Joint Information Systems Committee (JISC)

INVITATION TO TENDER

JISC Information Environment Portal activity: supporting the needs of e-Research

Summary

1. The JISC wishes to commission a study to investigate and make recommendations on how JISC Portal activity could be enhanced to support the needs of e-Research[1]. The focus for this area of work is resource discovery.

2. The aims and objectives of the study are:

   - To scope the requirements of e-research within the area of resource discovery with reference to 'portal' type services and tools.
   - To identify gaps and duplication within the current provision (with reference to JISC portal and other relevant activity) therefore to identify potential areas for new work and possibly synergies that could offer a more holistic approach than currently available.
   - To highlight issues and challenges that will need addressed in terms of serving e-Research requirements and in terms of enhancing portal activity for the IE more generally.
   - To make recommendations for portal related activity that could be taken forward by JISC.

3. The core deliverable is a report with recommendations; however there will be the need for progress reports and meetings as part of the study.

4. The deadline for receipt of tenders is 1300 hours on Friday 3rd March 2006. Funding of up to £30,000 (Inclusive of VAT and related travel and subsistence) is available for the study.

5. The expected start date for the project is 20th March 2006. The project is expected to last up to four months.

Background

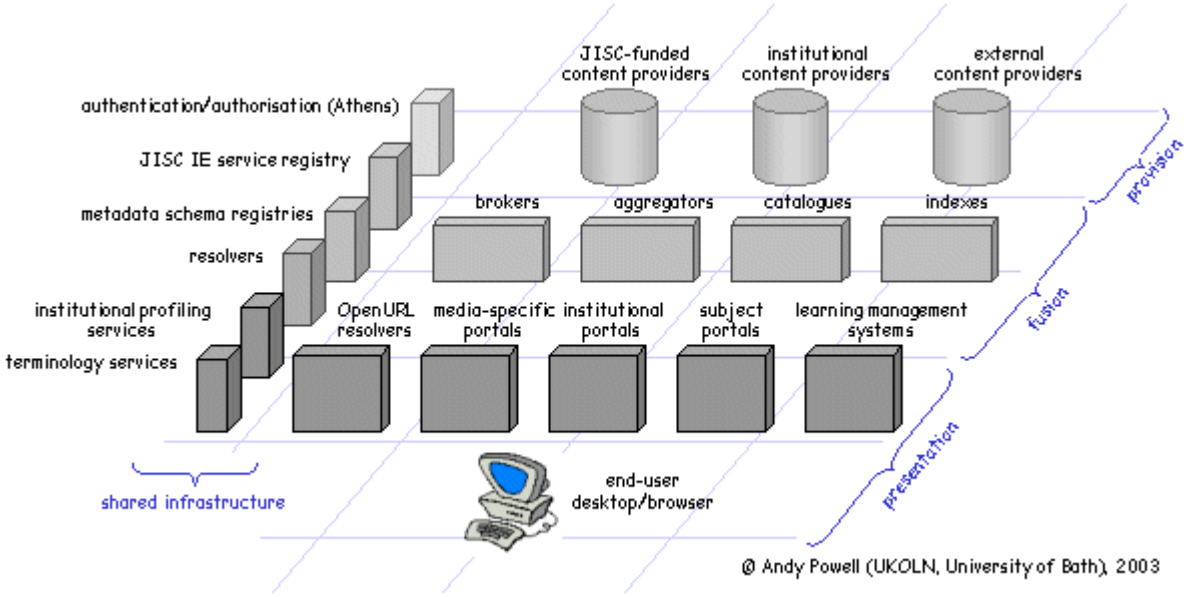
6. The Joint Information Systems Committee (JISC) is a committee of the UK further (FE) and higher (HE) education funding bodies that, through the funding of services and the management of development programmes, aims to help and facilitate institutions in their use of the Internet and other Information and Communications Technology (ICT) applications.

