Embedding a VRE in an Institutional Environment (EVIE). Workpackage 2: User Requirements Analysis

User Requirements Analysis Report

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Executive Summary

EVIE is a JISC-funded project which is aiming to develop a virtual research environment for staff based around portal technology. EVIE is funded on a 2-year basis, from November 2004, and is being led by the University of Leeds Library. The environment will enable researchers to share information across systems, and provide a single point of entry to tools that support research.

EVIE has just completed its user needs analysis phase. The methodology included structured one-to-one interviews with research staff, a series of focus groups with staff from the Schools of Geography and Medicine, and an online survey. 121 staff members completed the survey.

Key outcomes:

Respondents are keen to see a unified interface, flagging that this needs to be easy to use and available to them from off-campus. Different aspects of research activity were prioritised as follows:

1. Finding and acquiring published information such as articles, proceedings, monographs, etc.
2. Finding out about funding opportunities; applying for funding.
3. Collaborating with partners within the University or elsewhere.
4. Sharing or archiving research results; improving permanence of outputs.
5. Other activities.

Within these activities, respondents flagged the following issues:

Finding information: Respondents want a simple, easy tool to enable them to search across several datasets; they want advanced search interfaces too; and want to build up their own search strategies.

Funding: Respondents would like to see various aspects of the grants management process simplified; they want to be able to search and view previously submitted proposals; and they would like the portal environment to alert them about new funding opportunities.

Collaboration: Respondents want access to their own email within the portal, alongside the ability to share diaries and meeting organisers; they want tools which enable them to work collaboratively on documents and large files; and they would like to be able to find out who has what expertise.

Research outputs: Respondents want to be able to find the full-text of an output from the University publications listing, and processes in place to allow upload of their full-text to the system.

Other issues raised: Other activities flagged as important include monitoring of financial expenditure; and facilities for booking meeting rooms and other resources.

The outcomes of the user requirements analysis suggest initial priorities for incorporation of systems, tools, and information into the EVIE portal. These include: a single search interface to find information; tools to support grants submission; facilities for collaboratively managing documents; access to email and diaries; and facilities for uploading full-text documents to a repository.

1 Introduction

This document presents the results of the work package to identify user requirements for the EVIE project. The main aim of EVIE is to establish a prototype Virtual Research Environment (VRE) to support the needs of researchers. As such, this work package aims to elicit views from the research community as to which areas of research activity and support the EVIE project should develop, including key areas for integration within the University's portal framework and the content and applications that should be included.

This report details the activities carried out between November 2004 and April 2005 to progress the user requirements analysis work package. It describes the methodologies used to identify the requirements, the initial findings and an analysis of the results from the complete set of user surveys. The results of this analysis will feed into the next work package systems integration requirements. These will assess the user requirements and priorities against practical constraints and draw up the hit list of key capabilities that will encourage advocacy and maximise uptake of the EVIE portal.

2 Methodology

As noted by Middleton[1] most successful portals in a higher education context have been developed using a strong user-centred approach. The EVIE project wanted to ensure that the prototype VRE implemented features that would be used, rather than features which fitted the technology well. For that reason, the over-arching methodology was to involve researchers and formulate the user requirements from consultation.

2.1 One to one interviews

The requirements gathering exercise started with a number of fairly informal discussions with researchers. These one-to-ones discussed the current research activity of the user to determine stages and processes for their activities. They were also asked about the systems that they used and an attempt was made to identify gaps in the provision of support systems.

Subsequent one-to-one interviews were more structured, with a view to determining whether the research followed similar processes or whether it diverged from those interviewed previously. These interviews looked into more detail about the actual systems used, although still kept the flexibility to look into unused provision or gaps in research systems.

The majority of interviewees were from the departments of geography and medicine. By limiting the number of departments involved, a degree of consistency and depth of understanding with regard to the research process was achieved.

2.2 Focus groups

The first focus group was structured to check the validity of the ideas emerging from the one-to-one sessions. The second focus group meeting presented an idea of what might go into the EVIE portal,

[1] Academic Services Portal Project, Draft User Requirements Report, April 2004

and asked for feedback on this. It also set some challenges, for example, the attendees were asked to identify the 25 systems that a researcher might need to use on a day to day basis.

The initial requirements resulting from the one-to-one and focus group sessions were documented and the key ones noted. These were then prioritised based on the apparent importance to users gleamed during the interviews and focus groups. The prioritised requirements formed the basis for the questions posed in the subsequent online survey.

2.3 Online survey

A Web-based questionnaire was used to compare the needs of the specific communities involved in the earlier stages of this work package with the wider research community. The survey had very tightly defined goals: prioritisation of user requirements; testing the completeness of the requirements found through the one-to-one and focus group sessions; and confirmation that these requirements were applicable to researchers from other disciplines. It also provided opportunity for further consultation by encouraging comments on proposed functionality and perceived barriers to research.

An analysis of the questionnaire returns enabled the EVIE project team to adjust the requirement priorities of the proposed systems identified as a result of the one-to-one and focus group sessions.

2.4 Limitations of the methodology

The major limitation of the methodologies employed in the requirement gathering phase of the work package is related to sample size. The resource available to the project limited the number of one-to-one interviews that could be undertaken within the allotted timescale. Despite this, it was felt that increasingly repetitive answers indicated that at least some of the key requirements and main phases of research activity were already being identified. There was a disappointing turnout for the first focus group, though the second, and arguably more critical, group was well attended.

The project team had deliberately focused the one-to-one and focus group sessions on two departments within the university, Geography and Medicine, for the reasons outlined in paragraph 2.1. It was believed that these would provide the project with a broad spectrum of research activities, which proved to be the case. An obvious drawback of such an approach was that the research process of these departments might not be typical of other departments within the university. A few researchers were also involved at this stage drawn from a cross-disciplinary research community, the White Rose Grid community. These researchers were likely to be atypical and so might present requirements that were also atypical.

The online survey with its broad user base was a way of mitigating this risk and eliminating the potential bias that might result from restricting the number of disciplines involved.

A variety of techniques were employed to market the online survey to as large a cross-section of Leeds researchers as possible. An email mail shot was sent to each of the Research Support Unit's research interest lists, and the Flexible Learning and Development Unit also notified all of their users. Alongside this, all of the researchers involved in the one-to-one and focus group sessions were informed of the survey and encouraged to promote it as far and wide as they could. Even

though it was recognised from the outset that not all researchers would complete the questionnaire, the number of responses was higher than expected and it was felt that the views expressed by the respondents could be deemed to be representative of the research body of the university. Although not formally documented, the user population was effectively extended by also taking into consideration results from other requirements studies and the research experience of certain British Library staff.

While the EVIE project acknowledges that there are people who use Grid technology extensively, these technologies have been kept outside of scope for the User Requirements Analysis work package. When the VRE prototype becomes used widely and must be rescaled this needs to be revisited, at which point the technology underpinning the Grid technologies, and the relationship of research scientists workflow within the Grid to the capabilities of the VRE, need to be investigated.

3 Findings

3.1 One-to-one and focus groups

The one-to-one interviews highlighted some significant patterns and variations in both the tasks that research staff are engaged in, and the classes of tools that they find useful.

