## 1    Introduction

In September 2011, Edina commissioned Glenaffric Ltd, in association with other consultants, to support its work with JISC in leading the development of a repository and curation services infrastructure for UK higher education. A key purpose of this work is to identify and scope a set of services that will enable institutions to continue to operate repositories in a context of efficiency, cost-effectiveness and sustainability.

Glenaffric Ltd was asked to focus on engaging with two key stakeholder groups:

- Institutional Managers (including repository managers, senior librarians, and institutional senior managers with responsibility for research)

- Principal Investigators (PIs) and Authors (academics)

An interim report submitted in November 2011 focused principally on analysing and presenting the views of repository managers from a range of institutions across the UK. The scope of this final report includes the views and experiences from other stakeholder groups, including academics/PIs,  institutional senior managers with responsibility for research, and repository information managers. The main purpose of the report is to present an overview of stakeholder engagement to inform the ongoing development of UK RepositoryNet+.

## 2    Approach

### 2.1    Scope and Planning

The findings and conclusions from Phase One of this study, along with the interim report of the consultants engaging with stakeholders from research funder groups and the publishing sector, were presented and discussed with the UK RepositoryNet+ project team in December 2011. This was to inform the selection of services for a repository management service, which EDINA submitted to JISC in January 2012.

The first phase of activity confirmed Edina's initial theory and the diagrammatic conceptual overview of the repository landscape. The case for open access publishing is largely accepted in the sector, and rates of open access publishing are rising. However, there is no consensus in the sector about what an institutional repository is, what it contains, how it is used and by whom, or the role of the repository in managing and reporting research. In early 2012, the project team and consultants met on a number of occasions to scope the next phase of RepositoryNet+ activity.

### 2.2    Background and Context

The context for RepositoryNet+ is supporting the implementation of the key recommendations in the Houghton Report in relation to the exploration of 'new opportunities and new models for scholarly publishing that would better serve researchers and better communicate and disseminate research findings'.

The background for the development of RepositoryNet+ includes a number of significant studies, surveys and reports. It was clearly important that the next phase of stakeholder engagement be informed by, and did not replicate, existing research and knowledge. Desk research has identified and reviewed key reports relating to the views and behaviour of PIs/ researchers/ academics, open access and interoperability, and the communication of knowledge (notably studies supported by JISC and undertaken by the RSP, RIN and UKOLN).

A useful series of articles was featured in the January 2006 edition of ERCIM[1] News 64[2] entitled 'The Routes to Open Access Publishing'. It includes an overview of open access, and the green and gold routes. A key point made is that: 'International metadata standards and protocols must be applied to repositories so that harvesting across repositories can take place. To ensure that research output material is available for future generations, curation and preservation issues must be addressed.'

The 2005 report, Open access self-archiving: An author study[3], noted that: 'The evidence from this study (which corroborates our previous study that asked the same question) indicates that a mandate from an institutional employer or a research funder to self-archive would meet with very little resentment and even less resistance from researchers.'

The COAR[4] Interoperability Project published a briefing[5], The case for interoperability for open access repositories, which emphasises the need for a network of repositories facilitated by a variety of protocols including SWORD[6].

During discussions with the Project Team a series of questions for researchers regarding the use of repositories were raised:

- Have you ever deposited your research output into an open access (OA) repository? Why?

- How would you know that it was worthwhile depositing content into OA repositories (i.e. what benefits would be important and how would you know about those benefits)?

- What pre-existing conditions are required before you would routinely deposit all of your research output in an OA repository?

- What factors militate against depositing into OA repositories?

- How valuable are research papers retrieved from repositories?

- What would detract from this value and how can these factors be addressed?

- How do you find research materials that you need to read (including OA materials)?

However, the team recognised that while these are important and relevant questions, previous studies have addressed many of the issues raised. For example, Theodorou (2010)[7] identified the need for trust in the quality of the OA publication and strict acceptance procedures. Seaman (2011)[8] in a survey of humanities staff, found the identification of service user needs and awareness of reputation concerns to be essential to committed use of institutional repositories.

