Online Catalogue and Repository Interoperability Study (OCRIS)

Appendix 3 to OCRIS Final Report

In-depth studies of a sample of IRs and Online Public Access Catalogues

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1 Introduction

As part of Workpackage 3, the OCRIS project team devised a workflow by which to investigate Online Public Access Catalogues (OPACs) and Institutional Repositories (IRs) within 10 Higher Education Institutions (HEIs) deemed (both individually and as a group) to be representative of a particular facet of the project and its context. This purposive sampling provided a snapshot of the current situation regarding duplication of both records and scope between bibliographic/publication systems, the way item types are described and curated, the implementation and customisation of the software being used and the extent to which links are being made between the two systems.

Having identified HEIs with both OPACs and IRs within a previous workpackage, a purposive sample of these (10 in total) was selected. Establishing which item types were in scope for the OPACs and IRs, each sub-set of institutional systems was interrogated at User Interface (UI) level in order to identify and retrieve records for which examples of overlap or duplication might be found (for example, a record for the same thesis, held by both the IR and the LMS). Using these records, many issues and problems stemming from duplication, arrangement and description were explored.

The 10 institutions which OCRIS selected for in-depth study were as follows:

- Cambridge and Glasgow acted as Case Study institutions within Workpackage 3 thus were selected for inclusion.
- Hull is unusual in using Fedora software as the basis of its IR (with a Muradora interface).
- Southampton is notable for having multiple Institutional Repositories (10 in total), many of which pertain to specific subjects or disciplines.
- The National Marine Biological Library was selected as an atypical example for various reasons - its IR is both multi-institutional and subject-specific while its catalogue is based on Open Source software. OCRIS was able to explore its aims and objectives beyond the boundaries of a single University.
- Strathclyde is the "home" library of the OCRIS team and was an early advocate of Open Access repositories – being able to talk directly to staff involved in its development was beneficial.
- The University College of the Creative Arts administrate the Visual Arts Data Service (VADS), a format and discipline specific repository, using custom software.
- The metadata provided for their bi-lingual interfaces was considered in relation to the 3 HEIs which contribute to the Welsh Repositories Network (WRN): the Universities of Aberystwyth, Cardiff and Glamorgan.

The following discussion is structured according to various aspects explored relating directly to the aims and objectives of OCRIS. These are: scoping issues (primarily, duplication of scope at both item and record level as well as information provided to users on scope); the description of item and format types; the arrangement and granularity of subject menus; the application of authority control and levels of ambiguity/clarity; the instantiation of links between IRs and OPACs.

These themes are not explored herein in relation to every institution; instead, those examples deemed most illustrative have been chosen. Similarly the discussions vary in depth and length due to factors such as the number of IRs or catalogues within an institution, the amount of duplication occurring or the availability of information concerning any given system.

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All information taken from websites was correct at the time when these studies were carried out (July/August 2009). Inevitably some information will have changed since that time.
2 Scopes and item types

2.1 Cambridge University

At Cambridge University, the items searchable in the Newton catalogue are given as:

- Book
- Serial
- Electronic journal
- Electronic resource
- Disc (CD/DVD)
- Music Score
- Map
- Non-musical Recording
- Musical Recording
- Archive/Manuscript
- Kit
- Mixed Material/Collection
- Mixed Material
- Visual Material

But naturally the true scope extends beyond this list of 14 MARC-derived fields and is also more complex. Further investigation of the website reveals that the following holdings of Cambridge University Library are recorded in Newton:

- all printed books published from 1978 onwards, with the exception of Official Publications
- selected Official Publications published since 1999
- printed books published before 1978 considered to be of academic importance at the time of acquisition
- all print journals
- all electronic journals
- atlases published after 1977
- maps catalogued since August 2000
- sheet music and recorded music catalogued after 1990
- microfilms and microfiches published after 1977
- audio-visual material published after 1977
- music manuscripts

All printed books and journals in the 4 CUL dependant libraries are also recorded.

An additional note on scope states that "Coverage of books published prior to 1978 in the University Library is incomplete. Books published prior to this date, and considered at the time of acquisition to have been of secondary academic importance, are not included in Newton...[ ]...Coverage of music manuscripts in this catalogue is complete, and where such manuscripts contain two or more pieces, there are in most cases catalogue entries for each piece. This catalogue does not include theses or non-music manuscripts, which are in a separate Newton catalogue, University Library Manuscripts and Theses." 2

Yet it takes some digging for users to get down to this level of detail.

The item types for the CUL’s Pilot Universal Catalogue are the same as those listed above, but it also allows users to set search limits by format (which it terms "medium"). The range of mediums recognised in the Universal Catalogue is:

- Digital

Globe
Map
Microform
Nonprojected Graphic
Motion Picture
Projected Graphic
Sound Recording
Text (Eye-Readable)
Videorecording

DSpace@Cambridge webpages inform users that it was established in 2003, "to facilitate the deposit of digital content of a scholarly or heritage nature, allowing academics and their departments at the University to share and preserve this content in a managed environment". It provides a list of the item types contained within, derived from the standard Dublin Core "dc.item" terms instantiated within the repository. The following are listed in the ‘browse by type’ menu:

- Article
- Audio
- Book or Book chapter
- BW Image
- Colour Image
- Dataset
- Drawn image
- Image
- Journal Article - Published Version
- Journal Article - Submitted Version
- Map
- Other
- Preprint
- Presentation
- Software
- Table
- Technical Report
- Thesis

Similarly to the OPAC, the scope is in actuality broader than this, with all types of material being sought.

There is then, more potential overlap between OPAC and IR than it may seem from looking at "browse by type" menus. Conversely, overlap may be less likely than it appears once a user unearths sufficient detail. Yet it can be concluded that books, journals, maps and theses are all within scope for both systems at Cambridge. The ways in which that duplication actually occurs is considered in later sections.

2.2 University College for the Creative Arts

Types and Locations listed in "advanced search" delimiters by the UCCA Library Catalogue are as follows³:

**FORMAT:**
- Academic research output
- Cameras and IT equipment
- CD-ROMs and computer files

³ References to administrative aspects such as "reported missing", "in transit between campuses" and "CD-ROM 3 week loan" for reasons of relevance.
Copyright cleared photocopies
Dissertations and theses
DVDs, videos and digital games
Journals and newspapers
Manuscripts
Maps
Monographs i.e. books, etc.
Music and sound recordings
Slides

**ITEM TYPE:**
AV equipment
Academic research output
Audio cassette
BFI ticket - three day loan
Box of slides
British Library article
British Library book
CD
CD-ROM
Canterbury Fine Art Store
Canterbury Media Store
Computer equipment
Copyright cleared photocopy
Digital game
Electronic book
Electronic journal
Epsom Media Store
Information files
Journal
Laptop
MA reading list
Non BL document supply article
Non BL document supply book
Reference book
Scanned material (shadow catalogue)
Slide or group of slides
Thesis

**LOCATION:**
Academic Reserve Collection
Animated Films Video Collection
Annuals Collection
Archive
Artists' Book Collection
Audio Collection
Berbiers Collection
Canterbury Fine Art Store
Canterbury Media Store
Careers Collection
DVD Collection
Documentaries Video Collection
Feature Films Video Collection
Fiction Collection
Herbert Read Collection
Information Files
Journals Collection
Journals Collection (shadowed)
Look Book Collection
Map Collection
Multimedia Office
New Books Display
Off-air Recordings Collection
Online Collection
Oversize Collection
Professional Collection (in Library Office)
Rare Book Collection
Reference Collection

The OPAC does not appear to include records for single visual/digital images. Formats

The Visual Arts Data Service (VADS) is based at the Farnham Campus of the UCCA thus is treated herein as the UCCA's "Institutional Repository." However, VADS is a national service - containing over 100,000 records from many institutions for use in learning, teaching and research - and is aimed at the entire academic community.

The VADS "Collections" search offers access to 44 separate image collections, where the material types are marked "images". It also provides guidance and consultancy services in relation to digital projects and preservation.

From the catalogue lists given above it appears that the only potential scope overlap between OPAC and IR would be:
- Maps
- Slides
- Photocopies
- Scanned material

Even then this would only apply if they were derived from the two UCCA collections recorded in VADS (the Crafts Study Centre: University for the Creative Arts at Farnham and the Textiles Collection: University for the Creative Arts at Farnham) or if they linked to external digital copies of images.

In the OPAC these would always remain at bibliographic level only while in VADS images would be stored alongside richer, VRA4 bibliographic records.

In any case, there appears to be no duplication as slides/maps/photocopies and scans are not associated with the 2 UCCA VADS collections (whose parent institutions are not listed in the "Locations" menu). These specialist Centres are not libraries and the 30,000 items of the Crafts Study Centre Archive are described in the JISC-funded Archives Hub gateway service (http://www.archiveshub.ac.uk) rather than within the UCCA catalogues.

There is also potential overlap with some of the sets of "Resources" available via VADS (http://www.vads.ac.uk/resources/index.html) which include a database of selected film titles and viewing notes, transcripts of letters and multimedia collections. But generally these are clearly packaged to act as learning/teaching resources (a variety of "modules" are contained in the resources section) and are quite distinct in purpose to the bibliographic records held in the OPAC, effectively

being parts of a tailored collections. The one exception here may be the electronic copies of the journal Design.

VADS is a rich data source and merits further exploration in terms of item description/arrangement. Its search by "Themes" facility allows users to locate items within and across five key subject areas in the arts:

- Applied Arts
- Architecture
- Design
- Fine Art
- Media

The image files within these 5 themes are sub-divided into 20 classifications, with 70 listed material types or techniques. This means the material types depicted in VADS image files can only be discerned by clicking through each of the themes in turn. Whilst effectively placing the onus for building an index of material types on the end user, this type of classification is clearly designed to reflect the ways in which students think about and make use of visual arts materials (and illustrative images of them) within their work. Similarly, items are arranged by Collection (44 in total, 2 of which are UCCA collections). Students can save records to their own "lightbox" area and add tags to items.

Figure 1 - Just one of the specialised search menus tailored around media type, subject headings and 'themes' within the VADS 'browse by theme' interface. Only upon clicking through to the relevant subject "theme" does it offer the facility to limit searches or group items by material type or scope.
VADS developers are well aware of the need to interoperate beyond institutional boundaries and are currently "developing mechanisms to automatically share data with the growing Institutional Repository network and other data aggregators whose users require VADS images for their teaching and research" as part of the JISC Digitisation and e-content Programme.

2.3 University of Glasgow

At Glasgow, the *Encore Resource Discovery Platform (RDP)*, known as the "Quicksearch Service" currently searches the same database as does the main OPAC (or "Classic Catalogue") but uses different relevancy rankings and presents results in a more "Google-generation friendly" way, employing faceted menus, auto-suggest and tag clouds, for example.

It is notable that lists clarifying scope differ in terminology and number of item types listed. The main page of the OPAC lists 11. These are:

- Books
- Journals
- Audio-visual materials
- Course materials
- Electronic Resources
- Exam papers
- Maps
- Music Scores
- Rare Books
- Sound Recordings
- Theses

Those listed within the "advanced search options" of the OPAC and on the Resource Discovery Platform interface are:

- PRINT BOOK
- E-BOOK
- PRINT JOURNAL
- E-JOURNAL
- GU EXAM PAPER
- GU THESIS
- MUSIC SCORE
- MAP/ATLAS
- VIDEO
- SOUND
- EXTRACT
- E-EXTRACT
- KITS
- FINDING AID
- ARTWORK
- PHOTO SLIDE(S)
- NOT CODED
- DATABASE
- SOFTWARE
- WEBSITE
- E-SCORE
- E-MAP

This discrepancy is because of the level of granularity being applied, with "Electronic Resources" and "Audio Visual Materials" broken down into several further subtypes and "Books" becoming "Print Book" and "E-Book".