It quickly became apparent that there is no clear terminology to describe the seniority and experience of a researcher at the University of Leeds. Consultation with the Registrar indicated that shortly this would become even more complicated. Traditionally Academic Staff have been expected to do a combination of administration, teaching, and research: Professor, Reader, Senior Lecturer, and Lecturer. For staff whose contract is entirely research based, the titles are Principal Research Fellow, Senior Research Fellow, and Research Fellow. Additionally there are a raft of researchers on Other or Academic Related contracts. Some staff may be regularly involved in research activities without this being reflected in their contract or job title.

Graduate students and post-doctoral researchers focused on finding relevant information. This included locating sources such as journals or conferences, as well as the articles published in journals and conference proceedings. They exhibited classic citation following behaviour moving from recently published work backwards in time.

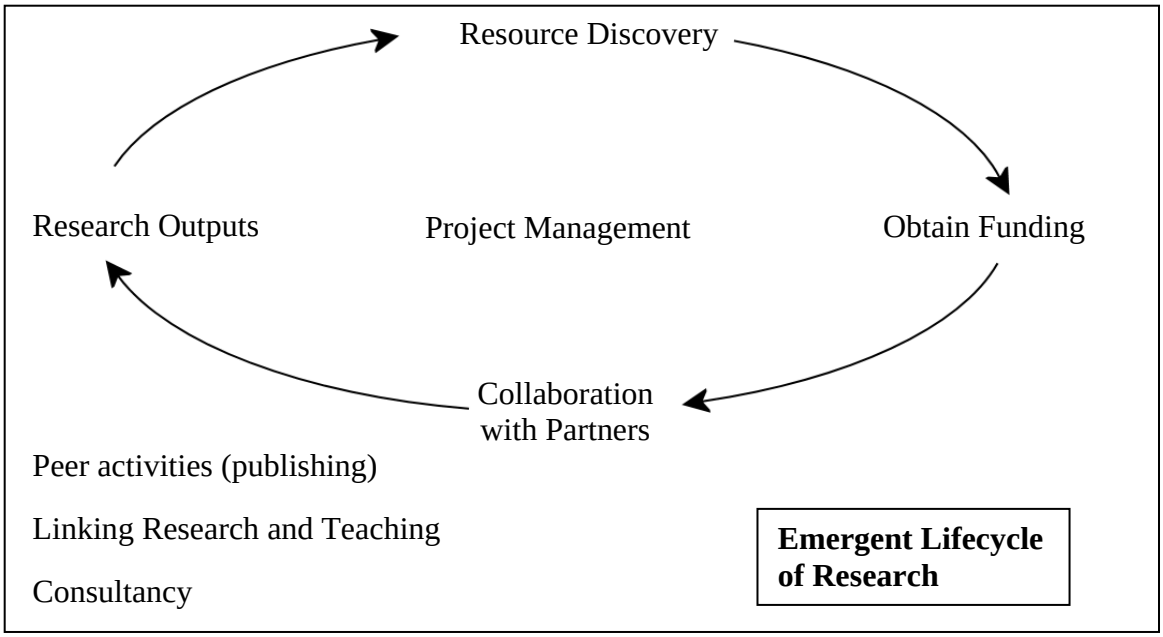
Lecturers and Research Fellows exhibited a wide range concerns in addition to locating information relevant to their research interests. The most widely mentioned were related to obtaining research funding. They looked for ways to identify relevant funding opportunities within the UK and European Union. Once they had identified a funding opportunity they would like support in assembling a compelling and successful proposal. Support might include forums to discuss techniques and approaches with others and access to a repository of successful (and even unsuccessful) proposals. They also sought support for identifying potential collaborators in other Departments and Faculties within the University. Many funding opportunities require non-academic or non-UK partners, which can be even more difficult to find. In addition to support in making successful applications for larger projects, these researchers also felt overwhelmed by the variety of small-scale opportunities that might support, for example, a single graduate student.

Professors and Readers often have the responsibility for managing large grants and large-scale projects, with their associated administrative overhead. Their information-finding needs were quite different from those of their more junior colleagues. To a large extent, their colleagues, peers, and

students keep them informed about exciting new articles; they are often actively involved with the funding agencies to establish programs or review proposals; they have established a track record of successful proposal writing and have good techniques. They are "in the loop". There are several other sorts of activities that they may be engaged in. They may edit a book with perhaps large numbers of contributors. They may found or edit a journal and desire support for managing the submission and reviewing process. They may even exhibit different citation following behaviour. For example, a senior researcher may have written a key article in her field, and some years later be invited to write a piece describing subsequent developments. In this task, the researcher starts with a small number of key articles and follows citations forward in time.

Different disciplines are supported by different sorts of search services. In Computer Science, researchers rely heavily on Google, which gives them excellent coverage. Within Geography, however, researchers turn first to the Web-of-Science, a subscription service provide by ISI. Within Medicine, researchers rely on Medline and PubMed. The Web-of-Science appears to have poor coverage on computer science topics. Researchers in Geography and Medicine make use of Google, but the terms that they use in their searches have wide applicability and appear in many unrelated documents.

The following diagram illustrates the broad clustering of research activity along with the natural flow between categories. Some activities do not readily fall into a discrete place in the lifecycle, but also are less common within the research user base.



3.1.1 Top priorities for stages in the lifecycle

Appendix 1 contains a complete list of requirements determined during the one-to-one and focus group sessions, these are roughly sorted to align with the clusterings of the lifecycle.

The following table indicates the top priorities at each stage of the lifecycle. All of these requirements were identified by several of the users, and were often applicable to researchers at each level of experience and seniority.

Lifecycle Stage	Requirement	Description/Comment
Resource Discovery	Remote access	Obtaining services while off-campus
	Simpler sign on	Use of fewer passwords
	Good cross-search interface	Ability to perform a search across sets of catalogues
Obtain Funding	Alerting to funding opportunities	
	Central bid repository	Searchable bids: present and previous
	Support in writing proposals	Boilerplate grant templates perhaps
Collaboration with Partners	Must handle large objects	
	Versioning	
	Threaded message board	Support usage via email (submission and reading)
Research Outputs	Streamline submission of content to storage	Handle multi-destination content
	Links to actual document for citation	
	Generation of website	Standard export of citation
Project Management	Financial information	For monitoring and ad-hoc co-ordination of resources and grants
Linking Research and Teaching	Enable content to be moved to Bodington	Handouts and course materials

There are also some key requirements emerging which encompass the whole of a VRE.

- Local ownership and administration is very important
- There needs to be a low barrier for including external users (and no heavy reliance on state of the art computing equipment)
- Easy to use, with accessible minimal help (where there is the need for too much help, documentation and training there is the implication that this requirement is not being met)

3.2 Online survey

Appendix 2 provides the web-forms used for the survey as a reference to indicate the actual wording that produced the responses. The high level design for the questionnaire was as follows:

- Self categorisation of the researcher
    - Faculty
    - Research seniority (role)
- Broad rating of the importance of the main aspects of the research lifecycle
- Prioritising requirement options for each of these aspects
- Assessment of the questionnaire
    - Applicability of requirement options offered
    - Completeness of the requirement options

Each section of the questionnaire was accompanied by space to allow free textual comment.

While designing the survey, it was realised that there was also an opportunity to find out some of the perceived barriers and hardships faced for some aspects of the research lifecycle. Instead of incorporating an extra question into the main body of the survey, which would have been likely to be a disincentive to completing the survey, a miniature, optional, follow-on questionnaire was created. This meant that the main survey directly supported its purpose: prioritisation of user requirements; testing the completeness of the requirements found through the one-to-one and focus group sessions; and confirmation that these requirements were applicable to researchers from other disciplines.

