JISC Information Environment Portal Activity: supporting the Needs of e-Research.
– The Information Environment and e-Research Portals –

Rob Allan
CCLRC e-Science Centre, Daresbury Laboratory,
Daresbury, Warrington WA4 4AD

Rob Crouchley
Centre for e-Science, C Floor Bowland Annexe, Lancaster University, Lancaster LA1 4YT

Caroline Ingram
CSI Consultancy Ltd., 42 Coquet Terrace, Newcastle upon Tyne NE6 5LE

Contact e-Mail: `r.j.allan@dl.ac.uk`, `r.crouchley@lancs.ac.uk`,
`caroline@csiconsultancy.co.uk`

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Abstract

This is a short information report on the portal activities of the JISC IE and some relevant e-Research projects in the UK.

It also surveys other related national and international activities which may be of interest for comparison.

Contents

1 Introduction

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A separate report *Portals and Portlets 2006* contains more technical information and a description of functionality to be found in current e-Research portals. [Ongoing.]

2 The Information Environment

The JISC DNER Programme, Distributed National Electronic Resource, which precedes the IE, but funded several projects, outputs of which are still being used. See Appendix A

The IE Development Strategy 2001-2005 [1] notes the following goals:

- Fit to serve all kinds of digital content. The kinds of electronic content that the Information Environment must deal with are increasingly diverse, and in many cases are based on rapidly evolving and non standard technologies. For example it must be able to accommodate all types of content from streaming video, to electronic books to new types of learning resources. It must be able deliver these efficiently, and must allow them to be accessed and mediated in a series of useful and satisfying ways which progress learning, teaching and research.

- Fully supporting the submission and sharing of research and learning objects. Activity will focus on methods to allow members of the community to build the content that they will access, and to share this in meaningful ways with other colleagues and peers. This activity will build a framework for leveraging our mutual community resource, the significance of which is emphasised in the JISC 5 Year strategy and elsewhere.

- Providing a range of meaningful, rich and innovative methods of accessing electronic materials, to enrich and develop the learning and research process. This will be achieved through developing new portals services which can fuse relevant content, by subject or learning aim for example, to offer enhanced access and greater relevancy to users. Portals and other services will also be developed so that they can be harnessed and embedded at an institutional level. This will be a component of providing an enhanced presentation layer for the rich content available through JISC funded activity in collections development, the holdings of our national data services, and resources held within our community.

- A collaborative landscape of service providers who work together to seamlessly cater for the needs of the community on a national basis. This will be achieved through the developing sophistication of shared services and developments in service infrastructure to enable the providers who work within the Information Environment to operate in a truly joined-up fashion.

- Underpinned by real world interoperability, based upon a common standards framework and common semantic for digital resource description and access. It has become clear that enhanced

interoperability for users will not be achieved without the agreement of some common semantics to support cross searching. As part of developing the Information Environment the JISC will strive for the cross-sectoral adoptions of standard terminologies, for example for subject, audience level, resource type and certification.

The IE intended to achieve its goals via the following development programmes:

Content Submission Mechanisms: 1. To progress access to and sharing of community content through developing and enhancing mechanisms for the disclosure, discovery, deposit and exchange of resources

2. To have significantly enhanced access to community collections through the use of these mechanisms

3. To have funded and managed a number of community based programmes in order to ascertain the organisational, technical, and business challenges involved in sustaining this area as a core strand of JISC activity.

Service Provider Development: 1. To have developed a service provider architecture suitable for the realisation of the Information Environment

2. To have funded a range of development activity needed to transform "service vision" into "service provision"

3. To have in place by a sustainable network of service providers whose services are developed to provide the operational Information Environment

Portals and Fusion: 1. To have a fully developed view of the nature and role of portals within the Information Environment

2. To have developed and tested a series of demonstrator portals in a range of subject, format based, and community based areas

3. To have been able to commit to a strategy for full portal roll out to satisfy the core needs of learner, teachers and researchers in further and higher education

4. To have explored the potential of portals as an extendable network of "gate keepers" to content being generated within a variety of cross sectoral initiatives, and their ability to address a variety of audiences beyond the formal education sector.

Shared Services: 1. To have fully ascertained the parameters for the operation of shared services within the Information Environment and to have reached an integrated technical solution that also inter-works effectively with developments in authentication and authorisation managed elsewhere in the JISC.

2. To have undertaken a series of studies, prototypes, and pilots leading to operational services in order to have tested the full range of shared services to lead to a full roll out from 2005.

Presentation: 1. To have significantly improved the usability of JISC Services and resources offered through the Information Environment

2. To have established the most effective means of embedding the presentation of resources within institutional, departmental, local and personal environments

3. To have established and disseminated best practice where ever possible in design of interfaces to support the requirements of access to diverse types of digital resources

These programmes define the scope of the IE, to which we will refer in our vision for the future [28].

In this section we analyse the current landscape of the JISC IE Programme with an emphasis on portal activities. We aim to extract features which may be relevant to e-Research. Input is taken from papers by Liz Lyon and Andy Powell [**?**, 4] among others.

In addition to listing the various portal development projects we note that there wser several supporting studies [18, 19].

The IE has initially targeted the following areas:

1. Images
2. Geospatial Data
3. Moving Pictures and Sound
4. e-Learning
5. Journals, e-Prints and Scholarly Communication

We expect a large part, if not most, of this work to be transferable to the area of e-Research. Many of the portal activies of the IE are focussed on service delivery, but there have notably been a number of attempts at multi-service resource discovery, e.g. in SPP and XGrain. This work has been based on the use of open access standards rather than Grid middleware and has highlighted a number of issues, particularly around accessibility, confidentiality and IPR, especially for access to the raw data. This is sometimes referred to [6] as an "open environment" approach. Because of these issues, access is often limited to catalogue entries with a secondary service-specific mechanism for access to the underlying content.

2.1 IE Technical Architecture

The IE Technical Architecture arose from the Service Provider Development Programme and is summarised as follows:

- In the "presentation layer", service components interact with content providers, brokers and aggregators to provide services targetted at real end-users. It is probably worth noting that the technical architecture tends to use the word 'portal' when referring to components in the presentation layer. This is possibly somewhat misleading. There will be a large number of different kinds of services in the presentation layer (some of which haven't been thought of yet!), including subject portals, portals offered by publishers and commercial intermediaries, reading list and other tools in Virtual Learning Environments(VLEs), library portals (e.g. Zportal or MetaLib), SFX service components, personal desktop reference managers, etc.

- In the "fusion layer", brokers and aggregators take metadata from one or more content providers and combine it together in various ways, making the resulting metadata records available to other components.

- In the "provision layer", content providers make their content (bibliographic resources, full-text, data-sets, images, videos, learning objects, etc.) available to other components.

- Finally, a set of "shared infrastructure services" support the activity of all the other service components, for example, by providing shared authentication, authorisation and service registries. These are machine-to-machine infrastructure services.