Enlighten (http://www.lib.gla.ac.uk/enlighten/) is the University of Glasgow's Institutional Repository service for published research material including:

- peer-reviewed journal articles
- published conference papers
- books and book chapters

The full list of item types only appears when you select Advanced Search, revealing them to be:

- Article
- Book Section
- Conference Proceedings
- Book
- Patent
- Artefact
- Show/Exhibition
- Composition
- Performance

Although these are probably derived from default EPrints "dc.item" types lists, it is worth observing that those listed on the homepage of Enlighten are different, as this makes a point about in/consistent description. Published conference papers appear to have been conflated with Conference Proceedings (or are they treated as "articles")?, while "book chapters" has become "Book Section".

Nevertheless, the scopes of the 3 Glasgow IRs are well defined and clear. Enlighten acts as a comprehensive publications database with as much content being made freely available as possible (and in such a way that as much of that data can be re-used in as many different places as possible).

The Glasgow Theses Service has a self-evidently narrow scope, whilst the Glasgow DSpace Service (intended to make "grey" and other non-peer reviewed outputs visible) is gradually being sidelined in favour of Enlighten.

However, remnants of the IRs’ histories as part of the "Data Providers for Academic E-content and the Disclosure of Assets for Learning, Understanding and Scholarship" (DAEDALUS) project (when scoping and other issues were less certain)⁶ can still be glimpsed in some aspects of Enlighten's User Interface (UI) as it continues its journey towards becoming a central publications system.

For users accessing the homepage, it may appear that the Glasgow Theses Service functions as a subset or specialised partition of Enlighten (Theses being referred to in its search options menu as visible in Figure 1) or that the three IRs are inter-linked. However, although there are web links provided on the Enlighten interface, allowing you to navigate and select easily between the additional Theses and DSpace Services - and conveying a seamless "one stop shop" - the underlying services are technically quite separate.

⁶ See: http://eprints.gla.ac.uk/115/ [Accessed 26th August 2009].
2.4 University of Hull

Hull is unusual because it uses Fedora Commons Repository Software for its IR. Known as eDocs, it is being customised and developed by the University's e-Services Integration Group (working in close co-operation with other members of Academic Services) and uses Muradora\(^7\) as its web-based "front end".

eDocs, it is indicated, can manage "any type" of digital material generated through research, education and administration, stating that "Materials currently being managed through the repository include images, project reports, undergraduate dissertations, teaching materials, datasets, collections of past exam papers and doctoral theses." There are plans for future development which would expand its range of content: "possible content for the future include published articles and conference papers, book chapters, and other forms of written research output".

However, the scope is somewhat unclear. While eDocs currently manages some of the research and teaching materials of academic staff and the outputs of postgraduate students it mainly focuses at present on administrative material, the repository being used to explore issues relating to institutional records management and storage, personal metadata, workflows and the use of web services.\(^8\)

Underpinning this, it seeks to support the work of both the teaching and learning communities as well as the University's administrators. The areas of potential overlap between the IR and OPAC are many.

The OPAC (http://library.hull.ac.uk/) does not provide a statement on scope, but by selecting advanced keyword search users can search by "Material Type". These types are as follows:

- ARTEFACT
- BOOK
- BOOK WITH DISK
- CASSETTE

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CD AUDIO
CHARTS
COMPUTER FILE
DVD
EBOOKS
EJOURNALS
KIT
MICROFORM
MS MAP
PERIODICAL
PLAYBILL
PRINT MAP
PRINTED MUSIC
SLIDE
SOUND RECORD
SPOKEN RECORD
TAPE WITH BOOK
THESIS
VIDEO
XEROX

A list of the "Material types" supported by the OPAC at Hull

Despite the planned integration of the IR with other institutional data services, the only duplication as yet appears to be of "Theses". However, this depends on what is classified as "Teaching Material", which is somewhat unclear.

Usefully, the OPAC provides links to electronic copies of theses held within eDocs, as can be seen below:

<table>
<thead>
<tr>
<th>Author</th>
<th>Murgia, Frankla</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Channel estimation for gigabit multi-user MIMO-OFDM systems.</td>
</tr>
<tr>
<td>Publication Info</td>
<td>2008</td>
</tr>
</tbody>
</table>

Figure 3 - The "Go to electronic thesis" hyperlink takes you to the copy held in the Hull eDocs repository.

2.5 National Marine Biological Library

LibWeb is used by the National Marine Biological Association (a UK Learned Society promoting scientific research into marine science) as the basis for its OPAC.

Its homepage states that: "LibWeb, the NMBL's online catalogue includes references to selected journal articles, books, book chapters, reports, conference papers, CDs, etc. It contains all items catalogued since 1988, the entire book collection, and a growing number of records from the old card catalogue, with an emphasis on the historical literature."
Only by contacting staff at the NMBL can users readily discover that "the selection of journal articles, book chapters, etc. (for both the old card catalogues and LibWeb) is based on the research interests of scientific staff between 1888 and about 2000." Further, "Since then only books, monographs, staff publications, and any articles relevant to British waters or marine pollution have been catalogued and indexed."\(^9\)

However, a useful collection overview is provided:

"The NMBL holds:

- 13,527 books
- 80,000 reprints
- 147 expedition report series
- 1,200 conference proceedings
- 4,668 serial titles ([click here to search serials catalogue](#))
- 1,052 current serials
- **Special collections** which include: Browne, Lebour, Harmer, Bidder and Young Libraries and Lankester Pamphlets
- **MBA archive** including papers, letters, notebooks and other documents, illustrations, photographs and pictures
- Comprehensive collection of maps, charts, atlases, expedition reports, microfilms/microfiches and CD-ROMs

**Description of collection:**

- Extensive coverage of marine biological and ecological literature
- Long runs of periodicals
- Wealth of historical literature
- Extensive reference materials
- Reports and grey literature from all parts of the world
- Worldwide coverage of research literature
- Books classified by subject, including finely illustrated, rare and valuable books from the 19th century and earlier
- Periodicals arranged in subject groups, subdivided geographically
- Rare material e.g. pre-1914 publications from Japan and the Far East, Russia, the Ukraine and other Eastern European countries
- Expedition report series dealing with deep-sea, offshore, coastal and terrestrial environments, many now difficult to locate in libraries."

The OPAC offers access then to a major research collection with much archival material. However, it is hard to get an overview of collection strengths or item types helpful to the formulation of a search strategy; this is partly because the Open Source software on which LibWeb is based is not simple or particularly user friendly. For example, a user cannot search for *phrases* ("climate change" would not find anything but "climate*change" retrieves 698 records) and the interface is quite unlike the interfaces of most OPACs or resource discovery websites.

If wishing to limit a search by year, or item type, a user must type certain commands into the "search terms" box - for example, "0909" will limit the search to items added to the catalogue from September 2009 onwards while "book" will search only for books. But which other terms might be appropriate to limit searches by item type? A list of item types is not provided thus users may have to guess whether "expedition report" or "technical paper" for example would be recognised terms.

Although the LibWeb help pages contain detailed and extensive guidance to assist users in the formulation of search queries ([http://www.mba.ac.uk/nmbl/lib_help.htm](http://www.mba.ac.uk/nmbl/lib_help.htm)) it is undeniable that

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\(^9\) Personal correspondence via email, July 2009.
discerning finer details of scope and searching the catalogue accordingly is - at least, for a novice - time-consuming.

The Marine & Ocean Science EPrints Archive @ Plymouth administered by the NMBL is "a digital archive providing access to papers produced by the staff of the Marine Biological Association of the United Kingdom, Plymouth Marine Laboratory and the Sir Alister Hardy Foundation for Ocean Science." It provides services to, and is shared by, all three organisations. Further, it:

"Is also an historical archive containing digital copies of early papers from the Journal of the Marine Biological Association of the United Kingdom." This makes its scope atypical.

The item types that can be searched are listed as:

- Article
- Book Section
- Monograph
- Conference or Workshop Item
- Book
- Thesis
- Patent
- Other
- Multimedia
- Maps

Clearly some of these correspond to the item types referred to in the OPAC, partly because of the emphasis within both of collecting historical/archival/Special Collections items and records. The "Browse by year" facility goes back as far as 1887.

As well as such items, current research imperatives are very much recognised by the repository. Details of any research output resulting from Natural Environment Research Council (NERC) funding must be added each year to the externally administered NERC Research Output Database (ROD). The OCRIS team were informed\(^{10}\) that extra fields have therefore been added to the EPrints repository for collecting information required for this annual exercise (e.g. publication type (ISI journal, non-refereed journal, etc), type of co-author (overseas institution, UK private sector, etc)). The hope was that, eventually, a programme would be developed so that records from the IR could be migrated directly to ROD.

Yet there are actually very few recent records in the IR. This, staff state, is due to a new version of the EPrints software having become available, offering far greater functionality than the version that is currently in use at NMBL. "The aim is to update the system before encouraging research staff to routinely deposit their records. Unfortunately, due to lack of IT support, the upgrade has been pending for some time now"\(^{11}\).

### 2.6 University of Southampton

The OPAC at Southampton lists the following formats as being in scope:

- Bibliographies
- British Official Publications
- Exhibition catalogues
- Medical projects
- Scores
- Statistics
- Theses
- Periodicals

\(^{10}\) Personal correspondence via email, July 2009.

\(^{11}\) As above.
This appears limited and rather mixed in its degree of specificity. For example, "Medical projects" is quite specific, certainly at discipline level (although, what type of project is left unstated) while "Statistics" might relate to any subject. It neglects entirely to mention books or book items, which are also recorded. The "Mediums" listed are more extensive and are listed in full below:

- Audio Visual
- CD (music)
- CD Rom
- Cine Film
- DVD disk
- Database
- Diskette
- E-book
- E-journal
- Electronic Academic Reserve item
- Map
- Micro card
- Microfiche
- Microfilm
- Microprint
- Multimedia
- OHP
- Poster
- Print
- Print plus diskette
- Print plus tape
- Slide
- Software
- Sound Disc
- Sound Tape
- Tapeslide
- Video

The "Items" and "Mediums" lists may be pre-loaded lists which came with the LMS software; alternatively staff may be attempting to reflect the range of specialist types of material available via their OPAC - but which is the case cannot be readily discerned.

The numerous Institutional Repositories at Southampton are as follows:

1. Ted Nelson e-Prints repository
2. 6Journal
3. Serpent
4. Portfolio
5. Cogprints
6. Language Box
7. e-Prints Soton, the University of Southampton's Research Repository
8. Edshare
9. ECS EPrints
10. eCrystals

It was only feasible for OCRIS to select a subset of these for closer investigation. Those selected were: e-Prints Soton, EdShare, eCrystals and ECS EPrints. Summaries of the scopes of all 10 IRs and explanations of how and why a sub-set was selected are however provided below.
1. The **Ted Nelson EPrints repository** has not yet been set up fully (appearing perhaps to be a test installation). It contains only 31 items at present - some of which have the item type "thing" assigned to them. Thus, it was not worth exploring further.

2. **6Journal** was established as part of an European Union Sixth Framework Programme (EU FP6) funded project and distributes information about Internet Protocol version 6 (IPv6). It is extremely unlikely that this material would be in scope for description by either the OPAC or any other Southampton IR.

3. This is also the case with **SERPENT (Scientific and Environmental ROV Partnership using Existing iNdustrial Technology)**, a media archive holding all images and video footage associated with a specific deep sea research project "exploring [the] undersea environment" to make "cutting-edge industrial ROV technology and data more accessible to the world's science community" while working in collaboration with key players in the oil and gas industry.