In an effort to improve the confidence of researchers in ensuring their works can be found and therefore the impact maximised, the London School of Economics have produced a handbook[9] for social scientists although anyone engaged in research will find it useful.

The Research Information Network have commissioned a number of studies in the broad area of scholarly communication and the costs of research. Of particular relevance to RepositoryNet+ are:

- Activities, costs and funding flows in the scholarly communications system (2008)[10]

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[1]  European Research Consortium for Informatics and Mathematics
[2]  http://www.ercim.eu/publication/Ercim_News/enw64/index.html
[3]  http://www.jisc.ac.uk/whatwedo/topics/opentechnologies/openaccess/reports/selfarchiving.aspx
[4]  Confederation of Open Access Repositories
[5]  http://www.coar-repositories.org/files/A-Case-for-Interoperability-Final-Version.pdf
[6]  Simple Web-service Offering Repository Deposit
[7]  http://quod.lib.umich.edu/j/jep/3336451.0013.304?rgn=main;view=fulltext
[8]  http://www.dlib.org/dlib/march11/seaman/03seaman.html
[9]  http://blogs.lse.ac.uk/impactofsocialsciences/the-handbook/

- Communicating knowledge: how and why researchers publish and disseminate their findings (2009)[11]

- Overcoming barriers: access to research information (2009)[12]

The Repositories Support Project and United Kingdom Council of Research Repositories (UKCoRR) undertook a survey of academic attitudes to open access and institutional repositories in 2011. Relevant findings from the 1676 academics surveyed in 20 UK institutions are:

| In favour of OA repositories | 80% |
|---|---|
| In favour of publishing in OA journals | 69% |
| Knew their institution had repository | 73% |
| Make their publications available in the repository | 59% |
| Deposit publications themselves (self-archive) | 59% |
| Publication deposited by someone else (eg library staff) | 31% |

Most recently, a landscape study published by UKOLN[13] has explored the adoption of CERIF in UK HEIs, and found that despite its widespread use many institutions are not engaging with it directly as staff find it too complex. It concludes that: 'There is increasing recognition that local understanding of RIM processes and how local data maps to CERIF allows more efficient and cost-effective CRIS implementation and ongoing development'.

JISC has been actively researching and promoting open access for some years. Further information can be found on the JISC website[14] and also through the UK Open Access Implementation Group (OAIG)[15] which aims to increase the rate at which the outputs from UK research are available on open access terms.

Finally, the need for urgent and timeous OA publishing is seen most acutely in the field of cancer research. A recent report from the eurocancercoms project[16] found that: 'There is only one real reason why most publishers have not fully embraced Open Access publishing as a business model and moved from the subscription model: Open Access will not and cannot generate the level of income and profit that is presently produced by the current business model. The traditional subscription model is simply too attractive to publishers but completely out of balance for the funders of research, the authors of research articles and the subscribers'. Moving from frustration to fury, George Monbiot highlighted the issues and injustices of academic publishing in an article in the Guardian[17] last year.

In summary, desk research has revealed a plethora of information, studies and research regarding the use of technology to support and enhance scholarly communications. There is firm evidence that the academic community is willing and able to participate as both consumers and contributors to OA publishing. The principal barriers to OA publishing becoming the norm remain the  funding models and publishers' agreements.

Project team discussions, based on understanding and experience of the sector, confirmed the

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10  http://www.rin.ac.uk/our-work/communicating-and-disseminating-research/activities-costs-and-funding-flows-scholarly-commu

11  http://www.rin.ac.uk/our-work/communicating-and-disseminating-research/communicating-knowledge-how-and-why-researchers-pu

12  http://www.rin.ac.uk/our-work/using-and-accessing-information-resources/overcoming-barriers-access-research-information

13  http://www.ukoln.ac.uk/feature/2012-03-22-cerif-landscape-study-f2012-03-16-14-40-rr.html

14  http://www.jisc.ac.uk/whatwedo/topics/opentechnologies/openaccess.aspx

15  http://open-access.org.uk/

16  http://ecancer.org/ecms/5/223

17  http://www.guardian.co.uk/commentisfree/2011/aug/29/academic-publishers-murdoch-socialist

assumption that research-intensive institutions have sophisticated mechanisms for the management of large amounts of research funding and activity. This may be done through a separate CRIS or as an enhancement of the institutional repository. The team agreed that exploring the research information process with research-intensive institutions should yield useful insights into how the sector might want to develop research information management provision over the next two to five years. This study would also help to create use cases to test and inform functional requirements for Wave 2 of the RepositoryNet+ project from September 2012 – March 2013.