7. One of the JISC's key objectives is to build an online information environment that provides secure and convenient access to a comprehensive collection of scholarly and educational material. This is based on the Information Environment (IE) Technical Architecture[2] which specifies a set of standards and protocols that support resource discovery as part of learning, teaching, and research activities. JISC is developing components within this architecture to test out and promote the use of

[1] By e-Research the JISC means both e-Science and research within the humanities and arts that is undertaken within a digital environment.
[2] JISC Information Environment Technical Architecture
http://www.ukoln.ac.uk/distributed-systems/jisc-ie/arch/

these standards and to help provide appropriate services to the community.

8. This study will inform the Portals[3] and Presentation[4] Programmes and other JISC work within the IE and the e-Framework[5] . This work is focused on addressing issues within the presentation and fusion layers of the JISC Information Environment Architecture. These are set out in the diagram below.



9. There is a wide range of ongoing relevant JISC work that will need to be considered as part of this work. A list of some of the work is set out in (**Annex A).**

10. Essentially the IE is about access to, and curation of resources. The diagram above depicts the high-level architecture that supports this. The portals developed within the JISC IE are focused on resource discovery. JISC has concentrated on the development of portals on a national level and focused on how to discover national resources through a single web interface and through local (institutional) environments. The Portals Programme has so far developed portal projects in media, subject and community formats. For example the Go-Geo! Portal Project[6] facilitates the discovery of geospacial data and geo-referenced resources from distributed content providers. The Connect Learning and Teaching Portal[7] offer specific functions for resource discovery for the learning technology community. The Subject Portals Project (SPP)[8] based at the Resource Discovery Network (RDN)[9] hubs developed a series of 'portlets' or modules, designed to sit within a java based portal framework, offering a subject view on to targeted resources. The portlet approach allows hubs (and other users of the software) to have a choice of the functions they install. The software is customisable by both administrators and users.

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[3] JISC Portals Programme
http://www.jisc.ac.uk/index.cfm?name=programme_portals
[4] JISC Presentation Programme
http://www.jisc.ac.uk/index.cfm?name=programme_presentation
[5] JISC e-Framework http://www.jisc.ac.uk/elearning_framework.html
[6] Geo! Portal Project http://www.gogeo.ac.uk
[7] Connect Learning and Teaching Portal http://www.heacademy.ac.uk/48.htm
[8] Subject Portals Project (SPP) http://www.portal.ac.uk/spp/
[9] Resource Discovery Network http://www.rdn.ac.uk/

11. Portal activity in the e-Science community is running in parallel to portal activity within the digital library and e-Learning communities. For example some projects in the JISC Virtual Research Environments (VRE) programme are looking at adapting existing portal functionality using uPortal[10] and GridSphere[11] while others are creating new portal technology based on collaboration tools such as Sakai.

12. New standards that allow the embedding of portal services within different environments have come to prominence allowing integration across the e-learning, e-research and the digital library domains. These help to deliver a more seamless experience to users and allow services to be tailored to organisational priorities and goals. As mentioned above tools have been developed to allow stand alone portal services to be accessed from within an institutional portal or other web environment. Standards that support this include JSR-168 for local embedding within institutions and Web Services for Remote Portals (WSRP) for the aggregation of portal services managed remotely. Discovery Net[12] is an e-Science Pilot project that has deployed JSR-168 portlets to support workflows[13] and SPP within the JISC Portals Programme has also developed JSR-168 portlet functionality. There was interest at the 2003 e-Science meeting[14] in seeing if IE portals and portlets could serve this particular community.

13. Within the e-Research community there is an increasing requirement for delivering scientific and application procedures through a portal, or more accurately a 'Grid portal' which can enable, for example, different components of a complex modelling project to interact. The Grid itself can be defined as a collection of distributed services linked by middleware (for instance handling security across multiple institutions and the development of Virtual Organisations). A portal is simply thought of as a gateway to these services and there are a number of activities in the community which focus on aspects of this. In particular the UK Grid Operations and Support Centre[15] is responsible for supporting basic Grid middleware infrastructure for the e-Science Community and is collaborating on the development of generic Grid service portals. These encompass high performance Grid-based computing portal services to enable secure and robust access to distributed computer resources; data portals which provide the ability to search multiple data resources; and an advanced visualisation portal. The JCSR-funded National Grid Service has a Portal based on the StringBeans portlet framework to access all these services[16]. The myGrid project[17] (EPSRC[18] funded) and GROWL project[19] in the JISC Virtual Research Environments Programme[20] are specific research projects investigating related grid and portal applications and lightweight interfaces.