SERPENT has an extremely detailed subject classification scheme in place, reflecting, among other things, the biological classification and taxonomies of the sea creatures being examined. The format types held in the repository are: "Image", "Sample", and "Video". While some project outputs might be describable in the OPAC an initial search suggests that there is no duplication occurring between the systems. It is most likely that outputs are only deposited within SERPENT, rather than being itemised as bibliographic records with the library.

4. **Portfolio** states: "this repository is being developed as a portfolio for students to exhibit their work." Again, it has well defined scope, with the following item types listed:
   - GDP Report (3)
   - IRP Report (10)
   - MSc Dissertation
   - Other (7)
   - Part III Project Report (11)
   - Software (5)

Clearly content is scarce at present and - as a showcase for student work - it can be assumed that none of these items will be recorded in the OPAC, as an initial search appears to confirm.

5. **Cogprints** welcomes users with the following detailed description:

   "Welcome to Cogprints, an electronic archive for self-archive papers in any area of Psychology, Neuroscience, and Linguistics, and many areas of Computer Science (e.g., artificial intelligence, robotics, vision, learning, speech, neural networks), Philosophy (e.g., mind, language, knowledge, science, logic), Biology (e.g., ethology, behavioural ecology, socio-biology, behaviour genetics, evolutionary theory), Medicine (e.g., Psychiatry, Neurology, human genetics, Imaging), Anthropology (e.g., primatology, cognitive ethnology, archaeology, palaeontology), as well as any other portions of the physical, social and mathematical sciences that are pertinent to the study of cognition."

This clearly scoped yet highly inter-disciplinary repository was investigated further by the OCRIS team.

6. **The Language Box** was developed as part of the EdShare initiative by Southampton's Faroes project [http://www.faroes.ecs.soton.ac.uk/](http://www.faroes.ecs.soton.ac.uk/) and is based on EPrints. It represents "an attempt to reinvent learning object repositories for the Web 2.0 world" and to extend the scope of EPrints installations beyond research into teaching and learning. Further, it is positioned as:

   "A place where students and teachers of languages can publish and share their learning materials, resources and links on the web. [They] can use the resources directly, or create new activities to put your own twist on things. The Language Box is funded by JISC and designed, built and run by the
Faroes project team at the University of Southampton and the University of Portsmouth" and "is for anyone who teaches languages and who wants somewhere to host and manage their materials, it's also for language students that want to record and share good stuff that they've found."

It is stated on its website that those developing the "Learning Box" (as part of the EdShare initiative) have "re-examined old assumptions about learning objects and learning metadata" to enhance development of subject based "community repositories".

Item types given are "Activity" and "Resource". Content associated with these item types are quite specific and unusual (compared with the scopes of other institutional systems) - for example, the following items are stored within The Language Box:

- Character matching game (Mandarin Chinese)
- Daily routine by two native speakers of French
- Deutsche Zungenbrecher
- Images of Salzburg (taken by Dr. David Millard on a summer trip in 2005).

These are not likely to be catalogued in an OPAC or any other Southampton IR.

7. **e-Prints Soton** "is the University of Southampton's Research Repository and contains a growing collection of literature from the University." Further, "the service provides a simple mechanism for enabling researchers to deposit the full text of their work (self-archiving) or to give it to the central service to deposit for them (assisted archiving). It offers advice and guidance on issues such as metadata, formats and copyright. It will aim to ensure the quality of the metadata being added. It provides a complementary service to traditional catalogues and learning resources."

ePrints Soton be browsed by "Year" (going back to 1920) or by "Library of Congress Subject Area" (42291).

These Subject Areas come bundled with EPrints. Because e-Prints Soton focuses on acting as a repository for all types of research outputs, there is clearly potential overlap with some of the other Southampton IRs, regardless that their scopes are far narrower and more tightly defined (whether in terms of purpose or type of departmental output sought).

8. **Edshare** states that it is "A resource for collaboration and sharing of materials used in teaching and learning". There is no note on Scope. An Advanced Search lets you select format but doesn't specify item type. It has a variety of 'Web 2' features such as controlled tags, tag clouds, details of the person who uploaded, semantic mark-up and a comments facility, as illustrated in Figure 3 below:
Figure 4 – a typical record for a "share" item within the EdShare repository.

9. **ECS EPrints** is the IR for the School of Electronics and Computer Science at Southampton. In 2001, ECS was the first academic institution in the world to mandate self-archiving of research output. It is fitting then that the complete research output of all members of the School is available and fully searchable in their online repository. It can be browsed by Year, Research Group and searches can be limited by Creator, Editor, Keywords, or Full text status. It is the "Advanced Search" facility which offers a break down of the Item Types held by the IR:

**Item Type:**
- Article
- Conference or Workshop Item
- Book
- Book Section
- Technical Report
- Thesis
- Other

**Monograph Type:**
- Technical Report
- Project Report
- Documentation
- Manual
- Working Paper
- Discussion Paper
- Other
Presentation Type:

- Paper
- Oral Presentation
- Poster
- Other

It is interesting to note that ECS EPrints has a 'Modify RAE Information' tool although this is password protected. It would be interesting to discover what links exist between the ECS IR and research systems at Southampton, or how it may make use of bibliographic tools to assist in the preparation and gathering of research outputs.

10. eCrystals has a very clear scope, being the archive for Crystal Structures generated by the Southampton Chemical Crystallography Group and the EPSRC UK National Crystallography Service.

As the homepage of eCrystals makes clear, "The information contained within each entry of this archive is all the fundamental and derived data resulting from a single crystal X-ray structure determination, but excluding the raw images."

Accordingly, the repository supports a variety of file formats not commonly used outwith certain disciplines or fields of study - for example, JMOL allows the structures of the crystals to be modelled and the resulting models can "rotate" on screen. "Data collection parameters" and "refinement results" tables provide fields for highly specific, numeric metadata associated with a given crystal. Authors are described as "sample originators".

The "About" pages of the website illustrate the types of specific and sophisticated need which a local (as opposed to centralised), format or discipline-specific repositories can serve, and the particular arrangement and formatting of records (and the IR itself) which attendant user communities may find best fitted to their needs:

"The information contained within an entry in this archive is all the underlying data generated during the course of a structure determination from a single crystal x-ray diffraction experiment. This information is freely available and allows the reader to a) assess the validity of the dataset or b) repeat the experiment or c) use the data for further studies.

An individual entry consists of three parts:

1. Core bibliographic data, such as authors, affiliation and a number of chemical identifiers,
2. Data collection parameters that allow the reader to assess at a glance certain aspects of the crystallographic dataset,
3. Files available for download. These files are: visualisations of the raw data (.jpg), the raw data itself (.hkl), experimental conditions(.htm), outputs from stages of the structure determination (_xs.lst, _xl.lst & .res), the final structural result (.cif & .cml) and the validation report of the derived structure (_checkcif.htm)."

The repository uses Dublin Core, qualified Dublin Core to incorporate additional chemical information. It uses the eBank Schema for the exchange of crystallography metadata (an application profile) and the locally developed "eCrystals Federation Data Deposit Model" (based on a model proposed by UKOLN).¹²

Staff are currently involved in the JISC-funded "eCrystals Federation" which "will make a major contribution to the development of a repository-based e-infrastructure for research data by establishing a solid foundation of crystallography data repositories across an international group of partner sites, with metadata harvested by a number of aggregator services. The issues of

interoperability, repository deployment and preservation in a federation of data repositories are to be addressed through the testbed that this project will develop.

A typical eCrystals record is shown below:

![eCrystals](image)

**trans-3-(Tetra-O-acetyl-D-\text{-arabino-tetitol-1\text{-}\text{-yli}}}2\text{-}(2\text{-phenyl}-4\text{-benzyl-1,3-dioxo-2,4-diazapentyl}]-2\text{-phenyl-thirane}**

---

**Available Files**

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<tr>
<td>01asp001.ent</td>
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</tr>
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<td>01asp004.xpl</td>
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**Other Files**

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<td>01asp004.mol</td>
<td>7k</td>
</tr>
<tr>
<td>01asp004.sif</td>
<td>54k</td>
</tr>
</tbody>
</table>

---

Figure 5 – eCrystals is an impressive example of a subject-specific repository supporting a range of file types and modelling tools and with a clear focus on interoperability.
The numerous IRs present within Southampton appear reflect a quite deliberate strategy being enacted within the University; this would be worth exploring through further work. Some repositories (as mentioned above) are unlikely to overlap regardless of scope, as researchers will choose to deposit in their local IR (with subject headings or metadata standards more suited to their outputs) rather than the central publications repository. This can be a complex issue in terms of metadata sharing and interoperability.

2.7 University of Strathclyde

Strathprints (http://strathprints.strath.ac.uk) is the institutional repository at the University of Strathclyde. On the "Policies" page, linked to via the "About Strathprints" page, it is stated that:

- This is an institutional or departmental repository.
- Strathprints holds all types of materials.
- Papers may include:
  - unpublished pre-prints (not peer-reviewed)
  - final peer-reviewed drafts (post-prints)
  - published versions
- Papers are individually tagged with their peer-review and publication status.

Independent of software package used, such statements are largely conventional, offering only minimal information on the range of material types and publication versions (pre-prints/post-prints) that are deposited in the IR. This particular scoping statement originated on OpenDOAR (http://www.opendoar.org/tools/en/policies.php) and it suggests that essentially all item types ("all types of materials") are in scope. However, there is no comprehensive, specifically-tailored note on the scope of Strathprints as a unique repository, and end users have to dig into the search options to find what item types are currently included. On the "Depositing in Strathprints" page it states that "the following types of item can currently be deposited:

- Journal articles
- Book chapters
- Monographs
- Conference papers
- Patents
- Reviews
- Theses"

Item types which can be searched by "advanced search" are:

- Article
- Book Section
- Monograph
- Conference or Workshop Item
- Book
- Thesis
- Patent
- Review
- Artefact
- Show/Exhibition
- Composition
- Performance
- Image
- Video
- Audio
- Dataset
- Experiment
- Teaching Resource
- Other

Figure 6 - an extract of the 'Advanced Search' page of Strathprints.

The OPAC's new SUPrimo interface, which replaces the Voyager service (http://zen.lib.strath.ac.uk/) does not allow users to search by format, even as part of an advanced search. The following statement is given: "Use our SUPrimo Service to search our Library collections, including: books - journal titles - electronic resources - theses - exam papers - media resources". Thus scope cannot be readily
discerned. However, it is clear that book chapters/monographs and journal articles are common to the IR and OPAC.

3 Journal Articles

3.1 Cambridge University

Browsing the Journal Articles in DSpace@Cambridge for both published and submitted versions of articles there are found to be only 3 of each. There is currently no duplication with journal articles made available via the Newton OPAC. Examples of partial duplication (i.e. bibliographic/item level) can however be found, even with such a small sample set.

Taking the published version of the journal article "Alive and kicking: a progress report on Open Access, institutional repositories, and health information," published in the electronic journal "He@lth information on the internet" by author Peter Morgan, a search in DSpace@Cambridge retrieved the full Dublin Core metadata record for the item. Searching Newton for "Electronic resource" using the "Journal title" field for 'He@lth information on the Internet', one result is returned.