3.2.1 Data analysis

The complete set of raw return data was imported into a Microsoft Excel spreadsheet, and this was used to perform some preliminary analysis. It quickly became evident that this tool was not sufficient to provide the level of detail that the data contained, so a Microsoft Access database was designed to manipulate and process the raw data.

The two identification questions, faculty and research role, were used to group responses together and provide categorised breakdown of the different questions to see whether there were any differences between requirements of distinct faculties and distinct research roles or not.

The first question proper, allocating an importance rating to the main aspects of the research lifecycle, was used to obtain an overall summary of researcher's priorities. The frequency of each rating was counted and plotted as a cumulative bar for each lifecycle aspect.

There were eleven questions that allowed the respondent researcher to prioritise a list of requirement options, grouped according to the five lifecycle aspects rated in the first question. Each of these questions allowed a ranking of 1^{st}, 2^{nd}, 3^{rd}, 4^{th}, or 5^{th} for the requirement options listed. The frequency of the options ranked as 1^{st} were calculated, and used to compare which options were considered top priority.

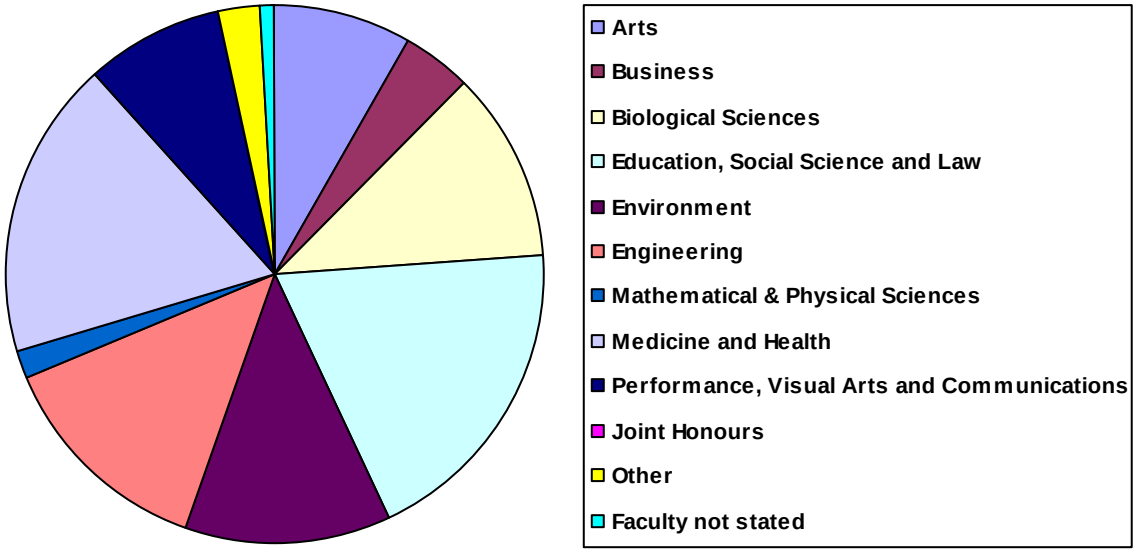
The free textual comments were analysed manually, and have been summarised in the relevant section. One of the eleven questions also included a textual comment area for the researcher to indicate the key resources that they would like to use for searching, and the number of times each resource was indicated has been counted.

3.2.2 Overall results

3.2.2.1 Distribution of respondents across the faculties

The spread of response across the faculties is fairly well proportioned. There is a notably low response from the Faculty of Mathematical and Physical Sciences. The reason for this low response is currently under investigation, which may be one of the following; either they already have adequate provision of services equivalent to the proposals from a VRE; the questionnaire was not completed due to lack of time and not seeing the questionnaire as a priority or; there was a lack of awareness as to the existence of the survey.

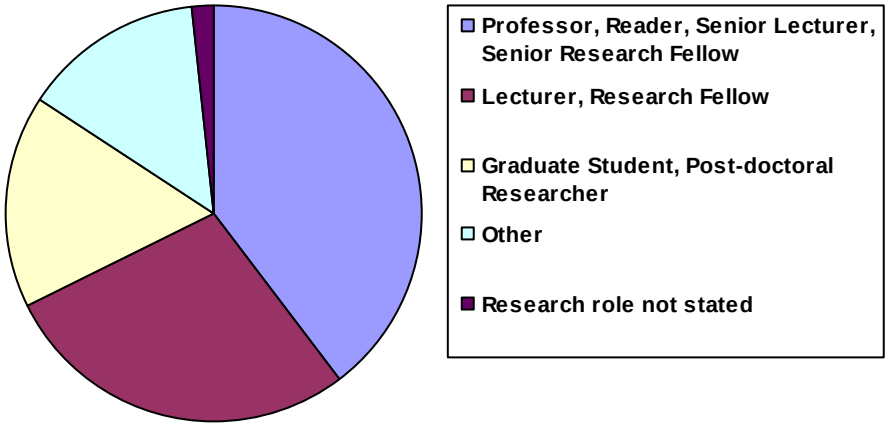
Faculty	Number of responses
Arts	10
Business	5
Biological Sciences	14
Education, Social Science and Law	23
Environment	15
Engineering	16
Mathematical & Physical Sciences	2
Medicine and Health	22
Performance, Visual Arts and Communications	10
Joint Honours	0
Other	3
Faculty not stated	1
Total responses	**121**



3.2.2.2 Distribution of respondents by research role

When looking at the position, or research role, of the researchers who completed the questionnaire it is clear that the largest group of responses came from senior researchers. This is the case for every faculty (with the exception of Business) and lends credence to the findings of the survey, as 40% of respondents have a wealth of experience doing research.

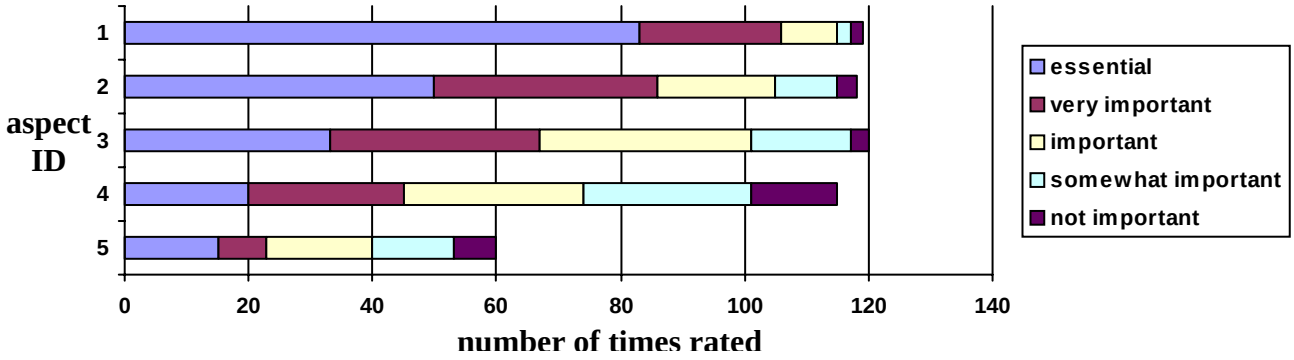
Research role	Number of responses
Professor, Reader, Senior Lecturer, Senior Research Fellow	48
Lecturer, Research Fellow	34
Graduate Student, Post-doctoral Researcher	20
Other	17
Research role not stated	2



Looking at the distribution of respondents from each research role, according to their parent faculty shows that most faculties had about the same number of Professor/Senior researchers as Lecturer/Research Fellow. However, both the Faculty of Environment and the Faculty of Engineering had a ratio of more than 2:1 for Professor/Senior - Lecturer/Research Fellow.

