUN Honeycomb storage layer is being installed underneath Fedora. We are expecting to upgrade to Fedora 3.0 in the near future (Spring 2008).

During 2008 we shall be contributing theses for digitisation as part of the JISC work and preparing ORA to be the conduit for the new EThOS UK thesis service^{xii}. The contribution of ORA to the future national REF (Research Excellence Framework) and to university research materials management is yet to be decided.

During the next 6 – 12 months we should reap the benefits of project work and work with groups around the university (such as the Oxford Internet Institute, Forced Migration Online and the Department of Plant Sciences). We are also hoping to have another upload of items from OUP.

4.4 Reflection on the process

With hindsight it might have been better to precede the two year implementation period with a longer period of fact finding and planning. Attempting to plan and implement concurrently is not easy when dealing with such a large and complex institution. Development has been constantly under the pressure of proving the value of the service before the initial implementation ends.

Asking users what they require can be difficult if they do not actually know what they want or what is possible (and some gentle explaining needs to take place if they ask for the impossible) and it is important to manage expectations and not promise more than we can deliver in the timeframe. So far this has not been a problem, but it is an issue we need to handle carefully.

Adapting and developing ready made open source software and services has proved to be a good model for Oxford. Our internal developments are being fed into the community (such as the Darwin Calendar work) and details are made available at <http://oxfordrepo.blogspot.com> and code is being made available through normal channels such as SourceForge and Google Code. Such open source development has resulted in efficient and innovative working. The choice of Fedora has been excellent for Oxford. Full time software support has been vital for success and there is still much to do: additional developers would never be wasted!

5 Overview of current contents

At the time of writing (March 2008) numbers of items held in ORA are trivial: the total stands at around 1010. ORA was seeded with about 170 items that had been self-archived in the former Oxford ePrints repository. The existing OUP items were ignored because we expect a new upload from OUP. All items deposited so far are full text, some with imposed embargoes. The current focus is mainly on text-based items, although there are a handful of images and we can accept any item type into the repository.

Apart from the RePEc (Research Papers in Economics)^{xiii} and Oxford ePrints items all items have MODS metadata with derived DC and MARC XML metadata. The records for items are derived from the MODS metadata if it exists or DC if not. All are full text indexed (unless locked files) and all MODS fields are indexed (for those items with DC, the DC is mapped to the index fields of MODS).

Flexible and non-hierarchical (RDF) relationships allow the creation of any number of collections. So far there are collections defined by item type (ePrint, thesis and so on), by research project (eg Young Lives) or by other type (such as the NEEO collection).

6 Overview of current deposit activity

We use a mixture of deposit methods:

- Mediated deposit (ORA Assistant)
- Author self-deposit (a dozen or so individuals plus thesis authors)
- Deposit by the author's representative (eg Professor's PA or a member of departmental administrative staff)

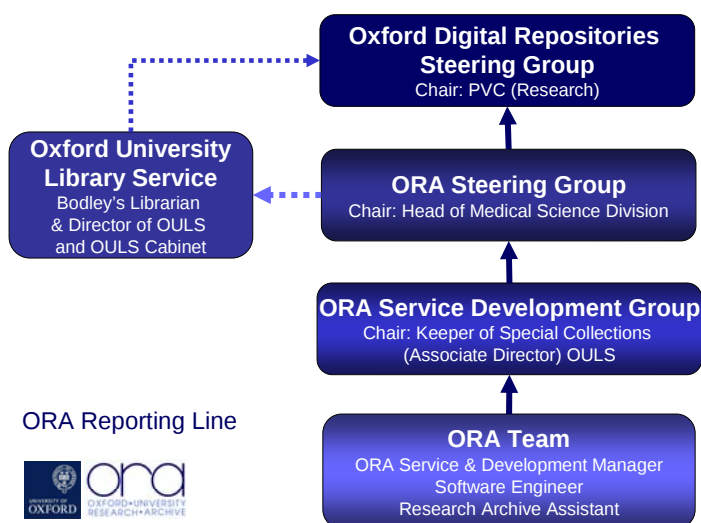
- Special collections (eg Young Lives project items added by a member of project staff, NEEO items added by a member of Social Sciences library staff)
- Bulk import from the former Oxford ePrints
- Syndication from RePEc and other repositories

Comprehensive mediated deposit by ORA staff is not sustainable. The potential large numbers of items eligible for inclusion in ORA mean that alternative methods of deposit will be necessary. It is also highly unlikely that all authors will welcome the opportunity to deposit their own work, even for future publications. Even though a number of departments and research groups have indicated they wish to use ORA for their research output, a mandate for deposit, even a 'patchwork' mandate as suggested by Arthur Sale at University of Tasmania¹, is unlikely to gain rapid ground at Oxford. Backlists of publications can be somewhat daunting. For example, one publications list we received from an academic included around 450 items, many of which pre-date the common digital era. This is a problem when persuading academics to use ORA for their CV.