This is illustrated in the record transcripts below:

000 01674cms a22004577a 450
001 4278727
005 20080916100040.0
006 m d
007 cr n
008 981016c19989999enkbr p s 0 0eng
016 7 |a 9808211 |2 DNLM
016 7 |a SR0092289 |2 DNLM
022 __ |a 1460-4140
035 __ |a (WaSeSS)ssj0013504
040 __ |a DNLM |c DNLM |d OCoLC |d OCoLC |d NLGGC |d CU-S |d WaSeSS
050 14 |a R118.2
060 00 |a W1 |b HE35225
082 _4 |a 610.285
130 0 |a He@lth information on the Internet (Online)
245 00 |a He@lth information on the Internet |h [electronic resource].
246 3 |a Health information on the Internet
260 __ |a London : |b Royal Society of Medicine Press, |c c1998-
300 __ |a v.
310 __ |a Six times a year
362 0 |a No. 1 (Feb. 1998)-
500 __ |a Title from caption.
506 __ |a Access restricted to authorised University of Cambridge users
516 __ |a Text (electronic journal).
550 __ |a Issued by the Royal Society of Medicine in association with the Wellcome Trust.
650 __ |a Health |x Information services |v Periodicals.
650 12 |a Information Services |v Periodicals.
650 12 |a Information Storage and Retrieval |v Periodicals.
650 12 |a Internet |v Periodicals.
650 17 |a Websites. |2 gtt
650 17 |a Geneeskunde. |2 gtt
655 __ |a Electronic journals.
710 2 |a Royal Society of Medicine (Great Britain)
Full metadata record

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<th>Value</th>
<th>Language</th>
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<td></td>
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<td>dc.date.accessioned</td>
<td>2008-02-06T16:11:12Z</td>
<td></td>
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<td>dc.identifier.uri</td>
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<td></td>
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<td>dc.description</td>
<td>An updated version of a talk given at the CILIP HLG Annual Conference, Eastbourne, 11 July 2006.</td>
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<tr>
<td>dc.description.abstract</td>
<td>The Open Access movement has promoted two parallel strands of information dissemination - OA publishing, and self-archiving in OA repositories. But while the original focus was peer-reviewed scientific research papers, repositories have extended their role well beyond the original OA concept, generating a lively debate about the role of the OA movement. This paper reviews recent developments internationally, examining different OA strategies, and looking in particular at activities within the field of health information.</td>
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<td>Alive and kicking: a progress report on Open Access, institutional repositories, and health information</td>
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<tr>
<td>dc.type</td>
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</table>

Appears in Collections: Publications from University Library staff

Figure 8 – The Dublin Core record retrieved for an article in "He@lth Information on the Internet".

3.2 University College for the Creative Arts
An advanced search for *Design* magazine using the Journal title field of the UCCA library catalogue retrieves collections located in each of the 5 libraries throughout UCCA: Canterbury, Epsom, Farnham, Maidstone and Rochester (Figure 9). Holdings information for the magazine is available at: [http://librarycatalogue.ucreative.ac.uk/uhb/bin/cgisirsi.exe/APY2qAWNzW/CANTERBURY/245710023/2/1000](http://librarycatalogue.ucreative.ac.uk/uhb/bin/cgisirsi.exe/APY2qAWNzW/CANTERBURY/245710023/2/1000).

The Library OPAC retrieves records for volumes of the magazine published from 1949 as can be seen in Figure 10:

**Publication info:** London: Design Council.

**Holdings**

<table>
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<th>Material Location</th>
</tr>
</thead>
<tbody>
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<td>Canterbury</td>
<td>DESIGN</td>
<td>1 Journal Journals Collection</td>
</tr>
<tr>
<td>Epsom</td>
<td>DESIGN</td>
<td>1 Journal Journals Collection</td>
</tr>
<tr>
<td>Farnham</td>
<td>DESIGN</td>
<td>1 Journal Journals Collection</td>
</tr>
<tr>
<td>Maidstone</td>
<td>DESIGN</td>
<td>1 Journal Journals Collection</td>
</tr>
<tr>
<td>Rochester</td>
<td>DESIGN</td>
<td>1 Journal Quiet Study Room - Rochester</td>
</tr>
</tbody>
</table>

*Figure 9 – UCCA holdings information for "Design" magazine.*
Design Online is an electronic library containing a digitised record of Design magazine for the years 1965 to 1974. Through Design Online, VADS provided access to digitized copies of Design magazine between these dates, provided by the London College of Communication. It is part of the Digitisation in Art and Design (DIAD) project (http://www.vads.ac.uk/resources/DIAD.html) which, according to its webpages aims "to provide a digitised record of seminal journals in design and applied arts subjects within the Higher Education sector". Design Online only retrieves records from the years 1965 to 1974, however, is supports access to "around 100 pages in each magazine, which are available as full screen size black-and-white or colour images". The magazines are therefore a searchable resource through the VADS web interface.

Although there may be some duplication in scope between IR and OPAC here, the OPAC provides more extensive coverage to this journal whilst the IR provides enhanced functionality to end users.

3.3 University of Glasgow

Taking a pre-print titled "Changing gender relations and environmental knowledges in Upper Egypt" from the Glasgow DSpace Service repository (https://DSpace.gla.ac.uk/handle/1905/12) which contains working papers, technical reports and other grey literature, Glasgow’s other IRs and OPACs were interrogated for records of the same item.

As a pre-print it can be located in DSpace. As a post-print, it can be found in Enlighten ((http://eprints.gla.ac.uk/170/) - which wouldn't store the "pre-print" version as it is a publications database.
The University Library's OPAC also has a record for the *Geographical Journal* in which the article was published. The post-print is then available electronically by various means (Expanded Academic ASAP, the JSTOR Arts and Sciences II Collection, the SocINDEX with Full Text and the Wiley-Blackwell Full Collection):

- Geographical journal -- Expanded Academic ASAP 01 July 1994-
- Geographical journal -- JSTOR Arts and Sciences II Collection 1893- 31 Dec. 2003
- Geographical journal -- SocINDEX with Full Text 01 Mar. 2001-
- Geographical journal -- Wiley-Blackwell Full Collection

*Figure 12 - journal holdings available from Glasgow for the "Geographical Journal."

Interestingly, the title has changed between the pre- and post-printing. The pre-print is titled:

*Changing gender relations and environmental knowledges in Upper Egypt.*

While the post-print is:

*Changing women’s roles, changing environmental knowledges: evidence from Upper Egypt.*

There is clear overlap between the scope of both the IRs and the OPAC in relation to information about and copies of journal articles (not just here, but across the board). Partly this foregrounds the necessity for clear notes on version with all IR deposits (this is already occurring at Glasgow and within EPrints software generally). It also flags up the fact that ensuring links exist between pre- and post-print versions and records can help end users find what they are looking for more readily, navigating through a "seamless web" of information rather than encountering "digital dead ends".

### 3.4 University of Southampton

The following examples of overlap have been drawn from ECS ePrints and TDNet: The University Library’s Journal Catalogue.

Below is an Electronic Journals Catalogue record for the Journal *Electrophoresis* on TDNet.

*Figure 13 - Electronic catalogue record for the Journal Electrophoresis.*

13 [http://eleanor.lib.gla.ac.uk/search~S6/?t%22the+geographical+journal%22%tgeographical+journal/1%2C5%2C9%2CB/frameset&FF=tgeographical+journal+online&l%2C1%2C1%2C/indexsort=--](http://eleanor.lib.gla.ac.uk/search~S6/?t%22the+geographical+journal%22%tgeographical+journal/1%2C5%2C9%2CB/frameset&FF=tgeographical+journal+online&l%2C1%2C1%2C/indexsort=--)
Records for articles from this journal can be found in the ECS eprints repository. Figure 14 shows a record for one such article, by Cui, L., Holmes, D. and Morgan, H. and published in Electrophoresis in 2001. Only bibliographic data is available from the repository, however, the record does not direct end users to the TDNet catalogue to facilitate retrieval of the full text articles via the library’s own journals subscription.

Figure 14 - ECS eprints IR article record.

Although the IR has implemented features such as "RSS Feeds" and "Look up in Google Scholar" as well as a Google Scholar Citation count, no link has been created to highlight the availability of relevant journals via the OPAC. Users are simply told "Full text not available from the repository".

Implementing SFX or another type of link based on the metadata about where the article appeared, or pulling in data via OAI-PMH would clearly be advantageous.

3.5 University of Strathclyde

Browsing Strathprints to locate an article using the "published" limiter and with the subject "philosophy" a record was retrieved for the article ‘Children: animals or persons?’ by Claire Cassidy, published in the journal Thinking: The Journal of Philosophy for Children, Volume 17, no3, pp. 13-16, 2004. As full-text access is not provided, users are then directed to an external site; rather than suggesting the library catalogue it point you to the Monclair State University host site for the journal, where the text is only available via subscription (http://cehs.montclair.edu/academic/iapc/thinking.shtml).

Thinking: the Journal of Philosophy for Children is, in fact, recorded in the OPAC where the full-text is available via the SFX journal search, with Wilson Web making the item available electronically. As an aside, the journal is not findable using "journal of philosophy for children" but only using "Thinking" as the title, as this is how it is referred to in Wilson Web's Journal Directory.
3.6 National Marine Biological Library

The Marine & Ocean Science EPrints Archive @ Plymouth and the National Marine Biological Library both place, as noted previously, something of an emphasis on historical records and publications. In this area, it does not take long to find examples of overlap; so too in the area of more recent staff publications.

The LibWeb OPAC contains a bibliographic record for the following journal article:

<218793>
SE 1 G 1
Using historical data to detect temporal changes in the abundances of intertidal species on Irish shores. Journal of the Marine Biological Association of the United Kingdom. 85(6), 1329-1340, 2005 [63 shores surveyed in both 1958 and 2003]

Figure 16 - Bibliographic OPAC record for a journal article by a member of MBL staff.

In the repository, the full-text of this article is available, yet no links are provided from the OPAC to the IR. The following screenshot shows the repository record for this publication:
Using historical data to detect temporal changes in the abundances of intertidal species on Irish shores


Figure 17 - Full-text version of the article held in the Marine & Ocean Science Repository.

However, links from the OPAC to the IR are being instantiated in some cases, particularly in the case of historic records. Bibliographic data may be available in the OPAC while items themselves are held in the IR. In one example, the MBA website offers access to the repository copy of the 1968 publication ‘Torrey Canyon’ pollution and marine life. A report by the Plymouth Laboratory of the Marine Biological Association of the United Kingdom, edited by J.E. Smith. Sections and chapters are available as separate PDFs while the complete volume is also available for download.
Figure 18 - Hyperlinks visible in this webpage link the NMBA's bibliographic data to full-text chapters and other sections held in the Repository.

Although the LibWeb Serials Catalogue (which is separate from the main OPAC) contains listings of holdings information, item level records are not provided. This keeps the scopes of the IR and OPAC separate in terms of journal articles. Nevertheless, links to historic articles published in the *Journal of the Marine Biological Association of the United Kingdom* - records of which are held in the Institutional Repository - are provided on the Special Collections pages of the library website.

Figure 19 - Links provided on the OPAC pages to historical works by former members of the Marine Biological Association.
Results for Simple Search

4 Theses

4.1 University of Glasgow

The first item listed when searching for the term "heart" on the "Department of Cardiac Surgery – Ph D. Theses (Cardiac Surgery) Collection" within the Glasgow DSpace Service is the PhD thesis of Michael Leon James Rose:

Date of Issue 1998

Title Development of a muscle powered blood pump: fluid mechanic considerations

Authors Rose, Michael Leon James PhD

Figure 21 - DSpace record for a Cardiac Surgery PhD Thesis.

A record for the thesis is also retrievable from the Enlighten repository, as illustrated below:

Development of a muscle powered blood pump: fluid mechanic considerations


Item Type: Thesis (PhD)
Qualification Level: Doctoral
Figure 22 - Record for the same Thesis item, retrieved from the Enlighten IR at Glasgow.