These assumptions were initially explored by the project team in informal discussion with the Research Publications Service Manager at the University of Edinburgh. Edinburgh's approach is to move away from using multiple IRs towards implementing full functionality of the CRIS (Pure[18]) as the 'single point of truth' for the recording, curation and access of all research outputs.

A key issue is to harness the drivers behind the rise in open access publishing for the population of institutional repositories (with artefacts) and the CRIS (in whatever form it takes) with related information about funding and project identifiers. The project team agreed that the next phase of stakeholder engagement would therefore explore, with representatives from key institutions, the management of research information and the use of the Common European Research Information Format (CERIF) data model[19].

## 2.3   Interviews

### 2.3.1 Research Information Managers

A small number of research-intensive institutions were identified for the exploration of the management of research information and its attendant issues in more depth. As a deliberate strategy, institutions were selected from the top research-intensive universities at the 2008 RAE[20]. For the purposes of this study at this stage it was not considered necessary to investigate randomised or statistically significant samples. Institutions which had already been contacted in the first phase of this study, and institutions which had contributed to the RIN and RSP surveys, were omitted from the selection. This was to avoid potentially skewing the findings with survey-fatigued responses or an over-emphasis on some institutions.

Interviews were arranged with representatives from the following institutions:

- University of Edinburgh (pilot)
- University of Cambridge
- Imperial College London
- University of Manchester
- Warwick University
- University of York

Interviewee job titles ranged from Research Strategy and Policy Officer to Director of Management Information & Planning, with the majority of respondents being managers. The questions used for the interviews can be found at Appendix A. Interviews were arranged through email and telephone contact, and then conducted by telephone using a real-time transcribing approach. Once the interviews had been completed the data was analysed using the coding frame at Appendix B and the qualitative analysis tool, MaxQDA.

### 2.3.2 Senior Managers and Principal Investigators

A few follow-up interviews were also undertaken in this period with senior managers (PVC

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[18]   http://www.atira.dk/?id=261#institutions
[19]   http://www.eurocris.org/Index.php?page=CERIFintroduction&t=1
[20]   http://www.guardian.co.uk/education/table/2008/dec/18/rae-2008-results-uk-universities

Research or equivalent) and Principal Investigators (PIs)/academic staff in some institutions identified in Phase One. While not forming part of the dataset analysed for the interim report, these interviews have informed discussions about the scope of subsequent investigations with stakeholders in these groups. It had been hoped that a faceted approach could be used where the different perspectives of key staff in the same institution could be compared and contrasted. In practice this proved impossible either because staff with different roles could not be found within the same institution or because their perspectives were just too unrelated.

Those who were interviewed were either senior academics or PVCs with responsibility for research from the following institutions:

- University of Birmingham
- Queen Margaret University
- Kingston University
- University of Leicester
- Leeds Metropolitan University

Slightly different question sets were used depending on whether the respondents were 'managers' or 'academics', both can be found at Appendix C. The same process for conducting the interviews was used with a different coding frame, at Appendix D, for the analysis.

## 3 Findings

To facilitate analysis following the initial coding, responses were grouped under five headings: System, Responsible, Sources, Curation and Tools. These will now be used to report the findings from the Research Information Manager interviews.