14. Portlet frameworks using Java technology can provide rapid development and extensibility features, whereby a user interacts by logging on and creating a `session' which comprises the user's recently used objects, files, jobs etc. These are represented by a set of tools for remote access and Grid and other services each

[10] uPortal http://www.uportal.org/
[11] GridSphere http://www.gridsphere.org/gridsphere/gridsphere
[12] Discovery Net www.nesc.ac.uk/action/projects/project_action.cfm?title=8
[13] JSR-168 portlets to support workflows http://www.doc.ic.ac.uk/~mo197/portlets/
[14] Portals and Portlets – e-Science meeting 2003
http://www.nesc.ac.uk/action/esi/contribution.cfm?Title=261
[15] UK Grid Support Centre www.grid-support.ac.uk
[16] National Grid Service Portal http://portal.ngs.ac.uk
[17] myGrid project www.mygrid.org.uk
[18] The Engineering and Physical Sciences Research Council (EPSRC)
http://www.epsrc.ac.uk/default.htm
[19] GROWL project www.growl.org.uk/
[20] JISC Virtual Research Environments Programme
http://www.jisc.ac.uk/index.cfm?name=programme_vre

associated with a unique portlet. Users can select the portlets they require for a particular job and to customise their portal workspace. The rich set of services provided and flexibility of configuration means that portals must be underpinned by a strong authentication and authorisation framework such as is beginning to be realised with the deployment of Shibboleth in the UK.

15. One of the main aims of portals within e-Research has been to allow interaction with systems that are dispersed, e.g., running data analysis through the portal by interacting with a relevant analyser in a different country. Portals within the Information Environment have so far focused on allowing users to discover metadata, and be directed to the source site for further interaction and access. Since the portal brings metadata together, there is scope for working with this within the portal itself. There is also the possibility of being able to interact with the full content within the portal through having retrieved the associated metadata. There is much that could be learnt from the e-Science activity in this area and the potential that this functionality may be useful to deliver across the communities.

16. The JISC e-Learning Framework Programme[21] has included some work on tools that help to open up course management systems and link different areas of functionality together in a more flexible fashion using portals as one of the means of presentation. The intention of the e-Learning Framework Programme is to explore how to make services and systems more flexible to support e-Learning. For example the integration of commercial, home-grown, and open source components and applications within institutions and regional federations might be possible by agreeing common service definitions, data models, and protocols across this variety of approaches. Some projects have created open-source Portal toolkits to facilitate embedding of these services like the PSE Portal Service Embedder Project[22].

17. Building upon this approach the JISC is also developing the e-Framework for Education and Research[23] in partnership with others, in particular Australia's Department of Education, Science and Training (DEST) (the initial e-Framework Partner). The primary goal of the initiative is to produce an information framework to support the evolving and sustainable open standards based service oriented architecture, for the education and research communities, which must of necessity include the information environment. In the work done to date the requirement for resource discovery services is proving to be common across these communities and therefore, it seems there is merit in exploring where commonalities and sharing can take place and where there are distinct and necessary differences.

18. Increasingly there is recognition that the digital library, e-Learning and e-Research communities have the potential to work together and to use common solutions. The Roadmap for a UK Virtual Research Environment[24] has already identified resource discovery as an identified common service. The activity within the resource discovery arena has been disparate and there is benefit in investigating the potential of how portals and portlets, within the Information Environment area, could be enhanced to support the needs of e-Research; and how the resource discovery approaches, currently in use within the e-Research community, might benefit the Information Environment and JISC portal activity more generally.

19. Finally there is future scope for enhancing the technology used, and such enhancements must be addressed by the e-Framework. One example for instance, is to make the services currently accessed via Web portals increasingly available and more directly integrated with desktop tools, such as Firefox or Eclipse.