Again, both the classic catalogue and the Encore RDP turn up records for this item, where links to the electronic version within Enlighten are prominent.

Figure 23 - How the RDP presents results for different manifestations of a thesis.

There is a clear duplication of scope across IRs, OPACs and RDPs with regards to the theses generated by the University - but as results are interfiled or links between the two are established, there is no "silo" effect.

4.2 University of Strathclyde

As an example of records duplication for theses at the University of Strathclyde, records for the PhD thesis of Kevin D. O’Gorman published by the University of Strathclyde in 2008 and entitled, "The Essence of Hospitality from the Texts of Classical Antiquity: The development of a hermeneutical helix to identify the origins and philosophy of the phenomenon of hospitality" were selected.

Both the University’s IR, Strathprints and the Strathclyde Library Catalogue were found to hold duplicate records for this thesis. However, links between bibliographic OPAC records and PDFs in Strathprints are being accomplished through the use of the Primo Resource Discovery Platform (known as SUPrimo) which is discussed further in Section 8.
Despite theses duplication, none of the 12 patents held in the Strathprints IR are discoverable in the OPAC. For example, whilst the thesis for the author Stuart Mackay of the University of Strathclyde’s Business School is recorded in the OPAC, his patent (WO/2004/086771) for a desktop display which is held in Strathprints, it appears, is not. This suggests that despite the OPAC claiming to collect metadata on patents, some recent ones generated by institutional staff may be going instead into the IR and evading the OPAC altogether.

Staff working with Strathprints informed us that the University Library intends to begin making theses available via its Digitool service rather than through the IR, despite the fact that theses are in scope for Strathprints and some are already deposited there. This will potentially create duplication and fragmentation for the end user.

Indeed, there is already duplication of content from the “Strathclyde Papers” Collection, recorded both in Digitool (http://oleg.lib.strath.ac.uk:8881/R/SHC37BGJYVVDJ4BQHNFTMLNBT33EYMS3LLHQRVM7D)
L89AMRNTY-00723?func=collections-result&collection_id=1119) and Strathprints, which holds many of the same papers (although, having been withheld when copyright clearance was being sought, the full-text is not yet available in Strathprints). Staff are now considering whether it is worth adding links to the full-text versions or removing the records altogether.

Indeed, there is much debate at present about whether Digitool or Strathprints would be a better repository for theses – for example, Digitool cannot provide a unique URL for each item whereas EPrints can. The library perceives cataloguing e-theses in Digitool as a natural extension of their existing work with print theses. Yet Strathprints is seeking to encourage the deposit of institutional outputs and would like theses included in its collection.

Perhaps such complications concerning the rationalisation of collection policy will undermine the role of Strathprints as it begins to become more central to planning for the REF. Records from the existing 2Research Metrics” database, currently administered by the Department of Engineering are already being transferred into Strathprints with a view to replacing the old system.

5 Name authorities and publications by author

5.1 Cambridge University

Taking the author Arandjelovic, Ognjen, a member of staff at the Department of Engineering, a search of the Universal Catalogue retrieves the following record:


Figure 26 - edited transcript of the catalogue entry for a member of the Department of Engineering.

Ognjen has not submitted anything to DSpace@Cambridge. However, in the CUED Publications Database there are 29 records for "Arandjelovic" ([http://publications.eng.cam.ac.uk/view/people/oa214.html](http://publications.eng.cam.ac.uk/view/people/oa214.html)) including his Masters Thesis but notably not the Ph.D Thesis catalogued in the OPAC.

Interestingly, from the CUED record, it can be seen that he is identified as being "person: oa214" which is his institutional (or at least his departmental ID). His website uses the same reference within its URL ([http://mi.eng.cam.ac.uk/~oa214/academic/](http://mi.eng.cam.ac.uk/~oa214/academic/)).

There are problems encountered, however, with regards to naming conventions across the IR and OPAC for both authors and the Departments to which they belong.

In CUED Arandjelovic is referred to as "Arandjelovic, Dr O." but in the OPAC his Main Author entry is "Arandjelovic, Ognjen". Here, he is also associated with the Corporate Name "University of Cambridge. Department of Engineering."

As indicated earlier, the Department's own IR is referred to as "Cambridge University Engineering Department", whilst in DSpace@Cambridge, the Department is simply called "Department of Engineering". This has implications which are discussed further in Section 5.1.

5.2 University of Glasgow

Using the example of author "Rogatchevski, Andrei", a member of staff at Glasgow in the Slavonic Studies Department (School of Modern Languages and Cultures) a number of records for published
research output were retrieved across the OPAC, RDP and both the Enlighten, DSpace and Thesis Service IRs. The OPAC retrieved this record:

```
Eduard Limonov: a critical study: thesis presented for the degree of Ph.D. in the Department of Slavonic Languages and Literatures of the University of Glasgow / by Andrei Rogatchevski.
```

This is the only entry. Simply using the name "Rogatchevski" to search, entries are returned for "Rogatchevski Andrei" and "Rogatchevski Andrei Course Convenor" (here, the name appears in the "Alt Author" field).

```
Figure 27 - Searching the OPAC using just the surname returns 2 sets of results.

Records for the author were also retrieved from Encore, Enlighten and DSpace:
1. Eduard Limonov: a critical study: thesis presented for the degree of Ph.D. in the Department of Slavonic Languages and Literatures of the University of Glasgow / by Andrei Rogatchevski
   Rogatchevski, Andrei.
   REFERENCE ONLY - Level 12 Spec Coll - Thesis 11232
   Show all 2 copies/volumes
   Location Call No. Status
   Level 12 Spec Coll Thesis 11232 Reference Only
   Slavonic Lang Dept Lib Thesis 11232 c.2 NOT KNOWN 1998

2. Slavonic Studies 1B: Post-War cinema articles
```

Figure 28 - Extract of records retrieved from Encore for Rogatchevski.

Searching Enlighten using the 'Author Field' returns:

A biographical and critical study of Russian writer Eduard Limonov

Full text not available from this repository

**Item Type:** Book  
**Status:** Published  
**Authors:** Rogatchevski, A.  
**Subjects:** P Language and Literature > PN Literature (General)  
**Faculty/Department:** Faculty of Arts > Department of Slavonic Studies  
**Publisher:** Edwin Mellen Press  
**Unique ID:** glasEPrints:2003-5185  
**ID Code:** 5185  
**Deposited On:** 23 Mar 2009 10:56  
**Last Modified:** 23 Mar 2009 10:56

*Figure 29 – Results from Enlighten for a member of the Slavonic Studies Department.*

In **DSpace** the thesis and course materials are not in scope, but a Conference Paper is:

**Title:** Aliens in New York: Slavonic émigré Authors as Taxi Drivers  
**Authors:** Rogatchevski, Andrei  
**Date of Issue:** 2003  
**Abstract:** In order to ascertain whether recent Russian fiction sheds new light on the topos of taxi driving, the author would like to give a detailed analysis of Vladimir Lobas's autobiographical novel Zheltye koroli (Novyi mir, 1-3, 1991; written in early to mid-1980s, it was translated into English as Taxi from Hell, New York, Soho Press, 1991), dealing with the experiences of a Jewish émigré taxi driver in New York. Furthermore, to determine whether there are any a) specifically Russian and b) specifically male components in Lobas's take on things, the author would like to compare his book to Iva Pekárková's autobiographical novel Dej mi ty prachy (1996; translated into English as Gimme the Money, London, Serpent's Tail, 2000), written on the same subject some ten years after Lobas's book (Pekárková also earned a living as a cab driver in New York while she was living there during her period of emigration between 1985 and 1996).

**URI:** [http://hdl.handle.net/1905/23](http://hdl.handle.net/1905/23)  
**Item Type:** Conference Paper  
**Appears in Collections:** 13th International Congress of Slavists

*Figure 30 - DSpace returns one result for Rogatchevski.*

Clearly there *is* scope duplication across Glasgow’s systems; although the thesis and book are findable in both the relevant (in terms of scope) IR and the OPAC, it is notable that Rogatchevski’s thesis is not recorded in the Glasgow Theses Service IR.
6 Name authorities and research departments and groups

6.1 University of Southampton

With 10 IRs (most but not all arranged on a discipline/subject basis), the University of Southampton presents a clear opportunity to compare and contrast a variegated suite of systems. Here, overlap between e-Prints and the ECS EPrints repositories is explored.

Although ECS e-Prints records are clearly in scope for e-Prints Soton, there are significantly more publications in the ECS's own "Nanoscale Systems Integration Group" folder (1746) than there are in the corresponding section of e-Prints Soton (25).

Taking the year 2007 as a test sample, 3 records are found to be common to the two repositories:

In e-Prints Soton:


In ECS EPrints:


Figure 31 – an edited version of results retrieved from e-Prints Soton, showing duplication of bibliographic records between e-Prints and ECS e-Prints (fig.25).

Figure 32 – the corresponding records in ECS e-Prints.

Neither system makes the full-text available and both provide links to the official location of the full-text article at Science Direct. However, while the citation details presented are nearly identical, it is notable that the research group is referred to across both IRs by different naming conventions.

The "Nanoscale Systems Integration Group" is referred to on its webpages as "Nano" and "Nano Research Group" – and it is unclear what the definitive name for this group within the University is. ePrints however, reflects accurately the structure of the University, as shown in Figure 2.
ECS EPrints, with its scope tied to a specific school (Electronics and Computer Science), organises items by Research Group, an example of which is shown below:

* ECS Groups (13989)
  o Pervasive System Centre (43)

Although these Research Groups may match the way they are referred to internally, the structure of the University and the departments of which they are a part is not referred to in the records. Only the general "ECS Groups" label is applied. However, it is worth noting that on the main webpage of the ECS Department, the term "Pervasive Systems Centre" (complete with extra "s") is used.

6.2 University of Strathclyde

The list of "Departments" used by Strathprints reflects and matches the institutional hierarchy at the University of Strathclyde and uses the University's in-house coding scheme, which matches the names of the Departments across the spectrum of the University.

A publication by Senior Lecturer Mark Sheridan from The Department of Creative and Aesthetic Studies, for example, can be found by navigating through the following browseable hierarchy:

University Departments (6910)
  o Faculty of Education (391)
    o Creative and Aesthetic Studies

Clearly this is extremely useful at an institutional level and this structure might be reflected well, for instance, within a shared XML record, provided that "University of Strathclyde" sits at the top of the tree.
Abstract

The conference will bring together some of the world's most foremost authorities on the teaching of composition and improvisation in elementary and secondary schools. Three days of workshops and presentations on the latest teaching ideas and scholarship on musical creativity.

Figure 35 – Partial record for a publication by Senior Lecturer Mark Sheridan at Strathclyde (http://strathprints.strath.ac.uk/3323/).

At record level, author names are constructed in a variety of ways, depending on the format type a user wishes to export the record in. In the OPAC, there is a record for the author Stuart McKay (a member of the University's Business School) where he is referred to under the personal name "McKay, Stuart".

McKay, S - if you look at the Dublin Core record and EndNote.
McKay, Stuart - in the EP3 XML.
S. McKay - in BibTeX.
Stuart McKay - in the ASCII citation and HTML.
McKay, Stuart - in JSON
S. McKay - in METS
McKay, S. - in Open URL Context Object and Reference
S. McKay - in Reference Manager.

Figure 36 – the many ways Stuart McKay's name is rendered by various format standards.

It might be noted that the author's name is formatted according to the same rules in both the OPAC and the EP3 XML encoding. Could these formats be potential bridges between the systems?

In Strathprints, McKay's thesis is findable via the following Departmental headings - "Strathclyde Business School > Hospitality and Tourism Management" - whilst in the OPAC the following term is associated with the record: "University of Strathclyde. Dept. of Hospitality and Tourism Management".