3.2.2.3 Rating of the main aspects of the research lifecycle

The following chart shows the count of how many researchers rated each of the five aspects as essential, very important, important, somewhat important, or not important. These have been shown in a cumulative fashion, with essential plotted first, so that it is easy to understand the overall response according to natural groupings. For example, prioritising according to those aspects rated as either essential or very important is likely to meet the requirements of more researchers. The relative importance of the different aspects of the research lifecycle is the same whether looking solely at the surveys rating the aspect essential, or grouping essential and very important, or grouping essential, very important, and important.



aspect ID	aspect description from survey
1	Find and acquire published information such as articles, conference proceedings, literature
2	Find out about funding opportunities; apply for funding; managed funding projects
3	Collaboration with partners with the University or at other institutions
4	Share or archive research results such as preprints, postprints, technical reports, software, or datasets
5	Other activities

Every faculty rated the activities surrounding resource discovery as the most important for a VRE to support, with 70% of respondents rating it as essential.

Funding opportunity tasks are also rated as very important, with some faculties rating it as having the same importance as resource discovery but the Faculty of Medicine and Health and the Faculty of Education, Social Science and Law indicated that these tasks need not be supported as strongly for their disciplines. One comment suggested that there are several information sources about funding opportunities already available together with support and advice networks, so this provision might fall outside of the VRE.

Collaboration activities were rated as very important or essential by over half of the respondents but this is very uneven across the faculties. The Faculty of Arts and the Faculty of Medicine and Health predominantly rated this aspect of the research lifecycle as important or somewhat important.

It was surprising that the activities surrounding managing research outputs received this low rating, as the one-to-one sessions had suggested more interest. Also, this area of the research lifecycle was seen as not important by 12% of respondents. These ‘not important’ responses came entirely from the following five faculties: Arts; Performance, Visual Arts and Communication; Business; Education, Social Science and Law; and Biological Sciences. For these faculties more respondents rated managing research outputs as not important than as essential.

At this point in the survey it would not have been obvious which activities might come under the catch-all aspect of other activities. This meant that this area of the lifecycle was only rated by half of the respondents.

The distribution of the five importance ratings across the aspects, when broken down by the research level of the respondent, is proportionately representative of the overall ratings, with just one exception. Only 10% of graduate students and post-doctoral researchers rated the funding opportunity activities as essential, where, overall, 30% of respondents rated this aspect as essential. This is attributable to most graduate students having no interaction with funding applications.

3.2.2.4 Priorities selected for General behaviour of the research portal

The highest priority chosen was that the VRE service should be easy to use, with little need for extensive help. Almost 50% of respondents selected this as their 1st choice.

35% of respondents wanted to be able to access software and information while off-campus. Some respondents work in an environment where all of their online work is done off-campus, and at present this causes problems (with email for example). Also, it must not be assumed that all of the off-campus access will be done across high bandwidth network connections via state-of-the-art computers.

While only 10% indicated simplified sign-on as the first choice in this section, it is felt that this is also one of the attributes of an easy to use VRE. One respondent asked for clarification of this feature, which indicates that the idea of fewer logins and user accounts was not generally understood.

No respondent selected departmental control as their first preference. Several of the comments received in later sections indicated that researchers definitely do not want their department to choose for them or to be able to control their view of the VRE.

3.2.2.5 Priorities selected for Searching for peer reviewed and other materials to support you in your research

For this question, one of two covering resource discovery activities, a single Google-style search box to cross-search many resources was rated as top priority over all of the research roles (selected by 37% of respondents). The Lecturer/Research Fellow research role rated an advanced search form as their top preference (with 39% selecting this and 32% selecting the Google-style). Overall the advance search form received 28% of respondents rating it as 1st preference.

While not selected by as many respondents, having access to the native interface and all of the powerful advanced search capability is evidently important (20%).

The comments show that the 1st choice, a Google-style cross-search, may already be provided by the relatively new Google Scholar service. The researchers require flexibility in this area, so ideally they would like a single Google-style search box and access to advanced cross-searching, with the option to use the native interface of individual resources available. Some native interfaces are seen as being extremely irritating, inefficient and slow. The VRE needs to acknowledge that many researchers are willing to put in time to learn a system as long as it will provide them fast access and the is sufficiently powerful to remove the deluge of information.

Some online resources achieve their value because they are subject-specific services, these would not be enhanced by including them in the VRE. Also, some researchers would prefer

national/international resources – Google scholar or the British Library are preferred to a Leeds based solution.

Further evidence on trends in information use by researchers can be found in the HEFCE report[2].

3.2.2.6 Priorities selected for the default screen for searching

This is the second question covering resource discovery activities. A very high proportion of respondents (63%) selected to be able to see all resources and databases available and manually select which to search across. The next highest option, to be able to build up personal lists of resources and databases to search received 17% of the response.

Pre-selection of resources and databases by the local department was rated as 1st preference by 6% of respondents, and no Lecturer/Research Fellow chose this requirement.

3.2.2.7 Priorities selected for Writing and submitting funding proposals

This aspect of the research lifecycle had one question addressing it. The top three options for 1st preference were quite close to each other.

- Search, view, and download previously submitted proposals (28%)
- Structured bid template with a high degree of automation for sign-off (27%)
- Automated alerts about new funding opportunities (22%)

The Graduate student/Post-doc researcher rated alerting about opportunities higher than putting bids together, but 19% of Professor/Senior research fellow also selected this too. Only 9% of Lecturer/Research fellows chose this requirement. The earlier one-to-one sessions tended to indicate that the Professor/Senior research fellow research role was likely to be on the inside of the loop when new funding opportunities arose, so this is either not transferable across the faculties or these researcher would like to be aware of funding opportunities that occur outside of their established loop.

Interestingly, 10% of respondents did not make any selection for this area which confirms the importance ratings given to each stage in the research lifecycle.

Several of the comments indicated that none of these options were needed, and that much of the provision already exists elsewhere. This is countered by other comments indicating that all of the options are helpful.

3.2.2.8 Priorities selected for sharing data amongst the research team

This is the first of the three questions covering collaboration with partners, both within the University and with other institutions and organisations.

[2] Researchers' Use of Libraries and other Information Sources: current patterns and future trends, Education for Change Ltd. (http://www.rslg.ac.uk/research/libuse/)

Sharing and handling large files was chosen by 32% of respondents as 1st priority. The next two highest selections were version control and multiple authorship (23%) and access security controls for viewing and modifying shared files (22%).

15% of respondents did not choose anything as their top priority for this question.

3.2.2.9 Priorities selected for Functionality to assist collaboration

For the second question on collaboration the availability of a group diary and meeting organiser was rated by the most respondents as top priority (32%), and the next highest ratings were split evenly between three options.

Collation/digest of e-mail groups was selected by 14%, threaded message board facilities by 14%, and desktop videoconferencing by 12%.

22% of respondents did not prioritise anything from this question, which indicates that there is much less interest in this part of the lifecycle.

3.2.2.10 Priorities selected for Setting up collaboration

The third question in the section on collaboration shows a better response than the two previous questions. Overall, a mechanism to find researchers with specific expertise was chosen by the most researchers (28%), with easy set up of teams and groups coming next (22%). Fairly close were the ability to locate previous and potential collaborators (17%) and support for collaborating externally to the University (17%).