We therefore need to find alternative methods of gathering items. Obviously we will try to make ORA so attractive that authors *DO* want to deposit their own items. It is frustrating that much information exists in other locations that is difficult to obtain and any re-keying is exasperating. We are therefore investigating other sources of data, both internal (eg Research Services, academic departments, RAE 2008 returns and the creation of author profiles) and external (eg open access archives such as BioMedCentral and upload of Oxford authored items from OUP). This policy does not come without its problems which have already been encountered with the minimal metadata records imported from RePEc and having to map less rich DC records to MODS. However, we will consider any possible form of bulk upload. We also see engaging administrative research support staff as one of the key groups in gathering content.

7 Institutional embedding

Because of the importance of institutional embedding and the need to establish continuation after summer 2008, we have taken a top-down approach to plant ORA well and truly within University procedures and strategies. This has been done in parallel with approaching individuals to build content. Having a steering group comprising senior members of the academic and central administrative communities has helped enormously. These people have a direct line to the most senior people within the university (ie PVCs and the VC). They also know what is going on and when, for example when the University strategy is being revised, who is on the panel (including two members of the ORA Steering Group), who to approach and how best to approach them.



We are hoping that ORA will be used as a central resource for future research assessment as it would be a key strategic means of institutional embedding. Having ORA included in the University and IT strategies and in the statutes (mandating deposit of theses) means that there are levers when applying for funding and also for continuation of the service. The reporting line is also important – it is an opportunity for engaging key senior staff (see diagram).

¹ Sale, Arthur, (2007). The Patchwork Mandate. D-Lib Magazine **13** (1/2). January/February. Available at <http://www.dlib.org/dlib/january07/sale/01sale.html> [Accessed 17.2.08]

Including and mandating deposit of theses in ORA has required exceptionally detailed work with groups such as the Graduate Office, Legal Services, Research Services and the Examination Schools. Part of this was creating procedures that fit with existing methods for print. This has the knock-on and valuable effect of presenting an opportunity for existing forms and guidance to be amended and improved (eg advice concerning patentable materials). All these activities reinforce ORA as part of the infrastructure.

A small but useful activity has been a regular monthly email update of progress. This has been sent to key people and anyone with an interest in ORA. Even if they do not read the albeit brief, contents in their entirety, it keeps ORA in their consciousness.

As well as academic and administrative circles, it has been crucial to embed ORA as a service with the libraries. This has involved lots of training and publicity and there is still a long way to go. Many library staff do not realise how relevant it is to them. The situation has been helped by the existence of the ORA Service & Development Group which comprises senior library staff.

8 Faculty engagement and advocacy

We have stressed from the start that ORA should be created for the Oxford research community and to that end we require input from that community to tell us what they need. We are keen to be seen to listen to concerns and take appropriate action if necessary. This should reassure the community that ORA is being created to fulfil their needs.

A major goal is to persuade entire academic departments to use ORA, particularly if they have already identified a need for some sort of research output store. This is slow work, and involves 'selling' to many different individuals and groups at many levels. We have been getting a foot in the door by any means we can: through librarians, key staff, attending meetings and so on. It has been important to find the benefit(s) of ORA that is appropriate for the particular group or individual, especially research support administrative staff. For example, some are keen on increased visibility whereas preservation and handing over responsibility for maintenance is the key feature for others. It is a matter of persevering until discovering what is important to them.

It has proved crucial to engage administrative and IT staff who deal with research materials. This was demonstrated by the attendance of a large group of such staff at the recent ORA seminar and the resulting follow-up. The seminar was entitled '*ORA: purposes, preferences and priorities*' and was designed to allow anyone dealing with research materials to find out what our plans for development are, and to offer suggestions as to how we might prioritise and adapt them to meet their needs. We were pleased to fill the seminar to capacity.

The advocacy campaign began in earnest in autumn 2007. There is much to do. We feel that the time for a formal launch of ORA is not yet right. Firstly, it needs to be more developed to meet user needs (ie simple to use and attractive) and for this we need much more basic work (eg on sharing data and incorporating additional services). Secondly, we are not sure that the 'come and see what we have built' approach is going to entice people to attend.