The first point is worth noting and we will bear in mind that there might be clients other than Web brower-based portals, e.g. Web Services are an obvious example, others were mentioned above. User interface components should be capable of working in a variety of ways in combination with other interfaces, e.g. in a desktop environment or PDA.

2.2 IE-related Repository Services

The IE is unlikely to satisfy the needs of the e-Research community unless the content provided is of interest. As noted above, the focus is currently somewhat limited. The JISC supports several large national data services, mentioned below and in [25]. The activities of the IE clearly should help to maximise and optimise use of all these services. Other national data services are however provided by Research Councils, for instance the seven NERC Data Centres of which the British Atmospheric Data Centre (CCLRC) and British Oceanographic Data Centre (Southampton) are two examples. We note that JISC have worked closely with AHRC via the AHDS, particularly in the area of digital images. CCLRC is increasing its involvement in the archival and curation of scientific data along with corresponding meta-data and provides components such as the Atlas Data Store and Scientific Data Portal with Grid middleware such as the Storage Resource Broker. CCLRC also has a corporate e-Pubs service and is actively exploring linking data and publications, e.g. through its involvement in the JISC-funded CLADDIER project. We suggest that the IE might usefully link into a wider range of such data services since it has developed a number of re-usable components within the Technical Architecture.

If this is not done, the uptake of the IE within the natural sciences will be largely limited to literature searches, many of which are currently done via Google or institutional library services, professional body such as IOP or a specialised scientific journal service such as Elsevier on-line.

Other on-line resources already accessible in some way via the JISC programmes are noted in the Collections Catalogue [2]. These are classified primarily by subject and then separated into those which are free of charge, and those which are subscription based. Many of them are noted in [25].

2.3 IE Middleware Services – the Fusion Layer

This has arisen from the Portals and Fusion Programme and the Shared Services Programme. Some information was taken from an Ariadne article [20]. This outlines the IE technical architecture and the purpose of its various comonents. The terminology is as defined in the JISC IE Glossary [21].

JISC IE Technical Standards recommendations: `http://www.ukoln.ac.uk/distributed-systems/jisc-ie/arch/standards/`.

Issues concerning the middleware (fusion) layer are:

- inclusion of union catalogues and Google;

- indexing and data mining;

- hiding a complex provision layer;

- performance measurement.

A fusion or fereration layer will have to hide many complex issues. On the repository side, there are heterogeneous meta-data formats, content formats, identifiers and packaging standards. On the user presentation side there need to be homogeneous metadata and content formats, identifiers and packaging. The process of querying a selection of resources also involves authentication and authorisation, for which mediation services must be provided as diverse mechanisms are currently being used. Brokering of search queries is required because of difference metadata and vocabularies in use. Aggregators are needed take the results of a search and format it in the way the user prefers.

Another approach was recently suggested by Andy Powell [**?**]. He notes that *By adopting international standards within the JISC IE, service components can benefit from a global approach that includes a wide variety of other national and international resource discovery initiaties. By adopting open standards, services can work with each other flexibly without needing to broker a potentialy large number of bilateral agreements.* We consider this a laudable approch, and one which is being formalised in the international e-Framework for Education and Research `http://www.e-framework.org`. However we believe that there will always be a need, perhaps diminishing, for some broker and aggregator services, if simply because of the spread of terms and content across multiple research domains.

Some re-usable components of the Technical Architecture include [6]:

Component	Description	Status	Examples
OpenURL Link and Resolver	A network service that takes meta-data about a resource in the form of an OpenURL and supplies links (pointers) to services on, or related to, that resource, for example delivery services. Provides resolver services fitting user preferences, such as content from those services to which they are subscribed.		GetCopy, ZE-TOC
Authentication	A structured network service that determines that the digital ID being presented to a network service is being used by the real-world individual who has the rights to use it. This is often achieved through the use of a username/password combination or a digital certificate, depending on the degree of assurance required.		Athens, password-based authentication service in use. Likely to be replaced by Shibbleth over next 2 years.

Authorisation	A structured network service that indicates whether a particular digital ID has the necessary access-rights to access a particular resource.		PERMIS
Service Registry	A network service that stores and makes available descriptions of (i.e. metadata about) services and the content of collections made available through those services. A service registry is used by portals to determine what collections are available to end-users, and by portals, brokers and aggregators to determine how to interact with available network services.	due April 2006	IESR
User Preferences	A structured network service that stores and makes available information about the preferences of end-users.		
Identifier	A network service that maintains and provides an association between an identifier and some metadata about the identified resource. Typically, an identifier service takes an identifier of a resource and returns a locator for it (usually in the form of a URL).		
Institutional Profiling	A structured network service that stores and makes available information about what licences institutions hold, i.e. their access rights as organisations to particular resources, and other institution-wide preferences, such as prefered content-delivery services.		
Metadata Schema Registry	A network service that stores and makes available information about the metadata schemas in use by other services.	pilot due June 2006	IEMSR
Terminology/ Thesaurus	A structured network service that offers terminolgy-related services, for example mapping a term from one controlled vocabulary to another or expanding terms within a thesaurus		HILT [22]
Format Registry			
License Registry			

Format Conversion			
Gazetteer	will support on-line geographic searching and assist in the geographic indexing of information resources	geoXwalk	
GIS Web Services			
Metadata Creation tools			
Name authority tools			

[Need to flesh out this table.]

In a separate document [23] we have identified some additional components of interest to e-Researchers which must be linked into this architecture.

Standards and Protocols

The IE Glossary mentions a number of standards and protocols which are used such as Z39.50, SRW, OAI-PMH, RSS, HTTP, MARC, Dublin Core. These should be capable of linking into both open (such as RDN) and commercial resources (such as Amazon).

Gaps

Key aim is to identify how Data stuff can be included. [expand on this]

Another key issue is metadata, and semantic tools which support translation and understanding of terms.

Provenance service. IPR/ watermarking service. Grid stuff Visualisation tools Admin/ institutional stuff Scientific Data discovery, linking and access

2.4   Portals Programme and the Presentation Layer

JISC have an on-line FAQ which covers some of this ground and identifies some of the relevant JISC projects developing the different portal types `http://www.jisc.ac.uk/index.cfm?name=ie_portalsfaq`. In particular this has a statement of how portals fit into the IE: *Portals are an integral part of the IE. The IE Technical Architecture diagrams show them as the point where content is brought together for display to the user. Thus, JISC portals will be involved in fusion and presentation activities. The IE Draft Development Strategy has incorporated this approach into the Portals and Fusion Programme, which is building and developing portals and portal technologies for use within the Information Environment. The Information Environment itself relies on a number of, possibly distributed, systems interacting with each other, each with their own role to play, portals and content providers being two of these. Interoperability is a key to this interaction and all parts of the IE are being developed with this in mind. The key technologies that support interoperability between JISC portals and content providers within the Information Environment are Z39.50, the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) and Resource Discovery Framework (RDF) Site Summary (RSS). Simple Object Access Protocol (SOAP) and the Universal Description, Discovery and Integration (UDDI) standard are also being investigated and all technologies are reviewed regularly*

to ensure the highest level of interoperability.