Such relative inconsistency has clear implications for current cross-searching, the exchange of metadata and the interoperability of both systems. Further, it could conceivably have a detrimental impact upon the compilation of accurate quantitative data on the research outputs of both individual authors and university departments for the purposes of research evaluation.

7 Subject Headings

7.1 Cambridge University

The CUL Newton OPAC does not provide information on subject coverage. Users must click through into individual MARC records to reveal the LCSH in use. This is typical of HEI OPACs because of course, their scopes are extremely general and at the same time, comprehensive. Subject fields can be used for keyword searching by end users but they do not tend to adopt the approach taken by IRs of offering browseable subject menus; these would likely become unwieldy (certainly in the case of...
Cambridge's OPAC, which includes holdings information for 89 libraries. Nor is there a standard classification scheme in use across Cambridge’s libraries; records may use different terms to describe the same subject.

It is interesting to compare some of Newton's LCSH terms with those used by the Cambridge University Engineering Department Repository (CUED), which applies two levels of classification to its subject headings: "Library Classification" and "Research Areas" (as illustrated below) with an approximately equivalent number of items represented for each. Again, there are an approximately equal amount of CUED library classifications as there are areas of research, and it is not clear whether these are the same items discoverable through different Library/Research subject searches.

Where Newton will use "Mechanical Engineering", or "Mechanics – Applied", CUED will use "Mechanics and Mechanics of Machines". The CUED system of classification appears fairly structured, and may well be based to some extent on LCSH or a conflation of its terms (some terms are indeed the same, such as "Fluid Mechanics" which is an LCSH authority heading). In another example, where CUED uses "Computers (Programming)", Newton uses the Subject heading "Programming (Electronic computers)".

There is no single recognised standard being applied to the subject headings in use across both systems. They therefore cannot efficiently be mapped or cross-searched using a single standard. Whilst interoperability of the two systems is not currently being planned, the lack of common standards could prove prohibitive if it were to be sought in future.

**Subject: Subjects (CUED Library Classification and Research Areas)**
- Subjects (CUED Library Classification and Research Areas) (13632)
  - CUED Library Classification (13446)
  - CUED Research Areas (13550)

**Subject: CUED Library Classification**
- Subjects (CUED Library Classification and Research Areas) (13632)
  - CUED Library Classification (13446)
    - A - History, Biography, Design, Useful Arts (1557)
    - B - Management, Behavioural Sciences, Psychology, Law, Economics, Education (905)
    - D - General Engineering (General to groups) (1043)
    - E - Mathematics (165)
    - F - Structures (1060)
    - G - Civil Engineering, Soil Mechanics, Surveying (1003)
    - J - Materials, Workshop Processes including Welding (1189)
    - L - Physics and Chemistry (where not placed with Groups) (739)
    - N - Electricity (3754)
    - Q - Automatic Control (1179)
    - R - Mechanics and Mechanics of Machines (452)
    - T - Fluid Mechanics, Aeronautics, Hydraulics (1297)
    - V - Thermodynamics, Heat Transfer (776)
    - X - Nuclear Engineering, Chemical Engineering (65)

**Subject: CUED Research Areas**
- Subjects (CUED Library Classification and Research Areas) (13632)
  - CUED Research Areas (13550)
    - Civil, Structural, Environmental and Sustainable Development (1860)
    - Electrical Engineering (2103)
    - Information Engineering (2673)
    - Manufacturing and Management (1716)
    - Mechanics, Materials and Design (3197)
7.2 **University of Hull**

The University of Hull [OPAC](#) can be searched using keyword searches of top-level "Subjects" while the [eDocs Institutional Repository](#) operates using un-controlled or informal subject "tags", generated (one assumes) by those depositing. Thus, while the IR lets you browse by "Subject", no controlled subject vocabulary is in place.

Compare this extract of a subject list from the OPAC:

- Accounting and Finance
- American Studies
- Art History
- Biological Sciences
- Biomedical Sciences
- Business and Management
- Chemistry
- Coastal Marine Biology
- Computer Science incl. Internet Computing
- Creative Media Technology

With an extract from one given in the IR:

- Isotopically substituted compounds
- Ja-sig, jisc, repomann, portal
- Jisc
- Johnson, magnus
- Kent
- Law
- Law and regulation
- Ledauniece, edith
- Legal material
- Legal matters
- Leicestershire
- Leucaspius delineatus
- Licence
- Lincolnshire
- Liquid crystal
- Little domesday
- Lloyd, Christopher
- Managing change

It is not immediately clear what guidelines are available to end users on how to submit materials, what the policies and procedures are in place, or how metadata is generated. This is due to the fact that authors currently submit content through an authenticated interface (using Muradora) which is not visible to the public and which Hull has developed via various JISC projects.\(^{14}\) Thus we cannot readily discern what options are presented to those making use of the repository.

We can observe however that Subject terms are often inconsistently assigned and that varying amounts of granularity are used (some very high-level, others very specific).

For example, one of the most popular Collections relates to the data and structure of the Domesday Book Online project, yet some items relating to this may be classified as being about "Kent" or about "Statistics" or "domesday", "domesday book", "domesday boroughs", "domesday statistics" and even erroneously, "domeday".

A representative of the IR at Hull informed OCRIS:

"We haven't standardised on subject headings yet, but have focused around what is most useful in the cases in question. For some areas, like e-theses, we need to start using formal headings like LoC, but for others, like committee papers, the subject headings will be standard but remain local."

The adoption of a "local" system of subject classification may do little to enhance future interoperability with the OPAC or other systems however the repository is undergoing constant development; no doubt such issues are being addressed. With its focus being primarily on administrative needs and digital rights management issues pertaining to content clearly needing curated by the institution.

At present eDocs focuses on gathering digital administrative materials which the University has a clear need to manage, rather than Open Access collections or research papers. As the repository begins to gather "published articles and conference papers, book chapters, and other forms of written research output from UoH academic staff" (http://edocs.hull.ac.uk/muradora/aboutRepository.jsp) as is planned, it will be interesting to see how its application of metadata evolves, in line with the aims of RepoMMan and other projects. As eDocs staff have stated: "the search for a tool that would fulfil [the requirement for descriptive metadata relating to textual objects] has been likened to the search for the Holy Grail".

7.3 National Marine Biological Library

Usefully, indices are provided by the NMBL OPAC to assist with keyword searching, allowing narrower, broader or related terms to be selected. A typical indice offered in response to the keyword "zooplankton" can be seen below:

15 Personal correspondence via email.
Figure 38 - a typical controlled subject term index within the NMBL's LibWeb.

Geographic and subject indexing terms have been included only "for publications reporting on British estuaries and sea areas or marine pollution."

Although complex, the OPAC is set up in a way designed to reflect the knowledge of experienced researchers familiar with the terminology being used. With access authenticated it may be unlikely that those outwith marine science and environmental sciences will gain access; yet while such users can be expected to be familiar with the terminology in use, they may nevertheless find the interface and arrangement a hindrance.

The IR is by contrast extremely general with little customisation, using default LCC indices supplied with EPrints and the following list of item types:

- Article
- Book Section
- Monograph
- Conference or Workshop Item
- Book
- Thesis
- Patent
- Other
- Multimedia
• Maps

The vast majority of LCC numbers will be inappropriate to eprints@Plymouth given its very specific scope. Searching between the OPAC and IR, users may find both the best aspects of user interface design (customisation; simplicity of search and browse) and the worst (complicated rules and terminology in the OPAC requiring much explanation; lack of focus and specificity) demonstrated by the NMBA systems.

It will be interesting to see how the repository develops when the upgrade is complete and as a greater number of current research outputs are added and whether further links with the OPAC will be established.

7.4 University of Southampton

There are clear differences among the various systems at Southampton in the case of both Subject and Name Authorities. The OPAC uses LCSH, whilst e-Prints Soton uses the Library of Congress Classification (erroneously referring to these as "Subject Areas"). These are not in fact subjects but broad category classifications. Cogprints encompasses items from various departments and disciplines and usefully provides a broad statement on scope and subject coverage on its homepage:

![Cogprints](http://example.com/cogprints)

Welcome to CogPrints, an electronic archive for self-archive papers in any area of Psychology, Neuroscience, and Linguistics, and many areas of Computer Science (e.g., artificial intelligence, robotics, vision, learning, speech, neural networks), Philosophy (e.g., mind, language, knowledge, science, logic), Biology (e.g., ethology, behavioural ecology, sociobiology, behaviour genetics, evolutionary theory), Medicine (e.g., Psychiatry, Neurology, human genetics, Imaging), Anthropology (e.g., primatology, cognitive ethology, archaeology, paleontology), as well as any other portions of the physical, social and mathematical sciences that are pertinent to the study of cognition.

**Figure 39 - statement on scope and subjects on the Cogprints homepage.**

Inside, Cogprints has adopted a mixed and more granular approach. LCSH, with some use of narrower terms or sub-divisions, alongside in-house headings deemed useful to users reflect the specificity of items in the collection. As illustrated below, journal titles are erroneously used within "Subject" menus alongside subject headings:
Not all the subject terms used in Cogprints are present in the OPAC; perhaps they are too specific. The figures below show the results of a subject search for "applied cognitive psychology" on the University of Southampton Libraries OPAC and a search for a more specialised Subject heading ("numismatics") across both e-Prints and the OPAC returned 69 hits yet in e-Prints only 1.
As part of a JISC project, EdShare has made sure to use standard subject schemes. It is as much a VLE (Virtual Learning Environment) as it is a conventional IR. Collections can be browsed using:

- JACS Subjects
- University School or Unit
- Course Modules
- Keywords

This seems extremely useful and well thought-out, catering clearly for a designated community. The following illustrations show some of the ways in which these menus appear to end users:
Figure 43 – browsing EdShare by JACS subject groupings.

Figure 44 – browsing EdShare by University School or Unit.

7.5 University of Strathclyde

An interesting example here is provided by the SFX generated "Electronic Journals" subject list, (http://ensor.lib.strath.ac.uk:3210/sfxlc3/azlist/default?&param_perform_value=searchCategories) visible when making use of the Andersonian Library’s SFX linking services. These broad headings and sub-headings relate to journal titles and correspond to journals available via certain subscription
database packages such as ABI Inform. Users have to search separately within the Library’s Electronic Database Services to find articles on a specific subject. The "Ejournals by Subject" pages include journals recorded in the library catalogue (i.e. NOT those where access derives from database aggregation services). These "Ejournals by subject" lists use controlled library terms and direct users to SFX activated abstracting databases and various other relevant subject-based resources.

### Ejournal lists (SFX generated) - by Title, Subject or Search

Use these broad SFX subject headings to find individual journal titles. To search for journal articles use the CTRL key to choose more than one subheading and the Shift key to choose all subheadings.

<table>
<thead>
<tr>
<th>Main Heading</th>
<th>Subheading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture Sciences</td>
<td>All subcategories (1219)</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>Analytical Chemistry (44)</td>
</tr>
<tr>
<td>Business, Economy and Management</td>
<td>Applied Chemistry (48)</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Biochemistry (441)</td>
</tr>
<tr>
<td>Earth Sciences</td>
<td>Chemical Engineering (150)</td>
</tr>
<tr>
<td>Engineering</td>
<td>Clinical Chemistry (19)</td>
</tr>
<tr>
<td>Environmental Sciences</td>
<td>Crystallography (35)</td>
</tr>
</tbody>
</table>

**Figure 45 - partial screenshot of the SFX-generated subjects and sub-headings used for searching aggregated journal packages.**

Unsurprisingly then, the SFX generated Electronic Journal headings do not match the Subject Headings being utilised by the OPAC or the IR. **Strathprints** uses LCC (the top level of which is supplied with EPrints 3) however, some more specific, lower level headings (around 8 -10) have been added by IR staff to reflect the granularity of the content deposited.

