OPEN ACCESS REPOSITORY REGISTRY (OARR): BUSINESS REQUIREMENTS EVALUATION

1   Introduction

Although registries of open access repositories are not necessarily perceived to be glamorous or critical components of the repository-related infrastructure, they are nonetheless important. They provide a mechanism whereby open access repositories can be documented and discovered and underpin the provision of management information in support of policy development, service development, benchmarking and repository-specific operational issues. Of the registries of open access repositories that currently exist, the two that are most commonly used by the stakeholders we consulted for this project are OpenDOAR[1] based at Nottingham University and ROAR[2] based at the University of Southampton. They both have different approaches to registry development: OpenDOAR offers a level of quality assurance through manual validation of records while ROAR has more of a data-driven approach, harvesting records automatically and frequently. OpenDOAR currently receives funding from JISC while ROAR receives no JISC funding but it is supported by EPrints Services.

Led by UKOLN, this project sets out to review these two key registries of open access repositories and consider whether there is scope to augment the quality and extent of the data and services they currently offer. In addition to a detailed technical review, as part of the concurrent business evaluation a wide variety of stakeholders have been consulted. Repository managers in the UK have had the opportunity to participate in the consultative process by means of an invitation from the Chairman of the UK Council of Research Repositories (UKCoRR)[3] to complete an online survey, and the Confederation of Open Access Repositories (COAR)[4] has also been represented in the process. This document synthesises the responses to the community consultation and sets out a number of ideas for service improvement, community engagement and sustainability.

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[1] http://www.opendoar.org/
[2] http://roar.eprints.org/
[3] http://www.ukcorr.org/
[4] http://coar-repositories.org/

2   Drivers for change

One of the key drivers behind this project is the notion that there is a background level of disquiet about the existing registries with respect to accuracy, reliability, level of coverage and frequency of updating. Both OpenDOAR and ROAR offer records that are known to be out of date. No-one we spoke with is completely satisfied that any of the existing registries of open access repositories meet their expectations, so people will often check two or more registries to ensure they have the best picture possible given the limitations of current registries. Although people giving presentations are able to cushion the data they have gleaned from the registries with appropriate caveats, repository managers reporting to their PVCs are often not afforded the same leeway: definitive positions backed up with reliable data are often expected but these are difficult to substantiate using the current registry information.

There is no doubt, particularly in the view of repository managers, that although OpenDOAR and ROAR do a satisfactory job they are not the best that they could be. Rather, they are the best that we have at present. Progress and innovation with respect to the timeliness and quality of the data and the level of services offered could be characterised as being moderate, the consequence perhaps of limited or uncertain funding, the lack of specific development goals or perhaps the absence of pressure from stakeholder groups to drive the services forward. To exemplify this, it is difficult to find any repository managers in the UK who are willing to strongly agree that the records in OpenDOAR or ROAR are up-to-date, accurate or that the registries are authoritative. Similarly, there is reported room for improvement with respect to the user interfaces, the ease with which repository managers can update their records and the range of additional services offered by both registries.

In view of this lack of confidence in any one of the existing registries, it is perhaps unsurprising that, for many people, the idea of a new, single, authoritative registry is appealing. Part of the attraction of a new registry is the notion of sweeping away old and inaccurate records and starting again with a set of new records. This is not, however, the only view. Proponents of the laissez faire perspective argue that services should effectively compete for use and that the process of competition should drive innovation and improve value to the extent that, in due course, there will be a clear winner – a service which, by responding to users' needs, has evolved to a state where people will prefer to use it. In reality the laissez faire approach appears not to work when it comes to registries. There is no competition in the commercial sense because access to the registries is free at the point of use and production costs are funded from sources other than the users' pockets. Competition at the professional level – that is, people wanting the services they are producing and developing to be the "best" – does not appear to drive the development of registries with any degree of urgency. This is not because they do not take pride in their work, but because there are competing calls on developers' time.

In the past there have been efforts to encourage those responsible for OpenDOAR and ROAR to harmonise and consolidate the benefits of both services, but such efforts have not produced the desired results. The teams responsible for both services have adopted different positions with

respect to their approaches to developing their registries, each position being well justified. At the heart of this dichotomy is the preference of the OpenDOAR team for a qualitative element to data collection, providing a level of quality assurance through human intervention, while the ROAR team prefers a data-driven automatic approach to data collection. A thorough technical comparison has been conducted as part of this evaluation process which highlights a range of limitations, many of which apply to both services. The technical evaluation supports the thesis that, while the current services are useful, there is more that could be done. New investment in a new registry and attendant services could well result in something better, but will the additional cost be justified by improved benefits or will diminishing returns be realised rather soon than expected? On the basis of this consultation, it seems likely that there is scope to increase the value and usage of registry services.