Almost all access to IE services is currently through a Web browser. We note that portals are not the only answer to presentation. Firefox, or Google toolbars and RSS have been noted. Access may also be required from mobile phones, PDAs, etc. [Andy Powell's "other P" talk] It is also desireable that information tools "plug in" to existing environments, such as VLEs, LMSs and VREs, thus providing a single environmentwhere a student or researcher can discover and access resources and carry out related tasks. Examples of VLEs include WebCT, Blackboard, Sakai. Other tools which used include, EndNote, Reference Manager, FeedReader.

In part based on the outcomes of the SPP project, see B, the IE defined a "baseline portal functional specification" `http://www.ukoln.ac.uk/distributed-systems/jisc-ie/arch/portal/spec/`. This describes what might be expected of portal "services" such as:

Enter: register as a user or log in with a username/ passwd (e.g. via Athens or Shibboleth authentication). User preferences and workspace might be loaded.

Survey: look at information about available resources provided in different views.

Discover: search accross multiple collections based on a particular requirement

Detail: obtain more information about resources found

UseRecord: manipulate lists of resources found, order or bookmark them.

Request: request a full copy of a resource if it is not on-line.

UseResource: download an electronic full copy of a resource.

It was noted that some of the functionality in the Detail, UseRecord and Request services may not be provided directly by the portal but by an external OpenURL resolver. In the case of UseResource, discovered resources will be downloaded directly to the user's Web browser (or other client) and used within their desktop environment. For instance, if the client is a learning system, then the package would be downloaded and unpacked within that environment.

Information below relates to the JISC Portals Programme and related projects.

Project	Technology	Description and URL
Portals for Information Management		
Connect		Learning and Teaching Portal `http://www.connect.ac.uk`
CREE	uPortal	Contextual Resource Evaluation Environment `http://www.hull.ac.uk/esig/cree`
Go-Geo!	Perl	Geodata Portal: Phase 3 `http://www.jisc.ac.uk/index.cfm?name=project_gogeo3`
Pixus		Image Portal Demonstrator `http://www.jisc.ac.uk/index.cfm?name=project_image_portal`
SPP	Jetspeed	Subject Portals Project: Phase 2 `http://www.portal.ac.uk/spp/demo/`
VSMPortal		Visual and Sound Materials Portal Scoping Study and Demonstrator Project `http://edina.ac.uk/projects/vsmportal/`

Xgrain II		Information Cross Search `http://www.jisc.ac.uk/index.cfm?name=project_xgrain2`
Planning Grid Gateway	JSP	`http://193.61.123.75:8080/wsrf/PlanningGridGateway.jsp`
HEIRPORT	Cold Fusion	Historic Environment Information Resources Portal `http://ads.ahds.ac.uk/heirport/` now included in CREE
Some Institutional Portals...		
Hull	uPortal	
Nottingham	uPortal	used for admin and research services
Bristol	uPortal	
Edinburgh	uPortal	
Oxford	uPortal	

We note that the institutional portals listed are the ones principally used for admin purposes as relevant to research, rather than all the teaching and learning portals which are in use.

Some JISC-funded projects are described in Appendix B.

Following comments from Roddy MacLeod about SPP and RDN: *We conducted our own EEVL questionnaire a couple of years ago. I wrote up the results for Ariadne: `http://www.ariadne.ac.uk/issue40/eevl/` Much of that article you can ignore because it doesn't deal with portal issues, and much is out of date, but the following is still largely relevant WRT what many people would regard as primary portal functions "Entrants were asked to rate six ideas for possible new EEVL services, and the results were not completely as expected. There was considerable support (80 ranking it Very good idea, 113 Good and 107 OK) for a service which allows searching a range of free databases from one place. There was slightly less support for the same type of service searching subscription databases, with 26 thinking this was actually a poor idea. Considering that they might be thought of as niche services, there was an unanticipated level of support for a journal Table of Contents (TOC) announcement service, a new book announcement service, and an events and conference announcing service, with only slightly less enthusiasm (165 OK, 75 Good, 40 Very Good) for a service which gave details of funding calls."*

I'm sure there have been plenty of other surveys within the RDN. I'm no longer part of the RDN so don't have the details, but Mike Fraser will know `mike.fraser@oucs.ox.ac.uk`.

What you'll find from such surveys is that opinion varies from discipline to discipline. Certain things, which might fit into portals (depending on how you define a portal, of course) are needed in some disciplines more than others.

You ask about the portalisation of the gateway services and whether or not its taken off. Well, three years ago (I think it was) I made a passionate appeal at an RDN away day that the RDN should forget about trying to catalogue the internet and instead concentrate on developing portal-like services using SPP outcomes. That idea was reckoned to be too radical, and the opinion was that there was not enough time or money available to do that.

So instead, the RDN has spent the past while revamping its existing services into Intute.

What does this talk about software, etc mean? It means that some of the SPP outcomes stagger on...just. SPP software is still being maintained by Jasper Tredgold at the ILRT, but none of this amounts to *real* subject portals. Most of the people who worked on SPP have dispersed.

Figure 1: eBank and PSIGate

Figure 1 shows the eBank services exposed via the PSIGate portal (an SPP portal for RDN).

3 e-Research Portals Activities

3.1 Brief Survey of Portals in the UK

Status at 20/3/06

Workshops have been held as follows:

1. 14-17/7/03 *Portals and Portlets 2003* `http://www.nesc.ac.uk/action/esi/contribution.cfm?Title=261` e-Science Technical Report UKeS-2004-06 a `http://www.nesc.ac.uk/technical_papers/UKeS-2004-06.pdf`

2. 3-4/3/05 *GridSphere and Portlets* `http://www.nesc.ac.uk/action/esi/contribution.cfm?Title=549`

3. March 2005, JISC Conference, Birmingham. Rob Allan presented the VRE Programme activities.

4. 22/6/05 *VRE and Portals workshop* at 1st Int Conf on e-Social Science, NCeSS, Manchester

5. 20-21/9/05 *Portals and VREs* AHM'05 mini-workshop, Nottingham, 17 papers presented.

6. 18-19/1/06 *JSR-168 and WSRP Developers' Workshop* Portsmouth `http://dsg.port.ac.uk/events/workshops/VRE05/`

7. July 2006 *Portals and Portlets 2006* planned at NeSC

There was also participation in several overseas events, such as the Science Gateways workshop at GGF-14 and the GCE Workshop at SC'05.

Some current and recent projects in the UK are listed in the table. This is not a complete list.