### 3.1 System

Respondents were asked to outline the systems used in their institution for recording research information, and the historical background to the system. They were also asked if the 'system'[21] had been in place for the 2008 RAE and how well they thought it had worked. As might be expected, each institution's configuration is different as are the principal drivers behind the choice of platforms and tools used. Five of the institutions have a CRIS (equal split between Pure and Symplectic[22]) while the remaining one has a bespoke system developed in-house. Three respondents described local Access databases being used for grant and research output management. Two institutions use performance management business intelligence software for data warehouse and reporting services (IBM Cognos and Oracle).

For the 2008 RAE, institutions had used bespoke, in-house systems which in many cases have led to the development of more sophisticated in-house system or the procurement of a CRIS. There is clear recognition of the need for integrated and interoperable systems with detailed reporting functionality and user access management. There was also a question about the use of the CERIF data model and respondents either referred the interviewer to someone else within the institution or simply confirmed that their institution was using it and involved in CERIF developments.

### 3.2 Responsible

Three questions attempted to explore the day-to-day responsibility for the management and collation of data, for the sustainability of the system and the extent to which the system is embedded in the vision of the institution. In terms of responsibility for data collection a mixed picture emerged ranging from individual academics and other staff, to departmental applications

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[21] The term 'system' is used here and subsequently to refer to any or all of the technological mechanisms that an institution might use to record and manage its current research information.
[22] http://www.symplectic.co.uk/about/clients.html

which feed the data warehouse, and to library staff: 'that's the right place, librarians are fastidious in ensuring accuracy, management of this sort of data is their core business'. In terms of the 2014 REF, one respondent commented that in the sector generally one of two camps has overall responsibility, either the research office or the planning office.

In terms of sustainability and position within the institutional hierarchy, respondents generally felt there was a clear line to senior management structures such as the Research Committee or similar strategic team. However, in terms of the extent to which the system is embedded in the vision of the institution a curious difference emerged. It appears that for most institutions the system is becoming more and more embedded as it grows and is refined while for others it is: 'pretty much under the radar – it's not viewed with the same importance as finance because its functionality is about performance and not pay', or: 'it's more a back-up than a driver'.

### 3.3    Sources

A question was asked about the sources of information such as institutional systems that might be used to populate the research information system. The question made specific mention of the following sources and the table below shows these and the responses:

| Source | Response |
|---|---|
| Finance | All use |
| HR | Majority use (People database) |
| Events | Not mentioned |
| Visitors | |
| Student Registry | Most use |
| Patent Database | One use, one held by intellectual property companies |
| Assets Register | Planning to use |
| Press Clippings | One use, another would if less expensive |

In addition respondents identified the following additional sources:

- HESA

- Higher education-business and community interaction survey (HE-BCI)

- RCUK Joint Electronic Submission (JE-S)

- Grant contracts application and awards tracking system (in-house)

- Thomson Reuters, PubMed, ARXIV and eScholar

Respondents reported that the users of the institutional research information system are crudely one third academic staff and two thirds administrative staff. Two respondents mentioned user access rights – only senior staff can view strategic information as the systems used can display benchmarking information across departments. However, ad hoc reports are created for other business areas as they are required.

### 3.4    Curation

The consistency of the data gathered was explored in a question which tried to identify any measures used by the institution including data import from external sources. Respondents reported that the majority of data is drawn from other sources but there are many issues with data mismatch, duplication and truncation. Often, administrative staff rely on academic staff to alert them to issues with accuracy and consistency. The smaller institutions felt that it was relatively easy for them to achieve high quality data as they are more centralised and have fewer historical issues.

Respondents were asked if they were aware of any specific curation issues such as redundancy, incompatible formats and manual workarounds within their institution. Various issues were cited:

- Author name mismatch/force address conventions

- Constant cycle of data cleansing

- EPSRC implementation[23] of RCUK Common Principles on Data Policy 2011[24] which requires research data to be stored for 10 years

- Duplication – multiple authors, inconsistent vocabularies for externals (UniCal, University of California)

### 3.5 Tools

The final questions in the interviews asked firstly if there were any tools, plug-ins or other refinements that would enhance the functionality of the system. A number of suggestions were made:

- Plug-in to produce format compatible with RCUK's JE-S CV requirements

- Publishers such as Elsevier could provide horizon scanning and research opportunities based on an institution's funding and research patterns

- Front ends need to address user accessibility

- Current project with HESA to develop API to pipe to data warehouse

- Security – 'how do you cater for different responsibilities for the same user without having too many security rules so the system grinds to a halt'

- Have to use screen scraping software on data from research councils to trawl through their data, then copy to own database to converge and reformat to avoid erroneous comparisons (Cambridge, University of Cambridge and The University of Cambridge)

- 'Once the data is in and aggregated we want to make sure it's available and discoverable. Presently the system is not fabulous but there is a link with Google Scholar – we want to create rich discovery'

Secondly, respondents were asked if there was anything else in the environment of the system that might be relevant or could be improved. One respondent expressed some frustration with multiple project initiatives in the same area, specifically the implementation of CERIF. It was felt that project funders did not wait for outcomes or review which causes frustration and a plethora of formats when one format should suffice. Suggestions for improvements included:

- HEFCE (for example) to facilitate the development of sector norms for research information systems using a unified research classification

- Access to research councils' datasets on grant success rates for benchmarking (currently available through Times Higher)

- Improved link between publications and post award systems so publications can be attributed to specific awards and therefore returns to research outcomes – 'useful internally so we can see which funders give most ROI'

- A decent research classification system – internal keywords do not map to Research Councils, which do not map to one another, medical funding charities or American classification systems

- Would like to make better use of Sherpa Romeo APIs and get information out of SSRN (Social Science Research Network) – 'RepositoryNet could lobby subject repositories for universal access to their data'

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[23] http://www.dcc.ac.uk/resources/policy-and-legal/overview-funders-data-policies
[24] http://www.rcuk.ac.uk/research/Pages/DataPolicy.aspx

- Improvements to Pure for data connectors to Scopus, Web of Science and PubMed so that a single query returns data in a usable format

The final two sections report the findings from the earlier interviews with senior managers and principal investigators.

## 3.6   Senior Managers

Senior staff were first asked about the importance of the repository to the institution and its fit with strategic plans for development and sustainability. Respondents agreed that the repository is essential for the institutional mission, the Research Councils desire for widely disseminated outputs and to ensure that staff have easy access to their collective outputs. In terms of institutional strategy, for all respondents the repository is sponsored at a high level and features in the planning process in strategies for both research and for IT.

Respondents were asked to comment on their use of the repository in terms of features useful to senior managers and if there were any others they would like to have. Responses were broad and diverse, perhaps indicating that the respondents did not have direct experience of using the repository themselves but were aware of its strategic importance. One described developments within their institution to create a new research information system that seamlessly integrates and links research awards to outputs in a 'dynamic lifestyle approach'. Another was concerned with accessibility but perhaps in the sense of citation as there is 'evidence that citation increases when a publication is in the repository'.

Finally, senior staff were asked about the use made in their institutions of subject and funders repositories. As with other interview sets, issues of duplication were identified with particular reference to the apparent shift from a simple emphasis on subject groupings to the inclusion of the institution in order to 'project the image of the institution that staff would wish to be projected'. It was also recognised that some subject repositories are more visible than others and that some subject groupings only survive because of the high cost of their journals. A change in the publishing model might well necessitate a move from a 'fantastic HQ in London to a tin shed', hence the pressure exerted on members of learned societies to maintain the subject groups. However, a mandate to require publication in both a subject repository and an institutional repository may not be feasible as the interests of the learned societies themselves may present a barrier.  Only one respondent commented on funders repositories recognising the shift to acceptance of open access and the role of the Research Councils in mandating public access to raw data which may open publication 'away from the little reprint that looks good on the shelf'.

## 3.7   Principal Investigators

The questions for the principal investigators placed more emphasis on their actual use of repositories. Views were divided but more were critical of the institutional repository and their ability to find anything in it when compared with PubMed and Web of Science. A variety of internal institutional issues were reported including inconsistencies in the procedure for deposit, lack of confidence by staff that the repository is current, issues with system integration and departmental variance, and weak institutional policies that lack logic.