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3   A single registry of open access repositories

The one-stop solution is appealing because it saves people time, but it will only be acceptable if the registry is authoritative. People want to be able to trust that the registry they choose to use is accurate, complete and up-to-date. If one accepts that such a registry of open access repositories does not currently exist – which is the prevailing body of opinion - and that a new one should be developed that builds on the strengths of the incumbent registry services, then it will need to be funded by the JISC or other public sources at least for the development and early adopter phases. In the absence of such funding, it is difficult to see how or why a new registry service would be born. It should be noted that even if a new registry service is developed and accepted by the stakeholder community, that does not mean that existing registries would simply expire. In fact it is rather more likely that at least one or two would continue in more or less their current form resulting in a situation where, far from having just one new registry, users would potentially have three or more registries to choose from. In due course if one of these is patently more authoritative that the others, it may become the most popular, but as long as there is more than one registry using different methods there will be users that will choose to cross check across different registries, negating in the short term the perceived benefit from a user perspective of having just one source.

3.1   A spectrum of views

It will come as no surprise to discover that different stakeholders in the open access community hold different views regarding their use and perceptions of registries of open access repositories. By a very long way the most commonly used registries are OpenDOAR and ROAR, so the views reported here focus on those two services.

3.1.1   Repository managers

Many repository managers with whom we spoke make little use of the registries beyond registering their repository in the first place. The survey of UKCoRR members indicates that relatively few of them use a registry more than once every six months and when they are used it is primarily to obtain management information, to identify comparators and to update their repository's record. Little use is made of registries to find specific information in support of funding applications or to find contact names for repository managers – though a minority do use the registries for these purposes. The management information is put to such uses as briefing university managers and for internal advocacy among academic colleagues. Other reported uses include identifying links to other repositories, looking into archiving policies and obtaining broad statistics on repository contents.

There are repository managers who devote little time to keeping their repository service documents up to date which means that registry services that automatically harvest information from these service documents inevitably represent out-dated information. This is typically the result of a lack of time and the need to set priorities; indeed, in some institutions a repository manager's time can amount to as little as 0.2FTE and, in these circumstances, it is easy to see why the task of maintaining repository service documents receives sporadic attention.

For the future there is a strategy that, on the basis of our interviews, looks set to engage research managers positively. Increasing numbers of repository managers are using registries and their attendant services for benchmarking purposes: they want to know how their repository is doing

compared with the repository of another institution. At present the bases for comparison are few, but there is a strong desire for progress in this field.

3.1.2 UK and international funders

Whether we are talking about research funders or funders of innovation the common theme is that people working for these types of organisations use the information provided by registries to gather evidence on trends in open access with respect to repositories for internal briefings, public presentations as well as to inform the policy development process. There is frustration that the scope of data available is currently rather limited and that those data are perceived to be somewhat incomplete or out of date.

3.1.3 Other interested parties

Members of the community of open access advocates in the public, private and charitable sectors make use of OpenDOAR and ROAR to gather evidence for the development of ideas and for presentations. Since both services offer tools to facilitate statistical presentation, they are ideal for the task. These informed users are under no illusion, however, that the data offered up by those services are necessarily accurate or comprehensive; rather, they are the best on offer for the moment.

Systems developers make use of the registries where required. They can be downloaded for free and used in the development of other services. A case in point is the development of the Academic Search Engine (BASE) at the University of Bielefeld. Both OpenDOAR and ROAR offer APIs. The technical evaluation involved interviews of developers with experience of using the APIs and with the lead developers of OpenDOAR and ROAR.

3.2 Driving the growth of registry services

At present registries and the services they offer are generally perceived to be a somewhat useful component of the international open access repository infrastructure, but they do not excite people. When asked whether, in the absence of a registry of open access repositories, they would invent one, the typical reaction was one of a brief period of silent reflection followed mainly by a qualified "yes". Many repository managers are ambivalent about their value and other stakeholder groups seem not to entirely trust the veracity or timeliness of the data produced by registry services. And yet despite peoples' sporadic use of these services and their misgivings about the quality of the data, they can see the potential for such services.

3.3 What stakeholders expect of a registry

It is useful to characterise a registry of open access repositories on two levels: first, there is the registry itself which is basically a list of repositories with perhaps some very basic metadata; second, overlay services that augment or add value to the basic registry data including, for example, additional information about each repository and the provision of data visualisation tools.