Project	Technology	Description and URL
Portals in e-Science		
HPCPortal	Perl and C	Generic Grid `http://www.grids.ac.uk/HPCPortal`
InfoPortal	Perl and C	Grid Information `http://www.grids.ac.uk/InfoPortal`
DataPortal	JSP	Scientific Data Collections `http://dataportal.dl.ac.uk:8080`
e-Minerals	JSP	Metadata Manager `https://forth.dl.ac.uk:8443/metadatamanager/login.html`
Bridges	WebSphere	Biomedical Information Delivered by Grid-Enabled Services `http://cassini.nesc.gla.ac.uk:9081/wps/portal`
DAME	Struts	Distributed Aircraft Maintenance Environment `http://www.cs.york.ac.uk/dame`
VOTES	GridSphere	Virtual Organisations for Trials and Epidemiological Studies `http://venus.nesc.gla.ac.uk:18080/gridsphere/gridsphere`
RealityGrid	GridSphere	Computational Steering, described here `http://www.realitygrid.org/middleware.shtml`
myGrid	Jetspeed-2, uPortal, GridSphere	Workflow in Bioinformatics, see `http://www.mygrid.org.uk/index.php?module=pagemaster&PAGE_user_op=view_page&PAGE_id=73`
BDWorld	Mambo PHP	Bio Diversity `http://www.bdworld.org/index.php`
GeneGrid	GridSphere	`http://193.61.123.75:8080/GeneGrid/Portal`
Discovery Net	JSP	Knowledge Discovery `http://www.discovery-on-the.net/`
NGS Portal	StringBeans	Generic Grid portal for the NGS
GridPP Portal	Perl and GridSite	Portal for GridPP Applications `http://gridportal.hep.ph.ic.ac.uk/`
e-HTPX Portal	JSP	`https://hub.e-htpx.ac.uk/hub/jsp_dev/`
P-GRADE Portal	GridSphere	Generic portal for Grid and parallel applications `http://www.lpds.sztaki.hu/pgportal/`
LCPortal	GridSphere	Liquid Crystal Applications `https://portals.dsg.port.ac.uk:8444/gsportal`

GEMEPS	GridSphere	Grid Enabled Microarray Experiment Profile Search `https://voyager.nesc.gla.ac.uk/gemeps/portal`
VRE Portals		
Sakai VRE	Sakai and uPortal	Collaboration and Grid Computing `http://rhine.dl.ac.uk:8080/portal`
TLRP VRE	Sakai	`http://groups.tlrp.org/portal`
IBVRE	Sakai and uPortal	Integrative Biology `https://avon.dl.ac.uk/uPortal/render.userLayoutRootNode.uP`
BVREH	uPortal and Sakai	Building a VRE for the Humanities
ISME VRE	uPortal	Multi-site experiments in materials engineering `http://pw63.mt.umist.ac.uk/isme/sites/index.htm`
EVIE VRE	uPortal	VRE for project management `http://www.leeds.ac.uk/evie/`

Further information about some of these projects is available from OpenGridPortals.org `http://www.opengridportals.org`, the GGF Grid Computing Environments working group `http://www.computingportals.org` and the UK e-Research Wiki `http://www.grids.ac.uk/eResearch`.

4 Acknowledgments

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A   JISC Infrastructure Programme

The JISC Infrastructure Programme has funded some relevant projects.

This programme, which ran from 1/7/2000-30/4/04 aimed to develop an infrastructure to support a national union catalogue for monographs and serials in the UK `http://www.jisc.ac.uk/index.cfm?programme_infrastructure`. Specific objectives are to:

- develop services, based on standards, that will enable users to identify the information they need and to access it easily in a consistent manner;

- facilitate access by developing mechanisms to cross browse, navigate, search and retrieve and deliver resources;

- to contribute to the development of an infrastructure that integrates national and local services for the benefit of the learner, teacher and researcher.

Computing Gateway – A set of information pages and training material for the RDN related to computing `http://www.eevl.ac.uk/computing/`

Docusend: Integrating Document Delivery Services – utilised VDX software provided by Fretwell Downing Informatics to handle the complex routing and management transactions involved. Docusend provides Locate, Request and Deliver functionality which can be accessed individually or as an end-to-end document delivery service. The Locate and Request services will also be built to interface with other Search and Locate services, such as those included within the Join-UP cluster, thereby enabling document delivery requests to be received via broker and other Search and Locate services. Note this is an example of the Request business process in the DLF references model.

Education Portal – Web interface to an Internet Resource Catalogue for educational research, policy and practice.

EuroStudies Gateway – uses ROADS software for profiling enabling portal to support specific activities. Also providing collection discovery services. Builds on SOSIG and extensions to European resources.

Gate-Z – a Z39.50 protocol gateway to support use of the Bath Profile and non-Bath targets

Geo-Crosswalk Gazetteer – (EDINA) develop a gazetter services using Z39.50 tagets. SOAP and ADL gazetteer content standard. asses what is required to provide a production service. art of DNER. Support geographic searching and geographic indexing of information resources. Phase II was funded under the Shared Services Programme, see below. [talk to James Reid]

Go-Geo! Geo-data Portal: Phase 2 – (EDINA) Z39.50 compliant resource discovery portal. Uses XSL to cross walk betwen standards. support Geo profile and Bath profile. Provides OAI-MHP access to import data into the portal.

JAFER: Java Access For Electronic Resources toolkit project – (Oxford) Z39.50 Java toolkit with client (gateway, includes non-Z39.50) and server, includes ODBC layer. Open source software.

Maths Portal: the RDN subject portal for mathematics –

MIMAS Metadata for the DNER – (Manchester) meta-data DB for MIMAS and related information services plus a Z39.50 infrastructure using Cheshire for indexing.. Z39.50 Bath profile will also operate with COPAC. Also Dublin Core, RSLP, learning metadata. Part of RDN.

NMAP – Nursing, Midwifery and Allied Health Professions Gateway, enhancing the RDN BIOME collection.

Physical Sciences Subject Portal for the RDN –

SAD1: Subject Portals Development Project – `http://www.portal.ac.uk`

Subject Portals Project – see under Phase II, Appendix B

Xgrain: cross-searching specialist databases for learning and teaching. See Appendix B

ZBLSA – Z39.50 broker to enhance the operation of the DNER by providing portals with a broker that will help connect the discovery of the reference to a journal article with the location of services that provide the full-text of the article, in printed or electronic form. Part of the Join-UP cluster, initially a proof-of-concept, but Phase II was funded under the Shared Services Programme, see below.

ZETOC – enhancements to electronic table of contents service. Part of the Join-UP cluster. Uses Cheshire software and provides a Z39.50 interface to an XML table of contents. Also has an alerting service, document ordering and reference linking.

B   JISC Portals Programme

The Portals Programme runs from 1/4/202-31/7/08 `http://www.jisc.ac.uk/name.cfm?programme_portals`. This programme aims to develop a view of the nature and role of a portal within the context of the JISC Information Environment. Its objectives are:

- Create a series of demonstrator portals in different areas (subject, format-based, community-based);

- Demonstrate possibilities and good practice in portal usage;

- Discover how portals can and will be used across further and higher education;

- Determine how portals can best serve institutions in making information resources available to their users;

- Explore the role of portals in the key role of delivering content within and outside formal education as a means of controlling access to available resources.

Clearly many of these projects were scoping studies, reviews or demonstrators, but some did deliver re-usable software.

[These are Portal programme projects]

CONNECT – learning and teaching portal.