An SFX generated Subject Heading might be "Library and Information Sciences" while **Strathprints** would encode this subject as both "Library Science. Information Science" and "Libraries (General)". SFX records the following subheadings:

- All subcategories
- Abstracting and Indexing
- Acquisition
- Archives & Preservation
- Cataloging
- Classification
- Digital Libraries
- General and Others
- Information Sources, Services and Retrieval
- Librarianship and Libraries
- Library Automation
- Library Management
- Library Networks
- Serials Control

**Figure 46 - Examples of SFX sub-headings for "Library and Information Sciences."**

46
Returning to the example for the author Kevin D. O'Gorman (presented in Section 4.2) a subject is not given for the thesis in the OPAC. However, in the IR, a variety of subject headings are used, again, depending on the format you wish to export the record in. The main entry is shown below:

```
Item Type: Thesis (PhD)
ID Code: 7645
Keywords: hospitality industry; history; classical antiquity; hospitality; tourism;
Subjects: D History General and Old World > DE The Mediterranean Region. The Greco-Roman World
        H Social Sciences > HF Commerce
        B Philosophy. Psychology. Religion > B Philosophy (General)
        C Auxiliary Sciences of History > CB History of civilization
Department: Strathclyde Business School > Hospitality and Tourism Management
Deposited By: Dr Kevin O'Gorman
Deposited On: 05 Mar 2009 12:26
Last Modified: 05 Mar 2009 12:26
```

The keywords assigned to this record for the metadata formats supported are shown below:

The keywords assigned to this record in BibTeX format are:

- hospitality industry
- history
- classical antiquity
- hospitality
- tourism

In Dublin Core the Subject is given as:

```
subject: DE The Mediterranean Region. The Greco-Roman World
subject: HF Commerce
subject: B Philosophy (General)
subject: CB History of civilization
```

In EP3 XML, where 'Family Name' and 'Given Name' tags are used for author, the Subjects are referred to only by their numeric encoding:

```
<subjects>
  <item>DE</item>
  <item>HF</item>
  <item>B1</item>
  <item>CB</item>
</subjects>
```

In EndNote format only keywords are given:

- hospitality industry
- history
- classical antiquity
- hospitality
- tourism

In JSON, the numeric encoding is used again, for Subjects and for Department:

```
"subjects": ["DE", "HF", "B1", "CB"],
"divisions": ["13314"
```

In METS the Subjects are:

```
</mods:abstract>
<mods:classification authority="lcc">DE The Mediterranean Region. The Greco-Roman World</mods:classification>
```
In Refer the keywords again are given instead:
%K hospitality industry; history; classical antiquity; hospitality; tourism
And finally, in Reference Manager:
KW - hospitality industry; history; classical antiquity; hospitality; tourism

Figure 47 – the different ways in which keywords are chosen and assigned in Strathclyde’s EPrints IR.
8 Resource Discovery Platforms

Vertical/specialised search services are marketed more to the LMS community by vendors but are being equally considered for IR development.

Many respondents to both the IR and LMS/OPAC OCRIS questionnaires indicated that integrated RDP services were either in place or pending. The installation at Strathclyde provides a typical (and local) example of what these products might achieve and how they function.

8.1 University of Strathclyde

At the University of Strathclyde, the aforementioned thesis by Kevin D. O’Gorman's is now findable in both print and electronic form via the newly installed Primo Resource Discovery Platform (SUPrimo).

Fortunately, the Strathprints cover sheet attached to deposits gives full citation details and alerts users to the source from which the item is being retrieved. SUPrimo's navigation menus list Strathprints items returned in search results as belonging to "Other Collections" (i.e. collections not entirely controlled by the library) rather than referring to the Strathprints repository by name.

Using the author's name, or the title of his thesis, as search terms, records for both the print and electronic versions of his work are returned, as shown below. The record for the electronic version links the end user through to the full text available from the Strathprints IR (http://strathprints.ac.uk/7645). SUPrimo, however, doesn’t search subscription electronic databases such as WebofScience.

![Primo Resource Discovery Platform](http://strathprints.ac.uk/7645)

Figure 48 – Strathclyde's new Primo implementation, "SUPrimo" retrieves the two version of O’Gorman’s Ph.D thesis.
Figure 49 – SUPrimo links to the Strathprints version of a PhD thesis.


http://strathprints.strath.ac.uk/7645/
9 Three examples from the Welsh Repository Network (WRN)

As part of its investigations into the more detailed aspects of scope duplication across IRs and OPACs, OCRIS sought to address the issue of a national repository network with requirements for interfaces and records to be made available to end users in a national language other than English and the implications this may hold for the future interoperability of these IRs with the library catalogues of the Universities they serve.

A brief survey was therefore undertaken of 3 HEIs within the Welsh Repository Network (WRN): the Universities of Aberystwyth, Cardiff and Glamorgan.

Objectives a) and e) of the WRN "Start-up Project" were to establish:

a) An operational open access digital repository in every Welsh HEI that forms an integral part of the learning, teaching, research and administrative fabric of its host institution.

and

e) A national resource discovery and search service which provides integrated access to aggregated data of Welsh interest and which also makes provision for long-term preservation and archiving.

Clearly there is a requirement for institutions to seek the retrospective deposit in their IRs of recently produced articles and PhD theses if these goals are to be achieved.

Objective c) of the Start-up Project announced that a principal component, to aid end users to access the resources of the WRN would be "A bilingual interface which is fully compliant with the requirements of the Welsh Language Act" (WRN, Final Report p. 4).

Of specific interest to OCRIS, therefore, was the necessity for WRN IRs to support both bilingual interfaces and metadata (for the provision of integrated access) and the impact this may have upon the comprehensive harvesting of metadata by national/international aggregation services and the compilation of accurate publications lists of research outputs; raising the issue of what may be lost or gained if catalogue records remain 'un-translated' between systems and services.

The Welsh Repository Network, Final Report specifies the technology and standards that the WRN will use:

"All repositories will be installed using standard-compliant repository software. At a minimum this is to expose records expressed in simple Dublin Core via OAI-PMH. Other standards such as RSS or ATM feeds will be provided where supported by the software. If possible, new JISC-funded standards such as the Scholarly Works Application Profile (eprints application profile) and Simple Web-service Offering Repository Deposit (SWORD) will be included" (Welsh Repository Network, Final Report, p. 2).

9.1 University of Aberystwyth

In considering repositories which fulfil a socio-political and even Nationalist purpose, certain provisions may be made regarding scope. CADAIR (the IR at Aberystwyth) states that in addition to collecting "cutting-edge peer-reviewed" research outputs:

The following categories of successful theses and dissertations may be deposited in CADAIR in addition to the two paper copies in the library:

- Successful research theses (PhD and MPhil) in their final corrected form
- Postgraduate taught masters’ dissertations (MA and MSc)
  - which receive distinctions (whether or not a student gets a distinction overall)
  - on the subjects of Welsh, Celtic Studies and Welsh History

**Figure 50 - extract from scoping statement on the CADAIR IR.**

This would seem to suggest that the quality criteria for dissertations covering subjects of particular relevance to aspects of Welsh national identity are less stringent (as it does not state that PG dissertations on these topics must receive distinctions).

The homepage allows you to move between Welsh and English and, as illustrated in the figure below, content can be browsed according to department, the names of which are provided in both English and Welsh within the same interface. Regardless of which interface you are using, you can use English or Welsh words as search terms, as translations to Welsh are applied to Dublin Core descriptors such as "title/teitl" "author/awduron" etc. This is illustrated below:

**Figure 51 - Metadata fields translated into Welsh, with the text contained in them un-translated.**
Figure 52 - Consistent use of department names in both Welsh and English.

Neither the OPAC nor the IR explicitly list "Theses" as being in scope of their catalogues, (CADAIR opting to include them within "Other major forms of academic research content").

One example of theses duplication can be seen below:
Yet links are not provided from IR to OPAC or vice versa. This would be extremely useful as many items in CADAIR are access restricted due to the assertion of rights by publishers or other copyright issues.

With specific reference to bilingual issues, at the time of writing there are 81 theses held or detailed in the institutional repository at Aberystwyth. Of these, 3 are MPhil theses, 52 are PhD theses, and 25 Taught Masters’ dissertations. There are 3 Welsh language entries listed in the MPhil theses collection in the IR. Selecting the "Full metadata record" for one of these reveals that the item is
catalogued in its language of origin (Welsh), yet translation into English in the dc.description.abstract metadata field is not provided.

Title: Dau o weithiau Robert Holland (c. 1556/7-1622): Ymddiddan Tudur a Gronw a’r Basilikon Doron

Authors: Morgan, Adrian

Full metadata record

<table>
<thead>
<tr>
<th>DC Field</th>
<th>Value</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>dc.contributor.advisor</td>
<td>Williams, Gruffydd Aled</td>
<td>-</td>
</tr>
<tr>
<td>dc.contributor.author</td>
<td>Morgan, Adrian</td>
<td>-</td>
</tr>
<tr>
<td>dc.date.accessioned</td>
<td>2008-02-26T14:44:12Z</td>
<td>-</td>
</tr>
<tr>
<td>dc.date.available</td>
<td>2008-02-26T14:44:12Z</td>
<td>-</td>
</tr>
<tr>
<td>dc.date.issued</td>
<td>2008</td>
<td>-</td>
</tr>
<tr>
<td>dc.identifier.uri</td>
<td><a href="http://hdl.handle.net/2160/512">http://hdl.handle.net/2160/512</a></td>
<td>-</td>
</tr>
<tr>
<td>dc.description.abstract</td>
<td>Yn y traethawd hwn ymdrinnir â dau o cybrif weithiau Robert Holland (c. 1556/7-1622), sef ei Ymddiddan Tudur a Gronw a gyhoeddwyd yn Rhydychen yn 1600 a'i gyfieithiad Cymraeg o Basilikon Doron y brenin Iago a gyhoeddwyd yn 1604. Yn y bennod gyntaf trafodir y manylion bywgraffyddol sy’n hysbys am Robert Holland ac ymdrinnir â’i gyfnod fel myfyriwr yn Mhrifysgol Caer-grawnt gan nodi nifer o unigolion a allai fod wedi dylanwadu ar yr efryddifanc. Yna, trafodir ei safbwynt diwinyddol a chesiris olrhain ei yra fel offeiriad yn Eglwys Loegr. Caisir crynhohi ei gysylltiadau diddorol yn sir Benfro a thu hwnt a chronicir ei yra lenyddol hefyd. Yn yr ail bennod rhoddir sylw i’w draethawd yn erbyn dewiniaeth—sef Ymddiddan Tudur a Gronw—sydd ar ffurf ymddiddan rhwng dau gymeriad. Ymdrinnir â’r testun ei hun a chesiris crynhohi manylion ei argraffu. Ar sail tystiolaeth a ganfuwyd yn y Ffydd Ddifffu gwnt Charles Edwards, dadleir i’r testun gael ei gyhoeddii yn ystod y flwyddyn 1600. Creffir ar ddiddorol hyn y cyfnod hwn mewn dewindabaeth a chesiris crynhohi ymateb y Cymry i’r mania hwn. Yna, ymdrinnir â chynnwys y testun. Mae’r atodiad sydd ynglwim wrth y traethawd hwn yn gymhariaeth o’r fersiwn llawysgrif (sydd i’w gaer yn Llslgr. Crwtrmawr 114B) a’r fersiwn printiedig a olygwyd gan Stephen Hughes yn 1681. Yn y drydedd bennod ymdrinnir â chefndir y testun</td>
<td></td>
</tr>
</tbody>
</table>
Figure 55 - a record from CADAIR with the abstract in Welsh but not English.