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[21] JISC e-Learning Framework Programme http://www.jisc.ac.uk/elearning_framework.html
[22] PSE Portal Service Embedder Project http://www.jisc.ac.u/index.cfm?name=pse
[23] e-Framework for Education and Research http://www.e-framework.org/
[24] Roadmap for a UK Virtual Research Environment (http://www.jisc.ac.uk/index.cfm?name=programme_vre)

Terms of Reference:

20. The terms of reference for this study are:

- To scope out what portal activity is underway within the e-research community and the Information Environment more broadly (with special reference to resource discovery and JISC funded portal developments and services, however to also consider interfaces with international developments such as Google Scholar).
- To identify the broad requirements for resource discovery and portals within the e-Research community.
- To identify gaps and duplication and potential areas for streamlining/co-ordination.
- To highlight issues and challenges that will need to be addressed in terms of serving e-Research requirements and in terms of enhancing portal activity within the IE more generally.
- To make recommendations for portal activity that could be taken forward by JISC.

21. The study should also take into account the following areas:

- **Functionality** – assess what portal functions have been developed and to identify duplication, distinctions and gaps across the e-Research, Digital Library and where appropriate e-Learning communities. For example as mentioned above full content integration within the portal is something that IE portals potentially need to deliver in order to serve these researchers and others. What are the issues with delivering large and complex research data through JISC IE portals or portlets?
- **Availability** – whether the identified portals and tools are open source or propriety; whether they are freely available or at a cost.
- **Interoperability** – whether the functionality that has been developed is using open standards. Assess the consistency of the standards and to explore the barriers to interoperability and what is preventing their effective use across the domains.
- **Interdependencies –** how would IE portals need to interface with Grid Technology in order to serve researchers and others better where appropriate?
- **Applicability** to different user environments – to map workflow functionality, practices and scenarios within the e-Research and digital libraries communities. It may also be valid to consider e-Learning. It should be noted that it is recognised that it would be difficult to map a comprehensive set of workflow scenarios. However, it should be feasible to set an appropriate and helpful level.
- **Usability** – what studies have been carried out to asses how users interact with portals and what related issues should be taken into account in future development work.
- To engage with the IE architecture, e-Framework and the e-Framework for Education and Research and draw out the commonalities and identify the gaps.

22. Further information on relevant projects and developments and be found at **(Annex B).**

Deliverables:

23. The deliverables for this study are:

i. Detailed final report with recommendations.
ii. An interim report will also be required. The date of which will be agreed at the start of the project.

Terms and Conditions of Grant

24. Projects will be expected to follow the normal JISC project management guidelines (http://www.jisc.ac.uk/prof_info.html), adherence to good project management practices, regular reporting and participation in meetings as appropriate. JISC's Terms and Conditions of Grant (http://www.jisc.ac.uk/proj_tocgrants.html) must be adhered to by all projects. Bidders are advised to read these carefully prior to submitting a proposal. Specific project management guidance for projects can be found at: (http://www.jisc.ac.uk/proj_manguide.html)

25. A general guide to bidding for JISC funds can be found at: (www.jisc.ac.uk/bidguide.html).

Reporting/ Management

26. Responsibility for this project will lie with Balviar Notay, Portal, Presentation and Resource Discovery Programme Manager (email: b.notay@jisc.ac.uk; or tel: 020 7848 2670).

27. The contractor will be expected to agree a programme of work and timetable with the Programme Manager.

Intellectual Property

28. Funding is conditional upon the outputs of this work being made freely available for widespread dissemination by the JISC, in perpetuity. Suitable licensing arrangements for any software that is produced as part of the project will need to be agreed.

Accessibility Issues

29. In line with Government legislation and social exclusion initiatives, JISC is committed to providing resources that are accessible to a diverse range of users. In order to achieve this, all software and IT resources including the project web site should meet good practice standards and guidelines, pertaining to the media, in which they are produced. Advice and recommendations for ensuring that IT based systems, tools and resources are accessible by all, can be found in the resource section of the Technology for Disabilities Service (TechDis, http://www.techdis.ac.uk).

Data Protection and Confidentiality of Data

30. Project leaders must take account of the requirements of the Data Protection Act 1998 and should consult with their institutional Data Protection Officer regarding the possible implications of their proposed project.

Funding available

31. The funding available for this study is a maximum of £30,000 (including VAT, travel and subsistence).

Timescale for the project

32. The awarded project should commence work on 20th March 2005. The timescale for the project is expected to be 4 months. The project completion date should be no later than the 21st July 2006. Proposals must clearly state the expected length of the project and its phases within the timescale stated.