B.1 Connect

Name: Connect Learning and Teaching Portal

Description: Now referred to as the Academy Connects portal services, these were developed as part of the JISC Learning and Teaching Support Network funded Learning and Teaching Portal Project. Following completion, the project outputs have become core services of The Higher Education Academy.

Connect is essentially a Web site with four search functions: organisations; funding; projects; and sector resources. It has associated information and a discussion forum. Of particular interest in this context, Connects services are freely available for embedding in institutional websites and portals. The Connect portal has been specifically designed as a set of discrete services which can be incorporated within your portal or web site in order to provide functionality for your users. Each of the services is completely independent so that you need only include the ones that meet the needs of your staff.

The services are primarily designed to meet the needs of staff within universities and colleges who support teachers (including librarians, learning technologists, staff developers and curriculum developers); though some of the services will be of interest to senior managers and to teaching staff.

The current services are:

- Connect Organisations: Listing all the organisations in the UK which offer support for learning and teaching with information on their particular areas of interest. This is an excellent way for users to find help with a problem or to understand the range of agencies in a particular area.

- Connect Funding: A database of funding opportunities in learning and teaching from over 100 funding bodies which can be searched by discipline, sector, amount of money and closing date amongst other options.

- Connect Projects: This database gives access to over 1000 centrally funded learning and teaching projects focused around both generic and discipline-specific themes.

- Sector Resources: A fully indexed set of resources for learning and teaching from carefully selected sites. This includes policy documents, examples of good practice, guides, toolkits and policy documents.

The services have been carefully designed so that they best meet your needs. For instance:

- All page designs can be fully customised by the use of cascading style sheets (CSS) which will allow the services to match the look and feel of the host site.

- Connect offers the options of embedding the complete, discrete services, with full functionality, at a location of your choice, through direction to a dedicated url, or by insertion of an iFrame into the appropriate page.

- As a space-saving option, a simple search enquiry of Connects databases is available.

- For highly specialised users, Connect can create uniquely tailored services which focus entirely on a particular theme.

Note that Connect is currently using iFrames and not portlet technology.

Frameworks: System Simulation Ltd.

Contacts: contact

E-Mail: connect@heacademy.ac.uk

URL/FTP: http://www.connect.ac.uk

Comments: previously referred to as the LTSN Learning and Teaching Portal.

References: references

CREE – Contextual Resource Evaluation Environment, adapted a range of existing search tools and toolkits (JAFER toolkit, BALSA, Heirport, Google APIs, cross-search) to be conformant with the WSRP and JSR 168 standards, thus facilitating their integration with any conformant national or institutional portal.

B.2 CREE

Name: Contextual Resource Evaluation Environment

Description: Following on from user requirements studies in PORTAL, the CREE study investigated user requirements for the presentation of a range of different Internet-based search tools in a variety of local institutional environments, enabling access to the search tools away from their home Web sites. The aims of the project were to:
• Assess, test and document user requirements of portal-embedded and non portal-embedded search and resource-push interfaces, together with other aspects of JISC portal functionality and integration, in a broad range of user contexts. Ensure that the results of these actions are disseminated effectively to the HE/FE community.
• Investigate and document generic aspects of adapting a range of existing search tools and toolkits (JAFER toolkit, BALSA, Heirport, Google APIs, cross-search) to be conformant with the WSRP and JSR 168 standards, thus facilitating their integration with any conformant national or institutional portal. Ensure that the results of this activity are disseminated effectively to both the HE/FE community and relevant standards bodies.
• Investigate in detail, test and document the practical integration of these tools with reference portal implementations. Further test this integration with a broad range of users, evaluating the effectiveness of different modes of searching using combinations of embedded and dedicated interfaces. CREE will actively seek other national and institutional portal reference implementations with which to test software components.

Frameworks: uPortal

Contacts: Ian Dolphin, University of Hull, Stewart Waller, University of York

E-Mail: i.dolphin@hull.ac.uk

URL/FTP: http://www.hull.ac.uk/esig/cree

Comments: comments

References: references

Summary

Towards the end of the JISC funded portal projects1 it became apparent that the presentation of services through a dedicated web site was just one way in which they could be delivered. Many institutions are now making use of virtual learning environments (VLEs) and a number are starting to implement institutional portals to facilitate the aggregation and presentation of applications, services and information to their staff and students. All universities also work heavily within the general web environment, providing a vast collection of information to users both inside and outside the institution.

The ability to deliver discrete services and combine them as required to build an appropriate workflow offers far greater flexibility to end-users in their use of technology. This service-oriented architecture approach is in its infancy, but offers huge potential. Within relevant environments, JSR 168 and WSRP4 (Web Services for Remote Portlets) are two standards that start to address this architectural approach by providing a means to wrap individual services in such a way, as portlets, that they can be used in any environment conformant with the standards (e.g., an institutional portal framework).

The CREE project was structured around two main goals in response to the needs users may have for systems providing search functionality.

- The investigation of user requirements for the presentation and delivery of search tools through a variety of institutional environments and contexts.

- The investigation of the JSR 168 and WSRP portlet standards to allow the presentation of existing search tools within conformant portal frameworks (e.g., uPortal).

The two strands of activity came together at the user testing stage, which utilised a series of full functional interactive demonstrators. One of these was based around the uPortal framework and demonstrated the presentation of search tools that had been adapted for such use using JSR 168 and WSRP.

The project has demonstrated that it is possible to take existing search tools (JAFER, HEIRPORT, GetRef previously known as Xgrain, BALSA, and Google APIs) and present these as JSR 168 and WSRP portlets for use within a conformant portal framework. This development path is feasible, through perhaps not ideal, as experience suggests it would be beneficial to design for a portlet when building the search tool originally. This is particularly the case where the original application is not Java-based. JSR 168 is a Java-based standard and it is thus simpler for Java-based applications to be adapted for use with it.

The project found that the simplest route to using WSRP was to develop a JSR 168 portlet first and then transform this for presentation as a Web service and provide a WSRP portlet. A step-by-step guide described by Matthew Dovey at the University of Oxford enabled this transformation.

As an example, the HEIRPORT servlet interfaces shown in Figure 2 was replaced by a portlet which could be rendered in uPortal. This was then used to develop *HEIRPORT Lite* which provides access

to the same search tools as the original portal. A notepad tool was added and some rough inter-portlet communication.

Beyond the initial development of the portlets, technical partners have provided additional functionality through the Help and Edit modes of a portlet, made use of XSLT to enhance the look and feel of the portlets, described a mechanism for enabling interportlet communication between JSR 168 portlets, and proposed alternative methods for the display of results using additional portlet windows.

Also worked with York archeology (Julian Richards) and with EDINA (Jon Hunter).

Resulted in some working portlets as noted above.

HEIRPORT: Geographical search interfaces for historical information. See separate section on previous work.

GetRef: The Xgrain (cross-grain) project looked at ways to develop a cross-searching (federated searching) mechanism for Abstract and Indexing databases and other bibliographic services in the JISC Information Environment. The fruit of the project is a fully functional cross-searching tool, GetRef, that enables the user to present a simple search string to multiple services and receive the matching results from each. GetRef currently has interfaces to many of the information services listed in [25]. See under "targets currently available" on the Web site `http://edina.ac.uk/getref/`.