However, the identification of the individuals for interview had been through referral from the earlier interviews with repository managers. They had tended to select academics who might be the more vociferous and opinionated. Consequently, there is an impression from this set of interviews that this particular stakeholder group is to some extent less supportive of institutional repositories and institutional efforts to utilise them effectively. Equally, this may be the very group that merits further investigation as they do hold significant positions with the institutions with regard to ensuring publications and other artefacts are deposited in the IR and that their research teams comply effectively and timeously with institutional ambitions for the IR, not just their subject communities.

## 4   Summary

The study team set out to broaden the evidence gathered from a wider stakeholder community than the repository managers alone. An attempt was made with the interview question sets used to match responses from different respondent groups. In practice there is some consensus around the issues of making effective use of IRs, particularly with data curation and the effect of subscription-based publishing models on OA deposit. The key points which can be drawn from these interviews are summarised below.

The majority of institutions contacted for the repository manager interviews have a CRIS in various stages of development and integration with other institutional systems. The research information management systems are a mixture of traditional reporting methods and data import from other internal and external services that require administrative staff to ensure the consistency, accuracy and validity of the data held. However, there is an impression that there may well be hidden costs within institutions as they transit from traditional forms of practice to more automated processes as many staff hours are needed to scrape and cleanse the data from various sources.

There does appear to be a shift in the institutional preparations for the 2014 REF in comparison to those for the 2008 RAE with more effective systems for the management of research information supported at a high level within the institution. A number of suggestions were made for both tools and improvements for research information management systems within institutions.

In terms of institutional repositories there does seem to be general acceptance of them and their purpose across all layers of staff involved with their use. All but the most senior staff express some degree of frustration with their use particularly where accuracy, availability of resources and ease of deposit are concerned. Senior staff are more likely to view the institution's repository as an asset and opportunity to showcase institutional talents and achievements.

There may be a layer of local resistance in some institutions from PIs / senior academics who do not view the repository in such a positive light. For them, the IR is not particularly useful, lacks currency and is less easy to use than publishers' or subject areas' own repositories. However, the issues of duplication, name mismatch and language/terminology issues appear to apply to all.

## 5   Recommendations

The current version of the component catalogue for RepositoryNet+ was reviewed in light of the findings from the various interviews. At this stage there do not seem to be any obvious matches with the issues identified from the interviews and the components listed with the possible exception of the Names2 project[25]. Further consideration and revision of potential components with reference to the UC3 curation micro-services model[26] is recommended.

Consideration should be given to further exploration of genuine resistance from principal investigators and senior academic staff with primary responsibility for research management within institutions. Evidence that their loyalties may be divided between their institution and their subject community does seem to exist and encouragement to assist in consistent deposit in the IR may need some additional facilitation either through better services and/or through advocacy.

Further exploration of the use and management of CRISs within institutions is probably unnecessary for the RepositoryNet+ project. A number of other initiatives are underway to promote and support research information management in the UK especially in preparation for the 2014 REF.

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[25]   http://namesake/about
[26]   http://www.cdlib.org/services/uc3/

**Appendix A: Research Information Manager Interviews**

Purpose: To explore current practice in research-intensive institutions for the management of research information

Respondents: Research information managers, CRIS administrators, Repository managers

Q1    Could you briefly describe the systems used in your institution for recording current research information

      For example, does your institution have a CRIS, a repository with enhanced functionality or different approach

Q2    How long has the institution had it?

      Was it in place for 2008 RAE, how well did it work?

Q3    Who is responsible day-to-day for collating and managing the data?

      Who's in the team and what do they do?

Q4    Who has overall responsibility for the sustainability of the system?

      Where does it fit in the institutional hierarchy?

Q5    To what extent is the system embedded in the vision of the institution?

      What is the world-view that drives its presence?

Q6    Does the data held in the system use the CERIF data set?

      Is there a CERIF4REF plug-in?  (schema developed by R4R project)

Q7    What are the main sources for the information?