3.3.1 Attributes of a basic registry

In discussion with a wide range of stakeholders we have distilled a number of basic attributes that are expected of a registry of open access repositories.

3.3.1.1 Reliability

Above all, people want to be able to trust the fundamental data within the registry. At present,

there is a background level of distrust to the extent that people report cross-checking both ROAR and OpenDOAR. When this cross-checking reveals inconsistencies – as is almost inevitable since systems typically behave in slightly different ways and the registry data collection methods are different – this serves to reinforce peoples' perception that there is something amiss with the reliability of the data. Because people believe the data are not entirely reliable, they typically reference the service providing the data (thus explicitly putting the issue of reliability in the registry provider's court) and they often qualify public pronouncements based on registry data with the use of appropriate caveats.

These views are common across stakeholders and lie at the heart of why many stakeholders would prefer one "authoritative" registry of open access repositories. It is unfair to blame the likes of OpenDOAR and ROAR for the real and perceived lack of reliability of the data. The process of harvesting data from repositories relies to varying degrees on the accuracy of the data supplied by repository managers about their repository. If they were to assiduously ensure that the records they expose to automatic harvesters are as accurate and up-to-date as possible, then the quality and reliability of the data in the registries would obviously improve.

3.3.1.2 Human intervention

The key difference between the strategies of OpenDOAR and ROAR is their respective attitudes towards human intervention. ROAR has a data-driven approach: OAI research repositories are automatically harvested every one or two weeks, synthesising RSS feeds in the process. There is a small amount of manual checking of some particular types of records but in essence the service is set up for the automatic retrieval of data from OAI-PMH records. Although ROAR is updated very frequently, it is reliant on repository managers maintaining their service documents to provide good quality information. OpenDOAR has adopted an approach that involves manual quality assurance whereby records are verified by actually visiting repository sites. OpenDOAR report a rejection rate of 25% and believe that this process enhances the quality of the registry. Through the stakeholder interview process we identified a general perception that the existence of human quality assurance procedures should result in a higher quality outcome. Indeed, one of the reasons that the OpenAIRE project points to the OpenDOAR service is because they share the same ethos – that human intervention enhances the quality of the data in their systems. In the survey of UK repository managers, a third of respondents believe human validation processes for quality assurance to be very important (though it should be noted that over half of the respondents claimed this to be "not very important" or "unimportant").

There is, of course, a cost to be paid. The overheads associated with a fully automated system requiring only periodic maintenance and occasional development are naturally less than a system requiring people to be employed to undertake the manual validation of records. Even if continuous funding was guaranteed, is it better to employ people to manually check records or would it be better to work on factors that encourage or even compel repository managers to maintain accurate and up-to-date records which could then be harvested automatically? This goes to the heart of the sustainability issue. If repository managers take seriously the task of maintaining the service documents for their own repositories, then the quality assurance costs are distributed widely and subsumed by individual institutions. If they cannot be motivated to do this, then a system of cleaning up after the fact will need to be funded somehow.

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3.3.1.3 Timeliness

A common complaint among interviewees was that registry data often appears to be out of date. Because ROAR harvests data frequently, out of date information will be largely due to repository managers not updating their service documents. With OpenDOAR it is possible that some of the out-dated records are awaiting manual validation before they are updated. Repositories that become known to BASE (Bielefeld Academic Search Engine), where they create their own internal registry drawing on OpenDOAR and ROAR, report that these repositories often do not appear in the OpenDOAR registry. Realistically, one wonders how critical it is to have up-to-the-minute information about the existence of a repository. It has been suggested that bi-weekly or monthly updates would be perfectly adequate given the nature of the data and the uses to which it is typically put.

4   The shape of a new registry

If there is to be a new registry of open access repositories, it should build on the experience of OpenDOAR and ROAR as well as lever other innovative advances in the field. Here we propose the overall shape of what a new registry of open access repositories could – perhaps should – look like, thus synthesising the views and suggestions of many of the stakeholders whom we consulted. At a more detailed level, the technical evaluation of OpenDOAR and ROAR revealed gaps in provision which, in effect, are opportunities to improve the current situation. These opportunities are presented under the headings of administration, end user functionality, data model, technology and third party features in the technical report. The business evaluation seeks to propose a model for a new registry at a strategic level. We propose a four-tiered approach from a basic automatic harvesting to current and potential services which add value for stakeholders.