JAFER: The JAFER Toolkit project (Java Access to Electronic Resources), aims to produce an easy to use, visual toolkit, which will allow users to build portals and information sources without having to deal with the technical intricacies of Z39.50. Software for both client and server is available from `http://www.jafer.org/develop.html`.

Google: A portlet interface to the Google Web service.

Note that we have demonstrated the WSRP interface to Jafer working in the JISC VRE Sakai Demonstrator project `http://www.grids.ac.uk/Sakai`.

Go-geo! – Phase III, geo-spatial information portal.

B.3   Go-Geo!

Name: Go-Geo!

Description: In the presentation layer the Go-Geo! Portal is a subject portal which will allow for the discovery of geo-spatial data and related resources within and beyond the HE and FE community; currently a trial service for the academic community; an extension has addressed portlets deployable into subject, media specific, data centre and institutional portals operating within the portlet framework; Go-Geo! is also becoming a Grid Portal for the UK academic geographic information science community. Project still investigating metadata creation in the community. GI-Gateway is a broker service, which gives access to the academic catalogues forming the Geo-data Network.

Frameworks:	systems
Contacts:	David Medykczy-Scott, EDINA
E-Mail:	`email`
URL/FTP:	`url/ftp`
Comments:	comments
References:	references

Institution-wide and Library Potal Case Studies –

LibPortal – library portal survey and review

PIXUS – also known as Go-pix! delivered an image portal and investigated the issues. It enabled cross searching of 8 collections.

B.4   PIXUS

Name:	PIXUS
Description:	Demonstrator portal provided access to a number of collections, SCRAN, Arts and Humanities Data Service, Visual Arts, Wellcome Trust, Resources for Learning in Scotland (RLS), British Geological Survey.
Frameworks:	systems
Contacts:	SCRAN: Scottish Cultoral Resource Access Network
E-Mail:	`email`
URL/FTP:	`url/ftp`
Comments:	comments
References:	references

PortAhead – Business and Technical Sustainability for Portals –

SPP – Subject Portals Project Phase II.

B.5   SPP

Name:	SPP: Subject Portals Project

Description: A common framework for delivery of customised Web portal interfaces, including cross-search facilities for the Research Discovery Network (RDN). SPP has developed portal functionality for five of the subject hubs of the RDN. The RDN service is an aggregator service with a presentation layer, linking the fusion and presentation layers of the Information Environment. The RDN also offers links to learning and teaching objects. The linking of digital libraries and virtual learning environments is required to provide a meaningfulconnection between learning activities andlearning resources.

No subject portal services, therefore, came out of the SPP. The original expectation of portal *services* gradually developed into rather lesser and incomplete *demonstrators*.

There's a page about the demonstrators `http://www.portal.ac.uk/spp/demo/` and there's an official demonstrator linked to at the bottom of that page `http://www.spp.opensource.ac.uk/spp/portal/` and there's this list `http://dev.portal.ac.uk/demos.html` where you will see that most of the demonstrators are either offline indefinitely or like GEsource and SOSIG - don't work. They are offline or don't work because no-one is funded to keep them going. The PSIgate demonstrator still works, and then there's a link to the EEVL Xtra demonstrator.

Frameworks: JSR-168 standards compliant such as GridSphere and uPortal

Contacts: Roddy MacLeod, Heriot Watt; Jasper Tredgold, ILRT, Bristol

E-Mail: `R.A.MacLeod@hw.ac.uk`

URL/FTP: `url/ftp`

Comments: Currently in the process of making the cross-search portlet available as open source. SPP and SAD1 has reveived £1M but were only demonatrators. Ongoing funding is uncertain.

References: references

User requirements study for a moving pictures and sound portal –

VSM – Visual and Sound Materials portal

B.6 VSM

Name: Vision and Sound Materials

Description: A portal demonstrator development and scoping project, is aiming to bring together access to visual and sound material collections. The project outcomes may result in a media-specific portal for images, moving images and sound (time-based media). The VSM portal demonstrator Invitation To Tender (ITT) led on from evaluations for the PIXUS project, and a Moving Picture and Sound Portal feasibility study, looking into the user requirements for a time-based media portal (2003).

Frameworks:

Contacts: EDINA

E-Mail: `email`

URL/FTP: `http://edina.ac.uk/projects/vsmportal`

Comments:

References: references

Xgrain II – Phase I and Phase II projects have delivered a broker (the back-end cross-searching engine) for use in portals such as the Xgrain L&T portal and the Subject Portals Project (SPP). Xgrain is also intended for use in institutional portals. Phase I was part of the Join-UP cluster.

[where were these funded?]

CIE –

B.7   CIE

Name: Common Information Environment

Description: The CIE is about making a wide range of information available to all sectors of the UK population. This is a long-term vision.
There were two CIE feasibility demonstrators and a third demonstrator is now being developed:

1. A demonstrator for Health professionals, utilising professional terminologies such as SNOMED CT and MeSH, delivered to users using Adiuri's faceted classification techniques. The demonstrator incorporated almost 30,000 documents, drawn from seven repositories such as the Cochrane and Wellcome Libraries and the RDN's Health and Life Sciences Hub, BIOME.

2. A map-based gateway, now in beta test stage, to distributed information about sites, monuments and finds. The project has shown that it is possible to create a common information environment across different public sector agencies, including both the presentation and fusion layers. The demonstrator incorporated roughly 2,000,000 resources, drawn from 13 repositories including English Heritage's Excavation Index, the Portable Antiquities Scheme and the National Monuments Record for Scotland. This builds on the work of the HEIRPORT project (see separate description).

3. Building upon two demonstrators commissioned in 2003, the JISC awarded a contract to deliver an Enhancement to the ADS' Place Demonstrator. Work began in August 2004, and the final demonstrator will be delivered by the end of July 2005. It will then remain available online for a period of 12 months. Surprisingly there is no more information about this on the Web site.