9 Policy formulation & legal aspects

Policy writing has been a part of ORA's development from the outset. Not only does writing a policy clarify what the repository is about, it also helps support decisions such as refusing certain items. So far, the policies that have been developed are fairly broad, and because they are working documents referring to a new and developing service, they will be reviewed regularly. There are a few policies remaining to be written and a risk analysis is underway. Policies are written and discussed by the ORA Service Development Group (in practice, they are first drafted by the ORA manager). They are then presented to the Steering Group for ratification. The SHERPA policy tool has been used as a starting point, but more details and elements have had to be added.

All legal documents have been scrutinised by the University's Legal Services. Legal Services tends to be under a lot of pressure and so it can be a slow process finalising documents.

10 Hosting and support

The ORA service is hosted and maintained by OULS. There is one dedicated full time software engineer. However, Fedora expertise within the department is growing because of the work on the DAMS. It remains to be seen whether this team will continue as a permanent group. Developing a system such as ORA requires consultation with other departments such as ICT support and OUCS (Oxford University Computing Services) for services such as authentication & authorisation. ORA uses existing and stable open source software, therefore contact with the rapidly growing developer community is important.

11 Service sustainability

At the time of writing the precise future of the ORA service is unresolved. There are strong indications that the University wishes the service to continue. Recommendations for continuing support for ORA are under consideration including staffing levels and associated costs. Much depends on where ORA is placed within the University. If it becomes a central tool for managing future REFs and research activity, there may be more of a role for central administration, and funding may come from different sources than now. Library Services may continue to manage the service.

One recommendation which has been put forward is for distributed creation and checking of metadata. Such work could for example, be spread across OULS. The potential amount of content means that this problem must be addressed. Numbers of items deposited in ORA annually could be in the tens of thousands (rough estimates put the total of eligible text-based items somewhere in the region of 26,000 per annum). Therefore serious consideration needs to be given to how such quantities should be managed.

12 Measuring and demonstrating success

Some basic targets to be reached by August 2008 were defined at the outset. These include numbers of text items and theses held in ORA, numbers of self-depositors and departments or other groups having indicated they will use ORA. It is however important that success is demonstrated using other measures – there is more to ORA than the quantity of items it holds. To this end, a list of measurable success factors has been drawn up which includes measures such as benefits to users, meeting the needs of administrative users and embedding in the University structure. Basic access and deposit statistics are being gathered.

13 Key challenges faced

One problem is getting the message about ORA around the University before individual groups set up their own repositories (a real possibility at Oxford). We don't want to prevent them setting them up, but it is preferable if a) they are aware of being interoperable with ORA, b) we can raise issues such as copyright and preservation which they may not be fully aware of and c) offer them a central service to avoid duplication of effort. The ability for them to pull back the content (eg RSS feeds) is important as is not losing ownership of 'their' content.

ORA as the home for Oxford eTheses has generally been a success, although not without problems. Firstly, there was a discussion as to whether ORA should require a written signature or other record for consultation of every thesis in ORA to mirror the procedure in place for hard copies. The Steering Group agreed that this practice would be impractical and the tables have been turned so that the procedure for consultation of print theses is now under review.

Another problem that raised its head regarding mandated deposit of eTheses is that of pre-publication. Although an embargo procedure is in place, this has not satisfied a group in one Division who are concerned that some years in the future, theses will be considered pre-published, thereby jeopardising acceptance for publication. This problem requires delicate negotiation to resolve the situation.

It may not be a common problem, but defining what constitutes a research thesis has been something of an adventure at Oxford. What seemed like a simple query resulted in the discovery that there are a number of different definitions. We hope that this conundrum is now resolved.

ORA staff have been pleased to find a number of sizeable and respected collections in existence around the University that are ripe for inclusion in ORA. However, translating promises and goodwill of the people involved into real action can be a long process and the data is not always 'shelf-ready' for ORA.

Researchers' strong affiliation with and use of subject and other repositories is common to Oxford as well as other repositories. Resolutions to this problem are urgently needed.

It has felt rather fraudulent to offer digital preservation when funded for only two years. However, we have taken a positive view which hopefully will be fulfilled. Digital preservation is a challenge in itself and we are doing what we can to ensure bitwise preservation and continued access to files.

The most crucial challenge exercising everyone involved with ORA at the present time is that of long term sustainability in both funding and staffing.