4.1   Level 1: Automatic harvesting to create a base level registry

There should be a lightweight automatic approach to harvesting information about repositories. The base level registry will offer the following benefits:

1. It will harvest data from repositories frequently, providing basic registry updates on a weekly or biweekly basis.
2. The scope of the registry will be as broad as possible embracing a wide variety of different types of repository, even those beyond the open access catchment.
3. The updated registry data will be available for public use immediately.

As repository managers come to recognise the importance of keeping their repository service documents up to date, so the accuracy and reliability of this first step will improve.

4.2   Level 2: Qualitative processing to improve registry data

There is clearly an appetite and a need for a qualitative element to the process of building a reliable registry. Human intervention is perceived to add value and is necessary to perform certain tasks. This part of the work flow will involve the following actions:

1. Registry entries will be manually validated on a rolling basis; ineligible entries will be deleted and incorrect or missing data will be attended to.
2. Specific data validity checks that are not currently done by either ROAR or OpenDOAR will be done, such as checking that XML is valid. It will also be necessary to understand the idioms of specific repository platforms and addressing known issues. For instance, DSpace throws up handle errors in many cases, something that usually requires an email exchange with a repository manager to resolve.
3. More information should be gathered about each repository including the items listed below. The two items in bold are those deemed "very important" by a large majority of UK repository managers.
    1. Information about certification, e.g. DINI
    2. What endpoints exist, e.g. SWORD and ORE
    3. What systems does a repository interoperate with
    4. Is the repository optimised for search engines

5. Declaration of repositories preservation policies and tools
6. Description of the policy tools used with a repository
7. **The number and types of objects within a repository**
8. Which publishers are represented in a repository
9. What datasets are in a repository
10. The proportion of pre-prints and post-prints
11. **Ratio of full-text objects in relation to metadata with no full-text**
12. Fields for the official and the English name of the institution to which a repository is affiliated and any acronym by which they are commonly known

4. There should be target of checking and updating at least 25% of registry entries each calendar month.

4.3 Level 3: Added-value services

The combination of both the automatic and qualitative approaches should go some way to producing a registry that is reliable and authoritative but, in addition, the registry provider should offer at the minimum a set of basic services. These will be core services or extensions of core services. These are likely to include the range of services currently offered by OpenDOAR and ROAR, not least because these are services to which stakeholders have become accustomed. They will include, therefore:

1. The ability to view standard and custom graphical representations of registry data.
2. Access to related information to do with policies and mandates akin to OpenDOAR's Policy Tool and ROAR's ROARMAP which provides information about institutions' open access mandates.
3. The provision of a suitable API together with documentation and technical help if required.
4. A mechanism to allow repository managers to update the information held about their repository on the registry. This is currently possible, but the fact that repository managers are asking to have this functionality indicates that there is some work to do with respect to engagement with the repository manager community. Perhaps also there needs to be clearer signposts in the services themselves.
5. There is interest in versioning in some quarters but in practice it is difficult to build services that require versioning. The Versions project came up with some definitions that would smooth the path to the accurate identification of different versions of a digital object, but those definitions are not yet routinely found in repositories. In fact many repositories do not record versioning metadata.
6. The Google search offered by both ROAR and OpenDOAR are generally appreciated, not least by repository managers who wish to search across repositories (rather than the subset selected by Google Scholar). There is demand for a more refined version of the search facility so users can tailor the search according to various criteria.

4.4 Level 4: New Services

The incumbent registry providers have provided a useful service so far but, as with many similar services, the extent to which they can develop innovative new services is constrained by the amount or nature of available funding. Sometimes such services rely on the goodwill of individual developers who devote spare time to improving things, though this is not an especially sustainable

approach to systematic service development. It is also probable that third party services will be harnessed by the registry developer. Given sufficient funding, some or all of the activities below could be considered:

1. Automatic text analysis to identify repository holdings. At present it is difficult to provide accurate counts of different types of digital objects within repositories much beyond counting pdfs. Simple metadata analysis should be an extension to the core functionality whereas the registry developer will probably need to make use of third party services when it comes to the more complex challenge of full text analysis.

2. The lack of common terminology in the repository world makes it difficult to make meaningful comparisons. A new registry service that became *the* authoritative source for repository information would be in an ideal position to introduce, for example, consistent descriptors for item types

3. There needs to be additional focus on providing services to machines. This is already possible and some of the things that could be done include:
   - REST APIs
   - Standards-based protocols (e.g. Atom)
   - Standards-based metadata
   - Provision to developers of client libraries to facilitate access and use of the data
   - Linked data and better identifiers
   - Ensuring that the user interface and the API present the same data

4. Automatic alert sent to repository managers if their service documents have not been updated for a period of, say, one month. They may choose to subscribe by Twitter, RSS, email and so forth. These methods of prompting repository managers are reportedly useful to them.