The approach of CADAIR here is helpful for Welsh language users, with catalogue records also being made available in Welsh. However, translations for end users are provided at the level of individual search/encoding fields within the metadata, not between records. The example above is from the Welsh language “Cymraeg” interface, but the English language interface carries the same Welsh language metadata for the “dc.description.abstract field”. Although integrated, the catalogue record (for this item at least) is not accessible in a distinct translated versions, presumably down to the resources available for such labour intensive cataloguing workflows.
CADAIR does integrate links to Social Networking and Social Bookmarking sites, such as “Facebook”, “del.icio.us”, “StumbleUpon”, “Digg” and “reddit” showing an awareness that its records are being accessed and re-used by wider linguistic communities.

9.2 University of Cardiff

The first point that might be made regarding ORCA (Online Research @Cardiff) and the Voyager Library Catalogue as Cardiff is that while the IR is presented, described, and catalogued in English only, the OPAC offers a Welsh interface offering translations of significant search fields.

Figure 56 - The bi-lingual (English-Welsh) Voyager Library Catalogue search interface at the University of Cardiff. Only certain fields can be viewed in either language.

Again though, only certain fields (usually at "top level") are translated into Welsh; many others used to structure searches (such as "keyword anywhere" or "title") are presented only in English. It would be interesting to investigate this further, as it may be that there are problems with making certain fields Welsh, which has implications for mapping and semantic interoperability and data exchange.

The translation of the University name into/from Welsh appears on the website but this process of translation does not apply to Cardiff's own IR or to the records of any of its scholarly resources therein, although (of course) users can search for Welsh language artefacts.

Given the importance of the Welsh national language in the nation's education system, the question remains as to whether such a discrepancy between the IR and OPAC suggested an assumption of intrinsically different user communities for - or at least, a lack of shared agendas and workflows between those administering - each system.

The only information on item scope in OCRA is that it is "a digital repository of research publications" and that it "is not intended to be a substitute for peer-reviewed journals, but has been developed to host work by Cardiff University researchers that has already been, or will be, published elsewhere." Although the advanced search menu lists item types these are standard EPrints/Dublin Core fields (http://orca.cf.ac.uk/cgi/search/advanced) - a specific statement on OCRA's scope is not provided.

The OPAC lists 8 item types where the IR lists 18. Other than "Book" there is no other clear, unambiguous "Item" search that could be repeated across both IR and OPAC – and "book" itself is not altogether without debate.
As objective e) of the WRN Start Up Project advocated "A national resource discovery and search service which provides integrated access to aggregated data of Welsh interest", a simple search was undertaken for books of, or about, poetry in Welsh.

Selecting the "set limits" facility and setting the language limiter to "Welsh", the item type limiter to "Book", and placing "Welsh poetry" in the "Title Begins With" search field, 10 records are returned, 1 of which is for a microfilm reel of "Welsh poetry and miscellanea" published by the National Library of Wales in 2007:

![Figure 57 - OPAC record for microfilm reel of "Welsh poetry and miscellanea".](image)

It is revealing that the MARC record contains bi-lingual descriptors, indicating one subject in Welsh (MARC field 650 0 |a Englyns) and another in English (MARC field 650 0 |a Welsh poetry).

This is illustrated below:

```
000 00797cam a22002415i 450
001 822583
005 20080225130645.0
008 071203s2007 wlk 000 m wel d
040 __|a WlCaUW |c WlCaUW
098 00 |a Humanities microfilm 405
130 _|a NLW Ms. 13237E
245 10 |a Welsh poetry and miscellanea |h [microform]
246 33 |a LLGC 13237E
246 33 |a NLW 13237E
260 _|a [Aberystwyth] : |b [National Library of Wales], |c [2007]
300 __|a 1 microfilm reel
509 _|a Filmed from the collection of the National Library of Wales, May 2007.
509 _|a Formerly known as Mysevin 17.
509 _|a A collection of papers formerly inserted in N.L.W. MS. 13236B.
650 _|a Welsh poetry
650 _|a Englyns
710 _|a National Library of Wales. |k Manuscript. |n 13237E
991 10 |d WELSH
```

![Figure 58 - MARC record returned when searching for items in Welsh.](image)
From this it appears that the locally defined 991 field is being used to allow "language" to be searched, rather than the language encoding in the 008/040 fields. However exploring other records presented in the search results list it is evident that in some cases it is the 509 or 549 fields which contain information on language, with 991 not used. It would be worth investigating further to discern whether this variation is because of different practices among the 18 different libraries contributing records or the fact that records have been imported from elsewhere and do not conform to Cardiff’s internal standard (for instance). Whatever the case, there is a clue here about potential problems with offering interfaces based on language or attempting to text mine, when consistent standards or rules are not being applied.

9.3 University of Glamorgan

A search for "theses" limited by "PhD theses from the University of Glamorgan" from the search menu, retrieves 1 record within Glamorgan DSpace, for Design and investigation of scalable multicast recursive protocols for wired and wireless ad hoc networks by Firas Al-Balas:

![Design and investigation of scalable multicast recursive protocols for wired and wireless ad hoc networks by Firas Al-Balas](image)

Figure 59 - partial record of a thesis held in Glamorgan's DSpace repository.

A search within the OPAC for the same author retrieves the record for the thesis there also.

![Design and investigation of scalable multicast recursive protocols for wired and wireless ad hoc networks by Firas Al-Balas](image)

Figure 13. Record for Design and investigation of scalable multicast recursive protocols for wired and wireless ad hoc networks by Al-Balas, Firas.

The full catalogue record is given below:

**Author**  
Al-Balas, Firas.
In this example, where there are two entry points to retrieve the same resource, there does appear to be clear scope duplication between selected IRs and OPACs within the WRN.

Browsing the repository by subject and selecting "artificial neural networks" retrieves a record for the following thesis, also listed in DSpace under "PhD theses from the University of Glamorgan."

<table>
<thead>
<tr>
<th>Issue Date</th>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-Jun-2009</td>
<td>Using artificial neural networks to forecast changes in national and regional price indices for the UK residential property market</td>
<td>Paris, Stuart David</td>
</tr>
</tbody>
</table>

Showing results 1 to 1 of 1

*Figure 60 - record retrieved for a PhD thesis in Glamorgan's DSpace IR.*

However an advanced search under the thesis title of Glamorgan’s thesis collection for the current year 2009 in the OPAC retrieves no records, nor do any results match the author Stuart David Paris.

There is a question mark, therefore, on whether thesis deposits in the IR at Glamorgan are also being systematically recorded in the OPAC. The question over thesis deposit, however, also works in the opposite direction. For the year 2008, there were 19 theses catalogued in the OPAC, yet there are only 3 theses in total listed in the Glamorgan IR under "thesis collection".

### 9.4 Some conclusions

If the Welsh Repository Network is to achieve its stated aim of making its network of IRs integral to the fabric of learning, teaching and research at their host institutions, it must continue to address the issues of scoping, the visibility of theses and the provision of national language metadata. It will be interesting to see how the network develops.

The question also remains as to whether the Welsh language materials in IRs, which may be catalogued only partly in Welsh, can be adequately served by aggregator services and other national data banks. End users may retrieve records by browsing item types listed within their local repositories, or by knowing in advance what they are searching for (i.e. works by a given author, on a given subject or produced by a specific department such as the Welsh Department at Aberystwyth).

Questions remain as to whether the same records would be retrieved when undertaking similar searches where less is known in advance, or within the OPAC; and to whether the Abstract field will adequately support keyword extraction. For example, data mining tools might theoretically be used...
within aggregator services (or virtual research environments) because there is no field provided to
denote language.

If aggregator services assume that items are in English, they are unlikely to support searching by
language or implement a "dc.language" field or LANG qualifiers for all records; this would,
however, be advisable and could point toward the future incorporation of items in other non-English
languages. Welsh uses the Latin alphabet so as a starting point, this should be easier to implement
because support for foreign character sets would not be required.

The point is made, not to disparage a practice which advances the representation of national
languages within the scholarly community, but to raise the issue of whether MPhil theses and
dissertations output is being made sufficiently visible at the level of the national repository network
through adequate record translation.

The consistent use of language fields would also increase the likelihood of LMS records and IR
records being retrieved via advanced searching in ways most beneficial to bi-lingual users.
URLs for IRs and OPACs considered in the in-depth study

1. **University of Aberystwyth**
   Institutional Repositories
   http://cadair.aber.ac.uk/dspace/
   OPACS
   http://voyager.aber.ac.uk/vwebv/searchBasic?sk=en

2. **University of Cardiff**
   Institutional Repositories
   http://eprints.cf.ac.uk / http://orca.cardiff.ac.uk/ ORCA - Online Research @Cardiff
   OPACS
   http://library.cf.ac.uk/

3. **University of Cambridge**
   Institutional Repositories
   Computer Laboratory Technical Reports: http://www.cl.cam.ac.uk/techreports/
   DSpace at Cambridge: http://www.DSpace.cam.ac.uk/
   CUED Publications Database: http://publications.eng.cam.ac.uk/
   OPACS
   Janus: http://janus.lib.cam.ac.uk/

4. **University College for the Creative Arts**
   Institutional Repositories
   http://vads.ac.uk
   OPACS
   http://librarycatalogue.ucreative.ac.uk/uhbin/cgisirsi.exe/x/CANTERBURY/0/49

5. **University of Glasgow**
   Institutional Repositories
   Enlighten http://www.lib.gla.ac.uk/enlighten/
   Glasgow Theses Service: http://theses.gla.ac.uk/
   Glasgow DSpace: https://DSpace.gla.ac.uk/index.jsp
   OPACS
   Encore (Resource Discovery Platform): http://encore.lib.gla.ac.uk/iii/encore/app
   Classic catalogue: http://eleanor.lib.gla.ac.uk/search/

6. **University of Glamorgan**
   Institutional Repositories
   http://dspace1.isd.glam.ac.uk/dspace
OPACS
http://opac.glam.ac.uk/TalisPrism/

7. University of Hull
Institutional Repositories
http://eDocs.hull.ac.uk/muradora

OPACS
http://library.hull.ac.uk/

8. National Marine Biological Library
Institutional Repositories
http://sabella.mba.ac.uk

OPACS
http://www.mba.ac.uk/NMBL/collection/access_to_libweb.htm
http://www.mba.ac.uk/isis/serlis/index.html

9. University of Southampton
Institutional Repositories
http://tprints.ecs.soton.ac.uk
http://Cogprints.org/
http://EPrints.soton.ac.uk/
http://www.edshare.soton.ac.uk/
http://ecrystals.chem.soton.ac.uk/
http://portfolio.ecs.soton.ac.uk/
http://EPrints.ecs.soton.ac.uk
http://www.6journal.org/
http://archive.serpentproject.com/
http://languagebox.EPrints.org

Narrowing this list down to the ones most relevant to OCRIS (i.e. ones which are not so specialised that there may be overlap we get:

http://EPrints.soton.ac.uk/
http://Cogprints.org/
http://EPrints.ecs.soton.ac.uk
http://www-lib.soton.ac.uk/
http://www.tdnet.com/soton

OPACS
http://www-lib.soton.ac.uk/

10. University of Strathclyde
Institutional Repositories

http://strathprints.strath.ac.uk

OPACS and RDPs

http://zen.lib.strath.ac.uk/ http://suprimo.lib.strath.ac.uk/primo_library/libweb/action/search.do?vid=SUVU01&fromLogin=true&fromLogin=true