14 Major achievements

It is important, given the project nature of ORA funding, to be able to demonstrate successes within the two year time frame. Notable achievements so far (February 2008) are:

1. the appointment of a high level Steering Group comprising Heads of Divisions and other senior staff. This places ORA firmly in the academic context.
2. agreement for the funding for a Research Archive Assistant and her subsequent appointment.
3. the recommendation by the Steering Group that in addition to the print copy deposited in the Bodleian library, a digital copy of the research thesis should be deposited in ORA. This recommendation was presented to the EPSC (Educational Policy and Standards Committee) where it was approved in May 2007. The official announcement was published and now it forms a part of the University statutes. Mandated deposit is for new students registering from 1st October 2007. It was imperative that robust and watertight practical and legal procedures were implemented to support deposit of theses. The design and agreement of these procedures were major milestones in themselves because a) they were so complex and had to fit with the processes for print deposit and examination requirements and b) there were a number of central services involved.
4. agreement that OULS will take part in the new ETHOS service (UK British Thesis Service)
5. inclusion of ORA in the current University IT strategy
6. most importantly ORA has been included in the draft University strategic plan (2008/9 – 12/13)
7. the plan for web-services that will be installed on top of Fedora. Part of this plan involves close collaboration with the Webmaster of the Medical Science Division for work on RDF relationships and author profiles.
8. some academic departments have indicated that they will use ORA for their research output. One set up a repository for the purpose of RAE 2008 but wishes to transfer. The Oxford Internet Institute decided against setting up its own repository as it felt that ORA answered its needs and provides a centrally supported service. The Institute provided a 'press release' detailing their reasons for using ORA which we can use with other departments and groups. In addition, it has been agreed that the existing Maths repository will be subsumed into ORA once some problems have been ironed out.
9. We were pleased with the attendance and interest in ORA resulting from the recent seminar, *ORA: Purposes, priorities and preferences*.

15 Important unresolved issues

There are a number of major unresolved issues:

1. The future sustainability and maintenance of the ORA service has not yet been agreed (although it now forms a part of the draft University strategy).
2. Funding for staffing the service expires August/September 2008. Current ORA staff contracts end at that time. There has, as yet, been no official indication of staffing after this date.
3. It was agreed that the Steering and Service Development Groups would exist for the duration of the implementation period (2006-8). That period is coming to an end and the future of how the service will be run (assuming it will continue) has not yet been decided. Additionally the current chair of the Steering Group is due to retire later in 2008.
4. There have been indications that ORA might play a central role in future research assessment activities. This is yet to be decided and will play a major part in supporting the future of ORA. If it is to be used for the REF, the plans for development of ORA will need to fit with HEFCE requirements and internal deposit and reporting requirements.
5. The University of Oxford does not currently have a central publications database. ORA could take on this role.
6. What we do about the suspected vast quantities and unknown extent of research data at Oxford is a current intractable problem. We are waiting on the findings of the Oxford Digital Repositories Research Co-ordinator to report on the situation at Oxford (report due around January 2009) and to help define the scope of ORA for research data.
7. Issues associated with other item types need resolving (eg metadata for images).
8. Work on all aspects of long-term digital preservation should continue for future storage and access to ORA content.
9. Integration of ORA with other Library systems needs investigating. The library management system and eResources discovery system are currently under review.
10. In order to increase efficiency, sources, rights and technological difficulties of sharing and re-using data both internally and externally should be investigated.
11. The problems of deposit in multiple repositories needs resolving ie deposit once, share many times retaining a canonical copy in (probably) ORA. Collaboration with other partners on the MURDER (Multiple Repositories Deposit Regime) work might find some solutions. Again this feeds into efficiency and attractiveness of the service.

Sally Rumsey
ORA Service & Development Manager
March 2008

ⁱ SHERPA (Securing a Hybrid Environment for Research Preservation and Access) <http://www.sherpa.ac.uk/>

ⁱⁱ Oxford Digital Repositories Steering Group <http://www.ict.ox.ac.uk/repositories/>

ⁱⁱⁱ ORA Help & Information website <http://www.ouls.ox.ac.uk/ora>

^{iv} OAister <http://www.oaister.org/>

^v CRIG <http://www.ukoln.ac.uk/repositories/digirep/index/CRIG>

^{vi} OpenDOAR <http://www.opendoar.org/>

^{vii} CAIRO <http://cairo.paradigm.ac.uk/>

^{viii} PRESERV2 <http://preserv.eprints.org/>

^{ix} BID <http://www.ouls.ox.ac.uk/sers/bid>

^x OARS <http://oars.forcedmigration.org/>

^{xi} ImageWeb <http://imageweb.zoo.ox.ac.uk/>

^{xii} EThOS <http://www.ethos.ac.uk/>

^{xiii} RePEc <http://repec.org/>