5. In addition, the system should automatically send a message to the registry service provider to highlight problems with the records of repositories. If a record has been updated by a repository manager but the new information flags up an error, the cause of the error will need to be reviewed and the repository manager contacted. This real-time quality assurance check will mean that data integrity can be maintained in real time, focusing expensive human intervention where it is most needed. There are tools such as link checkers and spell checkers that can be used to discover problems. It is also possible to identify high risk data such as URLs which are IP addresses and fields which do not follow expected conventions and flag them up for manual intervention by means of a watch list.

6. The greater use of semantic technology to help make research repositories more like linked data repositories. The key to unlocking this potential is to give the data suitable identifiers. Repositories must have identifiers (their URLs); any data that the registry produces should have URLs from which related data can be retrieved; and they should all be open and be capable of being shared. It would be useful to consider a data model which separates entities such as organisations from, say, repositories so they can be related as a graph rather than a flat text record. This will address some of the concerns of API consumers regarding limitations in the data models.

7. It has been suggested that one of the registry services could offer a seamless platform for deposit, whereby one item could be deposited once and be sent to the relevant repositories

– perhaps an author's own institutional repository, a funder's repository and perhaps even a subject-specific repository. OA-RJ and Topic Hub are projects exploring this area. The process is not straightforward so, at this stage, it is probably sufficient for any new registry to be supportive of the efforts of third parties to develop this technology.

4.5   Additional services

Two services likely to be fundamentally important to the success of any new registry service from the points of view of value for stakeholders and sustainability are, first, the ability to provide much better information about downloads than is currently possible and, second, to use download information in combination with other metrics to devise ranking systems that facilitate benchmarking. Developers in the stakeholder community wish to see the new registry based on open source software and for the development process to be more open and collaborative. In keeping with this, it would make sense for statistics relating to the use of the registry to be made public. The survey shows that usage is likely to be relatively low, but the availability of usage data over time would be helpful for those funding the service and other interested parties.

4.5.1   Download statistics

One of the most common uses of current registry services across the stakeholder types is for benchmarking. At a national level, many are interested in comparing performance of repositories between countries while at an institutional level, repository managers and university administrators use benchmarking to judge their own performance against their peer group. There are many data points that could be used as bases for comparison, but the number of deposits and the number of downloads by item type are particularly interesting to stakeholders. Obtaining accurate information by item type for *deposits* may be possible through more accurate and regular reporting by repository managers but also through investment in text analysis. Obtaining accurate information by item type with respect to *downloads* would not only be very useful for people but the recently-concluded PIRUS2 project[5] has shown from a technical perspective that it can be done.

The primary focus of the PIRUS2 project was gathering download statistics for journal articles, those downloaded directly from publishers and also from institutional repositories. A demonstrator shows that COUNTER-compliant download statistics[6] can be adduced from these sources. In addition, the project considered various ways to obtain raw data about different types of digital objects held in repositories. In brief, whenever an item is downloaded from a repository, the PIRUS server will be pinged with an open URL string containing various metadata elements which could include item type. In reality it would be better for the repository to pass an OAI identifier which enables the system to check the repository record which would contain information about the item type. In practice this can be difficult to begin with: although EPrints repositories tend to have consistent information about item type because it offers a standard drop down list, the situation is rather more difficult with DSpace repositories where no such standard item type list exists. Over time, however, it is possible to map the terminology that is commonly used to describe items types enabling the process to become automatic.

PIRUS-type functionality currently relies on patches developed for EPrints, DSpace and Fedora

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[5] http://www.cranfieldlibrary.cranfield.ac.uk/pirus2/tiki-index.php?
page=PIRUS2+End+of+Project+Seminar+Programme+and+presentations
[6] http://www.projectcounter.org/

repositories, but to roll out the ability to count downloads across repositories at the item level will require the functionality to be coded into the core software or be available as a robust plugin. This will also need to be done for repositories based on other software types. In terms of system architecture, it would make sense for the download statistics to be sent to one central clearing house for the UK where the data can be audited for COUNTER compliance and from where repository managers could obtain the statistics they require. With respect to sustainability there would be a cost involved in collecting, processing, auditing and facilitating access to cross-repository download statistics, but being part of a shared service will significantly mitigate the cost to each individual institution. This model can be easily scaled to an international level, whereby each country would have one central clearing house for repository download statistics such that users contribute to the costs of running the service in their own country, and there may be an international centre which synthesises data from the national clearing houses to enable international comparisons.