There is a disparity between the research roles for the responses, with 55% of Graduate Student/Post-doctoral Researcher and 30% of Lecturer/Research Fellow choosing finding expertise, while 23% of Professor/Senior Lecturer chose this – preferring easy group set up (25%).

12% of respondents did not prioritise any of the options.

The comments for all three sections within the Collaboration with Partners aspect of the research lifecycle indicate that some researchers definitely do not want any of the requirements offered by the survey. Many felt that this was an important area, although it was only in its small beginnings. Certainly the support of external collaborators and facilitation of data sharing would be really helpful to some of the respondents. Threaded conversations would be very handy as an enhancement to email collaborations, although email has sufficed so far between several institutions. Some funders are implementing conditions that all online collaboration tools need in order to conform to W3 WAI standards.

3.2.2.11 Priorities selected for Aiding the permanence of research outputs

This is the first of two questions for the research outputs phase of the research lifecycle. Despite being seen as one of the least important areas of the lifecycle, the response rate was comparable with the collaboration questions.

The availability of a single point of submission for research results to be archived received the highest number of responses (34%). The other options also received a good response. 25% selected having a quick and simple way of submitting outputs to be archived, and 24% selected that access

to documents should be maintained even where the staff who produced the outputs are no longer available.

17% of respondents did not select anything for 1st priority from this question.

Commenters raised the fear that submission and retrieval of data could become a major time consuming element of the research process, and simplicity and short cuts to avoid this are paramount. It was suggested that there is already considerable activity on archiving articles, and in particular the work at Southampton seems very promising.

3.2.2.12 Priorities selected for Options to help disseminate information

The second question for the Research Outputs phase of the lifecycle showed an almost unanimous response of 52% selecting that the University's list of publications should include links to the full documents. The next choice was automatic generation of personal research publications lists (17%), and some interest was shown in having a service listing previous and current projects (13%).

11% of respondents did not select anything for 1st priority from this question.

One comment indicated that these options were not important, but all the options for the previous question, "Aiding the permanence" were very important. The option for generation of CVs was suggested to be kept under the responsibility of the individual researcher. Funding councils may also be moving towards the archival of research outputs. The provision should not require duplication of effort and needs full administrative support.

3.2.2.13 Priorities selected for other research activities

40% of respondents rated monitoring financial expenditure of their grants as top priority for this question. 19% selected options for support for booking conferences, meeting rooms, refreshments, and parking. The other three options each received 1st priority from just less than 10% of the respondents.

13% of respondents did not select any of the available options, which means that more respondents completed this question than the research outputs questions or the collaboration questions.

Most of the comments received for this section were related to gaining better access to grant expenditure, and see it as vital that named researchers and principal investigators have access to this information. Anything to streamline grant management would also be a good thing. While the other options were acknowledged to be useful and good ideas, they are not necessarily as important as the previous sections of the questionnaire.

3.2.2.14 Priorities selected for mechanisms for being kept up to date

An e-mail alert containing information (specified in advance by the researcher) as and when it became available received the most 1st choice responses (41%), with having a "what's new" information page immediately on logon to the VRE receiving 35%.

This question did not have a space for open textual comment, although one related comment was received in the general comment box. Unless the filtering of information is really good, then there

should be no more alerting services – at the moment a vast number of items are already received and not all of it seems to fit the registered preferences.

3.2.2.15 Key resources for searching

Approximately half of the respondents provided data for this question. The following table shows the resources listed at least twice.

Key resources to search	Frequency listed
Web of Science	39
Google	29
Medline	14
pubmed	6
Cinahl	4
Embase	4
Cochrane Library	3
Google Scholar	3
sosig	3
Amed	2
arXiv	2
Biosis	2
JStor	2
Psychinfo	2
Psychlit	2
Science Direct	2

It is worth noting that making a search resource more accessible increases its usage. Where the resource is part of a subscription, this also maximises the value for money. By far, resources like Web of Science / Web of Knowledge, Google, and Medline are deemed necessary in a VRE.

3.2.3 Coverage and applicability: perception of the requirements set

The majority of researchers filling in the online questionnaire indicated that the features identified in the survey were applicable to their particular research needs. 75% of respondents thought that the features had good coverage or were spot on.

How applicable are features in this survey?	Number of responses	Percent (%)
spot on	17	14
good coverage	74	61
meets some needs	23	19
irrelevant	1	1
no response provided	6	5

Breaking down the returns by the respondent's research role shows these responses are representative of each of the different categories of researcher. The same is true for breakdown by parent faculty too.

Does the set of features seem complete?	Number of responses	Percent (%)
yes	66	55
no	26	21
n/a	12	10
no response provided	17	14

Generally, the feature set included in the questionnaire was perceived to be comprehensive. This backs up the broad applicability of the findings which emerged from the one-to-one sessions and the focus group meetings across the University.

3.2.4 Open ended comments

Some of the completed questionnaires included comments that suggest or request features that were not implicitly offered. There were also pointers to other sources of provision.

- External data such as stock prices should be able to be fed in to the VRE
- It would make life easier if email could be read from the VRE
- It is very useful to see who is currently logged in
- More work and efforts should go into proactive steps to aid and facilitate researchers to interact across platforms
- Time and resources be used to improve vital tools which are currently difficult for researchers to use. Make these more flexible and intuitive rather than introducing many more new things
- The single most important thing you could achieve is to think of the researchers first when designing the portal
- The focus should be on supporting collaborative work among colleagues rather than duplicating information that can easily be found elsewhere
- It is essential that the platform be accessible to all and as open as possible
- There is an issue of accessibility – any new core system must be accessible to all staff in line with the University's Equality and Diversity Policy
- Technology that avoids proprietary software formats and enhances usability and searchability should be designed from the beginning
- Access to and information about a wide set of shared resources and tools, e.g. distributed computing, experimental apparatus
- The questionnaire is oriented more to scientific/empirical projects, research in humanities includes more abstract work and hence other needs, e.g. dissemination of ideas to policy makers, media
- A radical rethink of how data is managed and processed within the university is highly recommended
- It should be very easy to turn off features that a researcher does not find useful

- The VRE should not be subject specific
- The VRE should have links to relevant e-discussion networks
- Often systems are designed with just the 'core science' in mind, so I will try to promote it to my 'social' colleagues
- Seems to be too focussed on making large databases, should have less work into archiving
- We have to assume that other universities will set up similar systems (it is important to ensure that a researcher is able to work through any external systems)
- Many of the things listed in the questionnaire are already provided. Some are done well, e.g. Web of Science. Some are difficult to use, e.g. OSCAR, SIPR, and COSTA. These systems are designed to allow back office functions to occur easily rather than be useable by researchers.

3.2.5 Barriers: the optional follow up question

Of the 75 respondents (62%) that submitted a response to the follow up question, one recurring barrier was mentioned in every stage of the research lifecycle: Time!

3.2.5.1 Barriers: find and acquire published information

Several comments indicated that the situation is currently very good, and there were no perceived barriers to this activity. The scale of the task and the information overload, especially when searching outside of the normal subject area, meant that this could be a painfully slow process. There was also mention of problems with obtaining hardcopy of material that is not available online. Sources are disparate and do not cover as widely as would be liked. The set of subscription may not cover resources required, and there are other cost issues – for example with pay for view articles. Having to search multiple sources was also raised more than once.