Frameworks: systems

Contacts: Paul Miller

E-Mail:	p.miller@jisc.ac.uk
URL/FTP:	http://www.common-info.org.uk/
Comments:	Not sure if this project is still active or why it has stopped being active.
References:	references

HEIRPORT –

B.8   HEIRPORT

Name:	Historic Environment Information Resources Portal
Description:	This project will prove the concept of a common information environment. Using historic environment information resources as a test bed, it will demonstrate the potential of technology to provide diverse user communities with seamless access to distributed digital content. It will use geographic location to support these search and retrieval operations.
	The original project was taken forwards in a partnership between HEIRNET, the ADS, EDINA and the RCAHMS and will explore the development of geospatial interfaces to the Historic Environment Information Resources Portal (HEIRPORT) to enable access to distributed content – including content made available by the ADS, RCAHMS, Portable Antiquities Scheme, English Heritage, SCRAN, Durham County Council and others.
	The historic environment is a microcosm of wider problems in public information provision. This demonstrator will show how Internet technologies can deliver the e-government agenda to ensure that everyone in this country can participate in the information society.
	The project will:
	• Demonstrate the benefits of the common information environment
	• Develop a platform-independent system for the discovery and
	• retrieval of digital content that complies with e-government
	• standards for inter-operability
	• Design a system around the needs of users that will be simple
	• and easy to use
	• Focus on geographic location as a point of access to information
	• Use technologies which are stable, robust and extensible to
	• create a prototype as a model for a full system
	• Show the benefits of collaboration between disparate partners in
	• diverse sectors
	• Promote inclusive access to currently exclusive content
	HEIRPORT was funded from 1999 and the portal was publically launched in 2002. There are now a MyHEIRPORT and HEIRPORT2 projects.
Frameworks:	ColdFusion portal using Z39.50 and geoXwalk
Contacts:	Tony Austin, ADS York

E-Mail:	`heirport@ads.ahds.ac.uk`
URL/FTP:	`http://ads.ahds.ac.uk/cfm/heirport2/about.html`
Comments:	The HEIRPORT potal is on-line at `http://ads.ahds.ac.uk/heirport/`.
References:	references

Summary

The project partners are encouraing others to participate by joining as Z39.50 targets. These should use the Dublin Core Bath Profile and CIMI Profile.

HEIRPORT is a Z39.50 enabled system. Z39.50 is essentially a protocol handling communication between a client (the interface) and geographically remote servers (target databases). target servers are required to conform to internationally accepted standards including the Bath and CIMI (Consortium for the Interchange of Museum Information) profiles which specify which suite of Attributes, Record Syntaxes, and other factors to use. An important consequence is that datasets must be mapped to shared standards including the Dublin Core metadata schema and the CIMI schema for the 4 W's (Where, When, What and Who) and for spatial referencing systems which creates a framework for the semantic searching of these elements in any combination. The Bath profile also requires the use of XML for record delivery and the possibility of exporting data so tagged to other applications.

The system developed encompasses new technologies in being powered by a Java Servlet engine and Zava, a specifically developed API, in using XML and RDF (Resource Description Framework) for configuration and communication and XSLT for transformation and delivery of content. r Zava (Z39.50 target) and Zavax (Z39.50 portal) applications are now downloadable from the SourceForge open source website at http://sourceforge.net/projects/zifx/. A detailed installation and configuration manual (pdf file) can be obtained via the above email.

The Zavax framework is shown in Figure 2.

ePrints –

B.9   ePrints

Name:	ePrints UK
Description:	a media specific portal, but also functions as an aggregator/ resolver, linking certain functionality to the fusion layer; the project aimed to develop a national service provider repository of e-print records based at the University of Bath, derived by harvesting metadata from institutional and subject-based e-prints archives using OAI-PMH, and to provide access to these institutional assets through the eight RDN faculty level hubs and the Education Portal based at the University of Leeds.
Frameworks:	systems
Contacts:	contact
E-Mail:	`email`
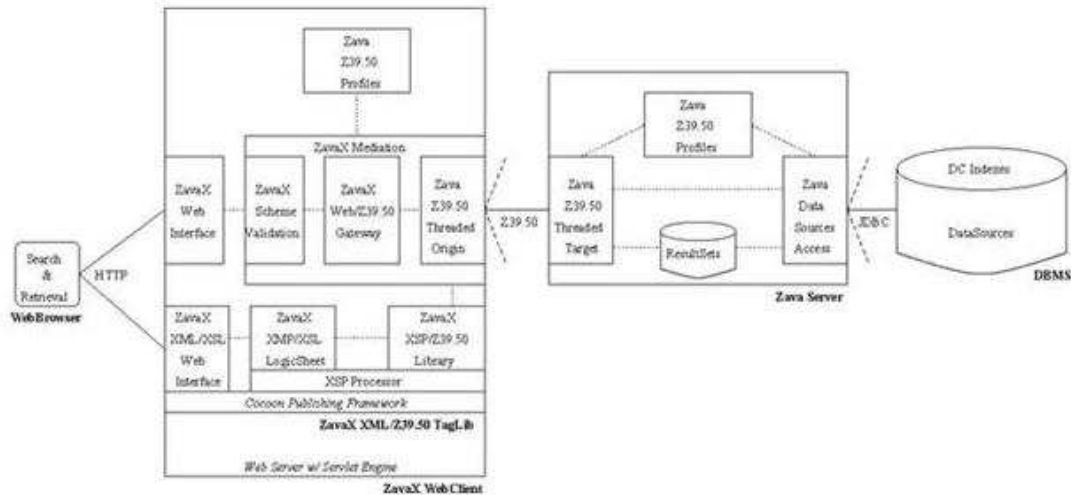
Figure 2: HEIRPORT Zava(x) Framework

URL/FTP:	`url/ftp`
Comments:	comments
References:	references

PerlX –

B.10   PerlX

Name:	PerlX
Description:	In addition, we are working on a JISC Digital Repository Project called PerX, which cross-searches numerous repositories, and in fact uses the same software as TechXtra. You can see our Pilot at `http://www.engineering.ac.uk`. Eventually, once some work has been done on the SPP software, that software will be plugged back in to this Pilot.
Frameworks:	systems
Contacts:	Roddy MacLeod
E-Mail:	`R.A.MacLeod@hw.ac.uk`
URL/FTP:	`http://www.engineering.ac.uk`
Comments:	comments

References: [17]

TechXtra –

B.11   TechXtra

Name:	TechXtra
Description:	Now then - we at Heriot Watt are the only ones who are actively still supporting any real outcome of the SPP, and we're doing this without any funding. We have a service called TechXtra `http://www.techxtra.ac.uk/` and its based on work done by SPP but has been refined a lot, and in fact right now does not use SPP software. Its not a full portal, but its part of the way there.
Frameworks:	systems
Contacts:	Roddy MacLeod
E-Mail:	`R.A.MacLeod@hw.ac.uk`
URL/FTP:	`http://www.techxtra.ac.uk/`
Comments:	comments
References:	references

C   JISC-funded Shared Services Programme Projects

The Shared Services Programme runs from 1/1/02-31/7/08 `http://www.jisc.ac.uk/index.cfm?programme_shared_services`. It aims to develop and trial a suite of shared services that will provide machine to machine (M2M) interfaces to allow machines to survey the information environment for end users. The programme will do this by exploring the required common standards, terminologies, description schemas and user profiles, and by investigating the surrounding sustainability and management issues. A number of shared infrastructure services are proposed by the Shared Services Development Plan. Most of these services have been explored over the past years by studies, scoping work and pilot projects funded under this programme.

In the light of changes both in the educational landscape and in technology, it has become clear that this part of the architecture needs to be viewed in a broader context, as a significant layer in inter-relating the technology aspects of learning, teaching and research. JISC is now working on the concept of a common middleware scheme for the widest possible range of institutional activities. The Shared Services Programme and JISČ2019s other middleware development work, such as the AAA programme and the Core Middleware Programmes are now brought together and handled by one single middleware team.