4.5.2   Rankings

There is little doubt that higher education institutions pay careful attention to rankings, be they based on national research assessment regimes or a range of other national and international services for measurement and ranking across a range of different criteria. As repositories come to contain more and more of the world's research outputs, so the attractiveness of measuring their effectiveness and usage grows. It has even been suggested that the success of an institution's repository could feed into formal national research assessment exercises. Since rankings are known to have a galvanising effect on university managers, the success of repositories will inevitably become increasingly important to an institution. This, in turn, will increase the pressure on – and the incentives for - repository managers to ensure that their repository is the best it can be, showing their institution in the best possible light. In such circumstances it is conceivable that repository managers will pay close attention to ensuring their registry records are accurate and up-to-date and that their voices are heard when it comes to suggesting improvements to registry services. This scenario would be a virtuous circle: repository managers will be working to optimise the performance of their repository and the by-product of this continuing effort – more accurate repository service documents – will mean that the accuracy and quality of the registry itself improves and the cost of maintaining the registry could diminish in line with the need for human intervention.

5   Sustainability

5.1   Financial sustainability

The issue of financial sustainability has been difficult for many different service providers operating in the open access and, indeed, the open source software arenas. Many of the services that users have come to take for granted were started with short term project funding. When the initial funding period expires, sometimes additional short term funding can be found either from the original funding source or some other funding agency but uncertain, short term funding makes it difficult for service providers to plan for the future or to make appropriate investments in terms of software and service development.

In the absence of guaranteed funding from public or private donors, the model that finds most favour is one where individual institutions contribute to the running costs of the service. This model can be usefully broken down into two levels. At the general level, a small number of institutions may be willing to contribute relatively large sums to help sustain a particular service. Although their motivations for contributing may be varied, this is a largely altruistic approach: their contributions benefit the whole user community. At the particular level, individual institutions which choose to make use of a particular service are requested to contribute to the cost of providing that service. Typically this is a voluntary contribution but more subtle variations on this model require contributions in return for higher levels of function or service that add genuine value. The key advantage of this approach is that institutions perceive value for which they are prepared to pay. It also provides an incentive for service providers to continue to develop their offering, secure in the knowledge that they are embarked on a sustainable path.

Given that services such as OpenDOAR and ROAR are currently used rather infrequently across the stakeholder spectrum it is unsurprising that their willingness to support such services with financial contributions is subdued. Important those these services are as part of the overall open access repositories infrastructure, it is more difficult to make a case for institutions to contribute compared with a service such as SHERPA/RoMEO[7] where the frequency of use is much greater. We know that universities in the UK pay for access to commercial benchmarking services so it is conceivable that as a new registry service begins to roll out its own benchmarking and ranking services, it will be possible to win financial contributions from users of the service. In the meantime, development funding will need to be found from public sources.

5.2   Community engagement

It can be argued that, in the open access and open source worlds, the issue of sustainability goes beyond money. Services such as OpenDOAR and ROAR were conceived and developed in response to particular stakeholder needs; as such, they have become components of the open access repository infrastructure. They are sustained by being used and being useful to a spectrum of users. There exists a relationship between the providers of such services and the user community, a relationship which should be nurtured by both parties. In the case of registries of open access repositories, this can be achieved through the involvement of organisations such as the Confederation of Open Access Repositories and the UK Council of Research Repositories, both of

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[7] http://www.sherpa.ac.uk/romeo/

which have indicated their support – through interviews conducted as part of this consultation – for the idea of developing the proposed new registry and a suite of new services. Dialogue between all the stakeholder groups and the organisation tasked with developing a new registry service is vitally important to the long term success of the venture. The success of the registry, as conceived in this document, will support the development of the role of repository managers and provide sound management information to those stakeholders who need it.

6   Appendix

The results of the survey of UKCoRR members can be accessed by opening the embedded .xps file below. The invitation to participate was distributed by the Chairman of UKCoRR to members and thirteen valid responses were received. The sample by itself is too small to be statistically reliable by itself but, taken together with the twenty semi-structured interviews we conducted, the survey results provide useful supporting evidence for the case made in this evaluation. It is worth noting that one of our interviewees had canvassed the views of twelve repository managers in Germany prior to speaking with us, for which we are grateful.

RepManSurvey.xps