3.2.5.2 Barriers: funding opportunities and applications

Again, some researchers stated that there were no barriers in this area of activities. However there does not seem to be enough structured support in place for the grant application process. Also, there needs to be more effective training, mentoring, and information sharing so that younger members of staff can learn what a successful grant contains. This is not helped by the diversity of processes for obtaining funding, which makes the whole area more tortuous than it should be. Good information is hard to get, and often there is not enough time between finding out about an opportunity and reacting to it. It is difficult to get comprehensible information on grant expenditure, and interfaces with the finance offices are often erratic. It is not possible to manage projects without access to financial data and control.

3.2.5.3 Barriers: collaboration with partners (internal and external)

Once more, several comments indicated that there were no problems in this section of the lifecycle. Human issues could make this area hard to tackle successfully. There is a lack of available tools that are easy to use and accessible to support the collaboration. It is disheartening to discover that colleagues on campus can work on the same area of research and never know that there are others of like interest.

3.2.5.4 Barriers: sharing/archiving research results and outputs

At the moment there is currently no known provision to allow this to be carried out routinely. This is also true on a larger scale (for some research disciplines). The maintenance and activity involved in archiving can become very time consuming. Files are sometimes too big to handle easily. There are also technical barriers to creating web pages for specific projects, but research must be outward

facing research. Perhaps some copyright issues would arise for some things that would need to be archived. Most of the barriers are technical in their nature.

3.2.5.5 Barriers: other activities

The IT support for research is not as good as it needs to be. Also, sometimes there is a lack of suitable equipment available for experimental activities. Sometimes there are excessive departmental teaching and administrative pressures, which takes away from the research time. The point about needing easy access to financial information was raised again here.

3.2.5.6 Follow up question: final comment

Managing research is probably the most problematic (e.g. the budgets). The features included in the EVIE VRE need to be clearly identified and justified. It was re-emphasised that access to all of the services whilst off-campus was very important, even when the researcher does not have a broadband connection.

4 Requirements listing

4.1 Top twenty options chosen as 1st priority

Requirement text from survey	Frequency rated 1st priority	Percentage (%)
I want to see all of the resources and databases that are available, and select which are included in each search	76	63%
The University's list of publications should include links to the full documents	62	52%
Have a service that is easy to use, with little need for help	58	48%
I want to monitor financial expenditure on my grants	49	41%
An email alert containing information that I specify when it becomes available	49	41%
A single Google-style search box to search across many resources	44	37%
A **What's New** page when you logon to the Research Portal	42	35%
Access software and information while off-campus	41	34%
A single place where I can submit research results for long-term storage and easy access	41	34%
Sharing and handling large files	38	32%
Group diary and meeting organiser	38	32%
Ability to search, view, and download proposals that have been previously submitted	34	28%
Mechanism to find researchers with specific expertise within the university	34	28%
An advanced search form enabling search on specific data fields	33	27%
A structured bid template with electronic routing/distribution and sign-off by University administration	32	26%

A quick and simple way of submitting my research results to be archived	30	25%
Access to documents and hyperlinks should be maintained even if staff transfer to new jobs or organisations	29	24%
Automated alerts about new funding opportunities based on my preferences	27	22%
Files to have version control so that they can be safely changed under multiple authorship	27	22%
Control over who can view or modify shared files	26	21%

4.2 Ranking of options: find and acquire published information

Requirement text from survey	Frequency rated 1st	%
I want to see all of the resources and databases that are available, and select which are included in each search	76	63%
A single Google-style search box to search across many resources	44	37%
An advanced search form enabling search on specific data fields	33	27%
Direct access to the native search interface for each resource to maximise retrieval capability	22	18%
I would like to build my own lists of resources and databases to search	20	17%
Ability to download citations or references to personal bibliographic software	18	15%
Direct links to external resources and databases to allow me to query each one separately	11	9%
Relevant resources and databases to be pre-selected by my department	8	7%

4.3 Ranking of options: funding opportunities and applications

Requirement text from survey	Frequency rated 1st	%
Ability to search, view, and download proposals that have been previously submitted	34	28%
A structured bid template with electronic routing/distribution and sign-off by University administration	32	26%
Automated alerts about new funding opportunities based on my preferences	27	22%
Full economic costing information to include in proposals	12	10%
Online help files on funding bodies and data protection	5	4%

4.4 Ranking of options: collaboration with partners (internal and external)

Requirement text from survey	Frequency rated 1st	%
Group diary and meeting organiser	38	31%
Sharing and handling of large files	38	31%
Mechanism to find researchers with specific expertise within the university	34	28%

Files to have version control so that they can be safely changed under multiple authorship	27	22%
I want to be able to easily set up teams and groups	26	21%
Control over who can view or modify shared files	26	21%
Ability to locate previous collaborators and potential collaborators with similar interests	21	17%
Support for collaborating with people external to the University	20	17%
Threaded message board	17	14%
Collation/digest of e-mail groups	17	14%
Desktop videoconferencing	14	12%
Online chat for real-time communication	9	7%
When shared data has been modified or added, team members should be notified automatically	9	7%
Support for building new interest groups	6	5%
Enforce collaborators to use the same application in order to view or manipulate data or files	3	2%

4.5 Ranking of options: sharing/archiving research results and outputs

Requirement text from survey	Frequency rated 1st	%
The University's list of publications should include links to the full documents	62	51%
A single place where I can submit research results for long-term storage and easy access	41	34%
A quick and simple way of submitting my research results to be archived	30	25%
Access to documents and hyperlinks should be maintained even if staff transfer to new jobs or organisations	29	24%
My publication list should be automatically generated from a repository	20	17%
People should be able to find a list of previous and current projects	15	12%
My on-line CV should be automatically updated with new projects and publications	11	9%

4.6 Ranking of options: other activities

Requirement text from survey	Frequency rated 1st	%
I want to monitor financial expenditure on my grants	49	40%
Support for booking conferences and meeting rooms, refreshments, parking	22	18%
I want to purchase order materials and stock using my project budgets	12	10%
Support for peer-review activities	11	9%
Mechanisms to make elements of the research process and outcomes available for the teaching process	11	9%

5 Conclusions

In order to establish a prototype Virtual Research Environment, the EVIE project embarked on a requirements gathering exercise. Three methods were used to ask researchers which areas of support and provision should be part of the VRE. The first two methods were based in the University of Leeds Schools of Geography and Medicine, and involved one-to-one interviews and focus groups. These were followed by an online questionnaire available to any researcher. The results from the questionnaire show that researchers from all disciplines have similar needs to those from Geography and Medicine.

Using a research lifecycle has proved a very useful tool for associating research activities together, and providing a good structure for presenting requirements options clearly to the user community. Over eighty percent of respondents to the online questionnaire saw some importance in the VRE providing support for facets of each aspect of the lifecycle.

Several researchers expressed a desire to conduct their research while off-campus with the VRE as a tool to enable this effectively. For the resource discovery, finding and acquiring published information, component of the research lifecycle respondents indicated that there should be more provision for cross-searching and that the configuration of searches should be transparent – so that it was easy to know which resources were available to be searched. In the area of grant and funding applications researchers would like a more streamlined and automated workflow together with a system to view previously submitted proposals. For collaboration with partners (both internal to the institution and external) respondents asked for a system that would allow large files to be shared within a team, and for support of team and group management – with diaries and meeting organisation. The final aspect of the research lifecycle, sharing and archiving research results and output, strongly suggested that the University of Leeds' current list of publications needed to be extended to include links to the full text publications. If the VRE can provide a single place where research publications can be submitted which creates entries in the publications list and archives the full text, then providing correct information for finding published information is simplified. There was also a strong indication that researchers would like to use the VRE in order to monitor the financial expenditure on their grants.