Format of Proposals

33. Proposals should clearly identify:

- The scope of the project.
- Background and rationale for the proposal with explanations of the key elements involved.
- The proposed methodology(ies) to be used throughout the project including management structures.
- How the project will ensure a wide participation and engagement from appropriate stakeholders.
- A detailed work plan with milestones and deliverables (this should address the requirements set out above as well risk analysis).
- The organisations involved in the bid, identifying the lead institution/organisation (in the case of a consortium bid) and the proposed contribution and responsibilities of each partner.
- The staff to be used in the main areas of work, together with detail of their relevant expertise and experience.
- The costs of the project, broken down into different phases as appropriate and outlining:
    - the relevant rates and time commitment for each member of the team to be employed on the project.
- confirmation of the proposed project timetable and start date; and
    - a completed cover sheet (see **Annex C**) including full contact details for the project leader.

34. It is recognised that the requirements are wide in scope. Bids should propose a methodology that addresses these issues realistically and in sufficient detail within the time and financial limitations. For example, some of the requirements may only be partially investigated.

Criteria for evaluation of tenders

35. Selection will be based on the following criteria (in no particular order):

- Clarity and feasibility of the development plan.
- Suitability of proposed methods.
- Commitment to working with JISC throughout the work to ensure there is a shared understanding and in setting the project priorities and reporting progress.
- Compliance with and understanding of the statement of requirements.
- An understanding of the challenges involved.
- Quality of solution offered.
- Relevant experience of the tendering organisation and proposed personnel.
- Awareness of current and past relevant JISC developments.
- Analysis of risks to successful completion.
- Value for money.

Submission of Proposals

36. Proposals of no more than 7 single-sided A4 sheets, typeset in Arial or a similar font at 10 point size, should be submitted, as one unbound hard copy. An electronic copy, in Word or Rich Text Format, should also be submitted via email as **one** file or a **zipped** folder. **The deadline for submissions is 1300 hours on Friday 3rd March 2006**. Both hard and electronic copies should arrive by the deadline. Proposals must include the completed cover sheet (see **Annex C**) in addition to the 7 page limit. CVs may be attached as appendices to the proposal and should be no longer than 2 sides of A4 each.

37. Both hard and electronic copies MUST be received by the deadline which will be strictly adhered to. Faxed proposals, or late proposals in either format, will not be accepted. Bidders are advised **not to rely on first class post** for next day delivery of the hard copy.

38. If the bid exceeds the page limit guidance, evaluators will be advised to disregard information provided beyond the indicated page limit.

39. Each bid must be accompanied by letters of support from an authorised senior manager at each institution/organisation named in a bid. The support letters do not count towards the 7-page limit.

40. The hard copy and electronic copy of the bid including appendices and letters of support **must** be received by the deadline stated. Proposals must be sent to:

    Tina Johnson, JISC Executive, Northavon House, Coldharbour Lane, Bristol, BS16 1QD (tel: 0117 931 7072; t.johnson@jisc.ac.uk).

Enquiries

41. General enquiries about this invitation to tender should be addressed to Balviar Notay (tel: 020 7848 2670; email: b.notay@jisc.ac.uk).

42. Enquiries regarding the bidding process should be addressed to Tina Johnson (tel: 0117 931 7072; email: t.johnson@jisc.ac.uk).

Annex A

Relevant work within JISC Programmes

Portals Programme:

1. The Portals Programme (http://www.jisc.ac.uk/index.cfm?name=programme_portals).

2. The programme has so far developed stand alone portals projects and also discrete re-useable portlet functionality that works at a national and local (institutional portal) level as well as some supporting studies.