      Other institutional systems and sources: finance, HR, events, visitors, student registry, patent database, assets register, press clippings

Q8    Who are the main users of the research information system?

      Research officers/administrators, PIs, researchers, research students, senior managers

Q9    What measures are there to ensure the consistency of the data?

      Data import/plug-ins from external sources

Q10   Are you aware of any specific curation issues?

      For example, data duplication, data redundancy, incompatible formats, manual workarounds

Q11   Are there any tools, plug-ins or other refinements that would enhance the functionality of the system?

      For example, simplified user-interface for researchers, interoperability plug-ins with external sources

Q12   Is there anything else in the environment of the system that you may feel would be relevant or that could be improved?

**Appendix B: Coding Frame Research Information Managers**

**system**

Briefly describe the systems used in your institution for recording current research information

**history**

How long has the institution had it? Was it in place for 2008 REF, how well did it work?

**responsible**

Who is responsible day-to-day for collating and managing the data?
Who's in the team?
#research FTEs, #research projects/outcomes per annum

**sustainable**

Who has overall responsibility for the sustainability of the system?
Where does it fit in the institutional hierarchy?

**embedded**

To what extent is the system embedded in the vision of the institution?
What is the world-view that drives its presence?

**cerif**

Does the data held in the system use the CERIF data set?

**sources**

What are the main sources for the information?
Other institutional systems and sources: finance, HR, events, visitors, student registry, patent database, assets register, press clippings

**users**

Who are the main users of the research information system?
(research officers/administrators, PIs, researchers, research students, senior managers)

**consistency**

What measures are there to ensure the consistency of the data?
Data import/plug-ins from external sources

**curation**

Are you aware of any specific curation issues?
For example, data duplication, data redundancy, incompatible formats, manual workarounds

**tools**

Are there any tools, plug-ins or other refinements that would enhance the functionality of the system?
(simplified user-interface for researchers, interoperability plug-ins with external sources)

**improve**

Is there anything else in the environment of the system that you may feel would be relevant or that could be improved?

**Appendix C: Follow-up Interviews**

**Questions for Academic Staff/PIs**

Q1.     What use do you make of the institutional repository?
         (How often do you use it?)

Q2.     What features do you find particularly useful?

Q3.     Are there any other features you would like it to have?
         (Does anything frustrate you?)

Q4.     Do you use a Subject Repository?
         (Which one? Does it link with the IR?)

Q5.     To what extent do you make use of any funders' repositories?
         (Are there any issues?)


**Questions for PVCs/Strategic Managers**

Q1.     What is the strategic importance of the repository for the institution?

Q2.     How does it fit into the strategic plans of the institution in terms of development and
         sustainability?

Q3.     Do you make use of the repository yourself?
         (Have you done so in the past?)

Q4.     What features do you find particularly useful?

Q5.     Are there any other features you would like it to have?
         (Does anything frustrate you?)

Q6.     Do you use a Subject Repository?
         (Which one? Does it link with the IR)

Q7.     To what extent do you make use of any funders' repositories?
         (Are there any issues?)

## Appendix D: Coding Frame PIs/Academics and Senior Managers

**PIs/Academics - Questions for principal investigators & researchers**

**ac_use**

What use do you make of the institutional repository?

**ac_useful**

What features do you find particularly useful?

**ac_features**

Are there any other features you would like it to have?

**ac_subject**

Do you use a Subject Repository? (Which one? Does it link with the IR?)

**ac_funders**

To what extent do you make use of any funders' repositories? (Are there any issues?)

**Managers - Questions for PVCs & strategic managers**

**importance**

What is the strategic importance of the repository for the institution?

**plans**

How does it fit into the strategic plans of the institution in terms of development and sustainability?

**man_use**

Do you make use of the repository yourself? (Have you done so in the past?)

**man_useful**

What features do you find particularly useful?

**man_features**

Are there any other features you would like it to have?

**man_subject**

Do you use a Subject Repository? (Which one? Does it link with the IR?)

**man_funders**

To what extent do you make use of any funders' repositories?