Respondents to the questionnaire were enthusiastic about the EVIE VRE, and seventy five percent indicated that the systems being considered represented good coverage of their needs, with a further twenty percent acknowledging that it does cover some of their needs. Over fifty percent of respondents felt that the feature set included in the questionnaire was complete, and so EVIE can move forward with confidence that there are few gaps in our understanding of the user community's requirements for research support.

6 Appendices

6.1 Appendix 1: One-to-one and focus group requirements

The requirements listed are taken directly from the one-to-one interviews and the focus group sessions, and are not filtered in any way even though some may fall outside of the remit of the EVIE project.

6.1.1 Resource discovery

- Nationwide licensing for all key resources
- Remote access to key resources
- Simple search interface
- Professional search interface
- Multi-disciplinary datasets
- Links to datasets from reference lists/citations
- Links from databases to library resources
- Reduced sign-on
- Integration of references and import/export with citation software
- Alerting service for new journal articles
- Alerting service for conferences
- Eliminate cost barrier of document supply
- Prompt supply of documents
- Easier access to datasets (including non-academic datasets)
- Support for record download and sharing
- Advanced resource discovery techniques

6.1.2 Obtain funding

- Help in writing grant proposals (including examples)
- Central bid repository
- Grant directory (searchable)
- Advice relating to data protection
- Alerting to funding opportunities
- Grant template with electronic signing mechanism and duplication
- Online proposal submission to ethics committee
- Support for conference attendance
- Streamline Research Support Unit activities
- Capacity for large bids (needs clerical support)
- Links to full costing information, especially for staff costing (easy access essential)

6.1.3 Collaboration with partners

- Applications embedded in collaborative tools
- Easy set up of memberships and user interface for collaborative tools
- Ability to push information to all members of a group
- Alerting information to a group member
- Tools capable of handling large files
- Data security
- Acceptable performance/availability of tools
- Enforced (no cost) use of collaborative tools
- Shared document/file versioning
- Desktop videoconferencing
- Group diary
- Help finding collaborators
- Help finding expertise within university
- Links between the collaborative tools and repositories (the bid repository and the research output repository)
- Collation and digest of email lists (listservs)
- Threaded message board
- Support to maximise benefit of collaborative tools
- On line chat
- Multi-lingual support and a 'low IT' threshold
- Building up new interest groups
- Tools for online voting, surveys, feedback gathering
- Visual discussion tools

6.1.4 Research outputs

- Online publication list to be linked to the full documents
- Publication lists to be made complete
- Documents and links to be maintained on transfer of staff
- Institutional repository (secure) for research outputs and findings
- Auto CV creation from University of Leeds Publication Database (ULPD)
- Streamlined processes for transfer to repository and/or ULPD
- Repository can be organised appropriately for any particular research discipline
- Links to actual outputs from professional website

6.1.5 Peer activities (publishing)

- Streamlined workflow

6.1.6 Project management

- Better mechanisms for monitoring financial information
- Organising meeting for collaborative research
- Managing resources/grants
- Training in tools to be used
- Ordering stock/purchasing
- Project related administration (room bookings, conference setup, access to support for convening meetings, online catering booking)
- Pastoral help

6.1.7 Mechanisms to link the research process to the teaching process

- Email to be automatically organised and prioritised
- Auto creation of space in the Nathan Bodington Virtual Learning Environment
- Enable content to be extracted from the repository for import into teaching tools
- Distance learners – live discussion forum/webcam

6.1.8 Consultancy

- Templated consultancy agreements

6.1.9 General

- Must be able to accommodate researchers irrespective of the computing platform that they use
- There is a fear of plagiarism, especially at the graduate student and post-doctoral research levels, which may mean reluctance to place research outputs on Websites or into an institutional repository prematurely
- At the faculty (or departmental and local research group) level, local ownership of the VRE is paramount
- Easy facility to administrate the VRE
- Easy to use interface to all functionality incorporated in the VRE
- There should be links and contacts for support (probably from units such as the Research Support Unit)
- Support should be intuitive, accessible, and minimal

6.2 Appendix 2: The online survey

6.2.1 Introduction page

http://www.leeds.ac.uk/evie/survey

6.2.2 Main survey

http://www.leeds.ac.uk/evie/survey/evieQnaire_onepage.html

6.2.3 Optional follow up question

http://www.leeds.ac.uk/evie/cgi-bin/template/evieQnaire_followup.html

6.3 Appendix 3: Follow-up comments

6.3.1 Barriers to research tasks: find and acquire

None. All already available on WoS, Pubmed etc.
No significant barriers. The libraries are helpful if inter-library loans are required.
the univ library has a very good selection of both paper and e-documents - and that is very helpful
Scale of task: have to identify and search through a number of databases not all of which are in my subject area
Not all articles are available online and getting a hardcopy is very slow.
As a student, I appear unable to use British standards online with my Athens account.
Having to search multiple sources
TIME! Remembering how to use assorted databases.
Lack of access to journals through either no subscription or erratic access procedures
Difficult if you are involved with managing research projects but are not a member of academic staff
None for articles & literature, other than time. Lack of knowledge / awareness will is barrier for finding conference proceedings.
Pay for articles is barrier, sometimes they are not available to non-members of website.
Sheer range of possibilities and information overload - but primarily lack of time for academic background research due to bureaucratic demands within the organisation
The barrier is that much of this material is not free so the publishing bodies protect access to it. The library works hard to facilitate this and I'm not sure there is more that can be done here.
The library inter-loan system is not well integrated with electronic archival methods
Time! Difficult to do off-campus which is often when I do have time to do this type of activity (for example I am filling this survey in at 10.50pm!!)
Use of inadequate and unsystematic data formats
Library does not always subscribe to the materials I want. It is infuriating to visit the library and THEN find that the resources aren't in the place that they should be (not much we can do about that I suppose).
I want to be able to find quality material without having to search multiple sites.
Sources too disparate. WoS and Medline do not cover everything
Would like to see more full text articles going further back in time.
Lack of research time because of excessive departmental teaching and administration pressures
Mainly limited by availability of access to electronic journals especially the lesser known ones.
Web of Science already offers a good coordinated access to published information, although it can get busy.
missing volumes or a period where the university has not paid for certain subscription years - need to go via DD
Not really - we have well developed web-searching skills. But, it is annoying when the university doesn't subscribe to a particular journal and you have to pay a lot of money to secure a copy of one article.
Time
Library website is not the easiest tool to use - I know there are planned developments here. Ideally, password management should be hidden (e.g. to IEEE xplore).
This is an easier task than it has ever been before and the barriers are falling all of the time. It is important to me but I feel that my ability to access such information is better than ever so I am not sure why a special portal would help in any way?
Needs to be more seamless although I noticed that this has already improved somewhat on the WOK.