    - Go-Geo Portal (http://www.gogeo.ac.uk)
    - PIXUS Image Portal (http://pixus.scran.ac.uk)
    - Connect Learning and Teaching Portal (http://www.connect.ac.uk/ixbin/hixltp?page=home)
    - Subject Portals Project (SPP) (http://www.portal.ac.uk/spp/demo/)
    - Contextual Resource Evaluation Environment (CREE) http://www.jisc.ac.uk/index.cfm?name=project_cree&src=alpha
    - Visual and Sound Materials Portal Scoping Study and Demonstrator Project. (http://www.jisc.ac.uk/index.cfm?name=project_vsmportal)
    - JISC User Requirements for a Moving Pictures and Sound Portal http://www.jisc.ac.uk/index.cfm?name=project_study_picsounds
    - Xgrain/GetRef http://www.jisc.ac.uk/index.cfm?name=project_xgrain2
    - Institution-wide and library portal Case studies http://www.jisc.ac.uk/index.cfm?name=project_portal_casestudies
    - Library Portal Survey and Review http://www.jisc.ac.uk/index.cfm?name=project_libportal
    - Visual and Sound Materials Portal Scoping Study and Demonstrator Project http://www.jisc.ac.uk/index.cfm?name=project_vsmportal

Relevant projects across Virtual Research Environment, Core Middleware and e-Learning Programmes:

3. EVIE Project: Integration & deployment of existing components within a portal VRE framework http://www.jisc.ac.uk/index.cfm?name=vre_evie

4. ARIA (Awareness and Training ICT Research in Arts and Humanities) http://www.jisc.ac.uk/index.cfm?name=project_aria&src=alpha

5. SPIE Shibboleth-enabled Portals and Information Environments http://www.jisc.ac.uk/index.cfm?name=project_spie&src=alpha

6. SAKAI VRE demonstrator http://www.grids.ac.uk/Sakai/

7. SAKAI Evaluation Exercise http://www.grids.ac.uk/Sakai/sakai_doc.pdf
   This report summarises the evaluation of various aspects of the CHEF, Sakai and other related projects that may play a significant role in establishing a Virtual Research Environment (VRE)

8. MDC (Middleware for Distributed Cognition). The project has developed Search interfaces that insulate the user from the complexities of querying digital repositories using interoperable standards. The open source JAFER software has been developed to provide a simple mechanism of integrating Search and Discover functionality into applications residing in the JISC e-learning framework User Agent layer, namely Learning Design, VLEs, Portals and Resource List Management software. http://www.jisc.ac.uk/index.cfm?name=mdc

9. D+ (Brokerage for Deep and Distributed e-Learning Resources Discovery The overall aim of the project was to develop a software toolkit that mediates the discovery of deep resources in distributed and heterogeneous repositories.http://www.jisc.ac.uk/index.cfm?name=dplus

10. PSE Portal Service Embedder
The project has developed a WSRP embedder tookit that will enable service consumers in HE and FE to access Connect portal learning and leaching data for displaying in their own front-end sites. The project has created a packaged interface to Connect. This will enable the re-use of that service by standards-conformant service consumers. This packaged interface forms the basis of a toolkit and testbed, which is reusable by others seeking to carry similar services.http://www.jisc.ac.uk/index.cfm?name=pse

Annex B

Relevant background information

Wiki dedicated to Portals, Portlets and the Grid
http://www.opengridportals.org/space/start

e-Research Wiki including information on the VRE programme and portal technology
http://www.grids.ac.uk/eResearch

MyGrid Technology:
http://www.mygrid.org.uk/index.php?module=pagemaster&PAGE_user_op=view_page&PAGE_id=3&MMN_position=2:2

Relevant projects/ studies from the Economic and Social Research Council
http://www.esrc.ac.uk/ESRCInfoCentre/index.aspx should be taken into account

Relevant projects/ studies from Research Libraries Group
http://www.rlg.org/ should be taken into account.

SourceForge
http://sourceforge.net/projects/mygrid-uk

JISC Open Source Software Policy
http://www.jisc.ac.uk/index.cfm?name=about_opensourcepolicy

Annex C

Cover sheet for proposals

(NB: All sections must be completed)

JISC Invitation to Tender:
JISC Information Environment Portal activity: supporting the needs of e-Research

Name of lead institution / organisation
List consultants / partners, if any
Full contact details for primary contact **Name:** **Position:** **Email:** **Address:** **Tel:** **Fax:**
Length of project: **Total cost to JISC over its life:** **Proposed project start and end dates:**
Outline proposal description