Incomplete subscriptions to electronic versions of journals
Ill takes a long time

6.3.2 Barriers to research tasks: funding opportunities

None
There does not seem to be enough structured support in the grant application process.
None – RD Info is excellent
Sharing information across the university of successful grants would help specifically younger members of staff learn what a successful grant should look like; I know this is not an easy task and IP problems may be the hurdle but I am sure some PI's would agree to share the info and maybe set up mentoring portals for grant writing - not SDDU-based but person-to=person with successful PI's
Addressing the last point, it is difficult to get information on research account expenditure that is easily comprehensible, and it cannot be exported anywhere. Even printing it out is painful.
We are often alerted far to late
Hard to get focused information - too much irrelevant info
Hasn't been my role up to now
Diversity of funding application procedures makes this process far more tortuous than it should be
Again barriers are time, & lack of knowledge / awareness.
Scattered data on funding and research projects
Generally pretty good service from RSU already
Good mentoring is very important for new researchers applying for funding. Information alone is only a small part of the story. Putting prospective applicants in touch with successful recipients of the same funding source (e.g. fellowships) across a wider base than within their own departments might be a useful extra function.
Requires active personnel with interest in our own research work who would compile such info
Knowing where to look and getting sufficient notice of closing dates
Yes. There don't seem to be many for black letter law.
Diversity of systems, poor coordination of submission technologies (Cordis/Repis better than British RC's submission formats)
Some senior academics do not pass on to their junior colleagues information on funding opportunities. If this information were centralised it would be more difficult for academics to 'hide' this information.
It would be useful to find out about continued JISC funding on projects.
Managing projects: interface with finance offices too erratic
Main barriers in applications are the diverse formats and the requirement from many funders to submit multiple hard copies of applications.
Information already out there (EnvNet etc). Could be collated in one place. Similarly systems already exist for funding applications. Ability to manage funded projects on the web would be useful.
Finding grants and monies is partly helped by the uni's association with research but more could be done at a university level to pool good websites to search and some good advice given of where to go for what type/size of money wanted. Also more courses in how to be a successful grant applicant are warranted
Not really - we have registered with all the major funding bodies so keep ahead of any funding opportunities. I'm told RSU do a newsletter but by the time you receive that, most of us already know about those opportunities via email.
Time
Main barrier is time. There are lots of e-mail alerts and digests of funding opportunities: I just need to make the time to look at them. Unless the portal also has the functionality of a time machine I suspect that it won't be able to help me much with this :-)
Needs to be in one place. Needs to be sent to people (because you don't always remember to search or interesting things that come up are missed or too close to the deadline by the time you see them).
The financial aspects of applications should be handled entirely by admin, freeing me to develop the best

science case.
Not possible to manage project without access to financial data and control

6.3.3 Barriers to research tasks: collaboration with partners

None
No significant barriers.
not being able to easily find info on what various people's expertise is and only discovering by accident that people in totally different departments have common interests etc.
The micropolitics which develop can become a barrier to maintaining contacts
Timing communication. An online message board for discussing ideas would be very good. Some already exist but attract limited use due to lack of confidentiality.
Lack of knowledge & awareness who people who may want to or able to collaborate. Need a database of skills & interests, & also events to meet up & talk.
Lack of enthusiasm
Lack of easy to use and accessible tools. VKP was poorly designed for end users and completely unworkable on grounds of disability access. It is important to support potentially large scale collaborations and dissemination within projects (not just preparation of grants) e.g. direct dissemination of outputs, invitations to participate, access permissions, or discussion could sometimes involve hundreds of people!
Lack of time!
Especially in getting industrial funds for social sciences/humanities- requires a dedicated person imaginative actively pursuing funding for our research- other universities have such staff
Hard to find unbiased information of pros and cons and experiences setting up collaborations. For some such enquiries anonymity is important
Lack to time to network and meet with other people in the University.
I want an easy way of file sharing and modification without having to bounce e-mails backwards and forwards.
Identifying researchers with similar/complimentary areas of interest
Lack of research time because of excessive departmental teaching and administration pressures
No real barriers here as email etc make this fairly easy. Ability to share/transfer large data files electronically might be helpful.
It always saddens me when I find out someone within the university has been doing research on a similar topic to a colleague, and they haven't known about it. I think Campusweb research pages are helping with that. And the WUN network is too.
Time
I collaborate extensively with partners across the University and have found few barriers: where they exist they are in people's minds I think. Collaboration with other institutions is hindered by RAE and the need to compete unfortunately!
Personal ftp, share large file, etc are not easy

6.3.4 Barriers to research tasks: share or archive results

None
I know of no shared areas which allow this to be carried out routinely.
N/A
Lack of a coordinated National and International Geographical Information Infrastructure is a huge barrier to addressing problems, forecasting and planning.
Archiving and keeping records can become very time consuming.
Lack of easy indexing and large ftp depositories for sharing data. Particularly items too big to e-mail.
Often data files are too big to handle, or ability to share them with collaborators is too complicated
Time.

Non availability or member requirements
Technical and time barriers to creating web pages for specific projects. This is very important, our research must be outward facing and it must be made easy (or automatic) to create publicly (access controlled) spaces that can be content edited (WYSISWG) and where files can be uploaded.
A University archive/repository for research output would be nice, so I don't have to be responsible for preserving my own work for years to come (are my CD backups still readable??)
Copyright info for offprint dissemination online?
Use of inadequate and unsystematic data formats
I don't want to have to archive project documents twice (i.e. in university and collaborator's repositories).
Could be a lower priority as mechanisms already exist: significant wins for research portal are elsewhere
Having to go through IT dept to set up shared folders.
This would be useful. Main barrier for me here is knowing where to start!!
Technical problem with the large size (gigabytes) of many environmental datasets. Secure archival and easy access would be a great bonus though.
Time
We need an institutional policy as, for example, Southampton have put in place.
I archive all of my research outputs on the web (breaking copyright where necessary) so I have not come across any barriers (of course I may change my tune if I ever get sued for breaking copyright agreements that I sign!).
Lack of secure space. Also access to these materials needs cataloguing or an interface with meta-data. Otherwise it's not very useful. A bit like what happens with many resources now. Great to store in one place but how to access them easily.
Not aware that there is such a capability

6.3.5 Barriers to research tasks: other activities

Experimental activities are sometimes hindered by the lack of suitable equipment.
Our IT support fro research at present is not good. Students have better support than we do.
General lack of technical support for using specialised equipment such as FACS and SPR.
Often there is a prerequisite by the research sponsor to have an external facing website in order to disseminate the work of the project to the wider public. therefore there would be a need to link this the confidential collaborative element of the project - preferably managed by one host
Time
Lack of research time because of excessive departmental teaching and administration pressures
Time
On-line access to project financial information is needed. I currently have to go via Faculty finance office - there is no clear process.
Site licences with network installation of software rather than trying to track down the department's CD. Access to better on-line help manuals than the generally useless manufacturers' guides.

6.3.6 Final comment

Managing research e.g. the budgets is probably most problematic. Otherwise am largely happy with resources available for funding opportunities/literature which I seek through discipline specific portals rather than generic resources
Time is a major potential problem.
None.
Best of luck!
Identify clearly what the added value is that this project provides over the existing online resources, and don't expect everyone to want or need to use it: try to cater for very different types of user, from daily experts to occasional browsers.
Too much time spent on unrelated university admin is main barrier.
Please think radically about data structures, submission forms, data rendering etc. to support research.

Make specialist research software available from a server base / through virtual LAN.
Any solution must be web based and not tied to Windows software. Many users in have Unix/Mac machines on their desktop.
T = r!
I'm really looking forward to seeing this portal!
Good luck!
It is important to be able to access services offsite - many of us are using home equipment (and sometimes university office equipment) which is not always up to date, so it's good if services can be compatible as far as possible with earlier hard/software. Also we don't all have broadband connections.