The objectives of the Shared Services Programme are:

- To continue to selectively fund studies, scoping work and pilots which will inform future productions services;

- To define requirements in key priority areas;

- To continuously review the Share Services architecture while taking note of the major development in the wide front;

- To roll out services that are required by the community and are sustainable.

Projects funded under this programme are:

Balsa – (EDINA) an OpenURL Resolver, Phase II of rhe ZBLSA project.

Bath Profile Project (M25) –

Collection Description Focus –

Content Delivery Infrastructure Streaming Content Trial –

geoXwalk – Phase III

HILT – High Level Thesaurus Phase.

Information Environment Service Registry (IESR) –

Information Environment Metadata Schema Registry (IEMSR) –

D   JISC-funded Presentation Programme Projects

The Presentation Programme runs from 1/4/02-31/7/08 and aims to investigate and discover how different types of resources can be presented within a variety of web environments in ways that best benefit users `http://www.jisc.ac.uk/index.cfm?programme_presentation`. This will include both presentation through dedicated web sites and the integration and embedding of resources into exsisting web environments such as an institution's web site.

Specific objectives are to:

- Assess the most appropriate methods for presenting different data types in an educational context

- Develop software tools to enable resources to be integrated in different web environments

- Explore the usability of resources within a variety of web environments

- Examine the processes and issues associated with presenting information through these environments, including interface design and visualisation

- Investigate the role of personalisation in presenting services to users and the technologies required

- Create advice and best practice guidelines

Projects funded under this programme are:

HCI Design Foundation Study –

Investigation into Personalisation within Presentation Services –

Usability Foundation Study and Investigation of Usability in JISC Services –

Visualisation Foundation Study –

E   JISC-funded FAIR Programme Projects

The FAIR Programme, Focus on Access to Institutional Resources, was funded by JISC 1/8/02-
31/10/05 `http://www.jisc.ac.uk/name.cfm?programme_fair`. Some projects received additional
funding, e.g. from CURL the Consortium of University Research Libraries. The aims and obejectives
were to evaluate and explore different mechanisms for the disclosure and sharing of content (and the
related challenges) to fulfil the vision of a web of resources built by groups with a long term stake in
the future of those resources, but made available to the whole community of learning. Specifically:

- explore the OAI protocol as a mechanism for disclosure and sharing a range of resource types,
  eg images, museum content, e-prints, e-theses;

- explore, in addition, possible alternative mechanisms for disclosure;

- explore the challenges associated with disclosure and sharing, including IPR and the role of
  institutional respositories;

- test out the delivery of disclosed information through established JISC services and investigate
  other means of delivery;

- inform work towards developing the JISC Information Environment.

FAIR funded the following projects:

Accessing the Virtual Museum –

BioMed Image Archive –

DAEDALUS: Data providers for Academic E-content and the Disclosure of Assets for Learning, Un-
derstanding and Scholarship –

Electronic Theses –

ePrints UK –

FAIR Enough –

HaIRST: Harvesting Institutional Resources in Scotland Testbed –

Harvesting the Fitzwilliam –

Hybrid Archives –

PORTAL: Presenting natiOnal Resources To Audiences Locally –

E.1   PORTAL

Name:	PORTAL (Presenting natiOnal Resources To Audiences Locally)
Description:	project investigated the provision of institutional portals, and developed the port.hull portal locally at Hull University. It will provide memmbers of the institution with a single, personalised interface to many of the resources they need to undertake their research, learning and teaching activities.
Frameworks:	systems
Contacts:	Ian Dolphin, University of Hull
E-Mail:	`email`
URL/FTP:	`http://www.fair-portal.hull.ac.uk`
Comments:	comments
References:	references

Summary

The PORTAL project gives the JISC definition of an institutional portal, which describes the various features as belonging to three categories – access to information resources (internal or external), transaction-based services and collaborative tools:

An institutional portal provides a personalised, single point of access to the online resources that support members of an institution in all aspects of their learning, teaching, research and other activities. The resources may be internal or external and include local and remote 'information resources' (books, journals, Web-sites, learning objects, images, etc.), 'transaction-based services' (room bookings, finance, registration, assignment submission, assessment, etc.) and 'collaborative tools' (calendars, email, chat, etc.). Typically, access to many of these resources is restricted to authenticated members of the institution.

The restriction "to authenticated members of the institution" referenced in the JISC definition enables institutional portals to provide access to personalised information and services.

In an effort to better understand the preferences and requirements of those for whom institutional portals are being constructed, the PORTAL project undertook a period of stakeholder consultation between November 2002 and March 20036.

On the whole, respondents welcomed the role of an institutional portal as a means of gaining access to both institutional and external resources. Personalisation was a major topic. At one level, the ability to have the portal personalise displayed content by a users role would be welcomed and useful. Beyond this, though, tensions appear between end users who might wish for a greater degree of flexibility and the portal providers who wish to retain control over key aspects of content, look and feel of the portal.

Since then a further period of consultation has been undertaken with users of the new portals. Certain external information resources, such as the near-ubiquitous weather forecast, have been rejected in favour of access to library resources, teaching materials, and personal information. However, most users are also finding that the portal does not necessarily offer the functionality or personalisation they would prefer.

One of the key aims of the PORTAL project was to deliver personalised content to users in an effective manner. In order to provide this service, the system needs to gather appropriate personal information from existing corporate systems and store it for use within the portal. A standardised metadata solution is required to support this function.

The project also produced7 a report detailing the work on the production of a personalised RSS channel for an institutional portaland the code required to include the channel in uPortal; a report examining the feasibility of mapping between organisationalstructures in universities and colleges and the 'faculty' groupings of services such as the RDN is now available as a pdf file. The report canbe accessed at; A discussion document 'Describing External Resources for use within Institutional Portals' is now available at; and also an installation guide: 'A Beginners Guide to uPortal'. 1 http://www.jisc.ac.uk/programme_portals.html 2http://www.jisc.ac.uk/project_mle_activity.html 3 http://www.uportal.org/ 4 http://www.oucs.ox.ac.uk/portal/developers/environment.xml

5JISC (2003) JISC Information Environment Architecture Portal FAQ. http://www.ukoln.ac.uk/distributed-systems/jiscie/arch/faq/portal/ 6 Defining User Requirements for Institutional Portals: http://www.fair-portal.hull.ac.uk/WP3.html 7 All available at: www.fair-portal.hull.ac.uk/downloads ??

RoMEO: Rights Metadata for Open Archiving –

E.2   SHERPA

Name: Securing a Hybrid Environment for Research Preservation and Access

Description: SHERPA is investigating issues in the future of scholarly communication. It is developing open-access institutional repositories in a number of research universities to facilitate the rapid and efficient worldwide dissemination of research.

This project has focussed on the establishment of a body of self-archived articles in order to increase the range of UK research outputs available on open access via the Open Archives Initiative. This includes both pre-prints and post-prints. The University of Nottingham is working with six other development partners and 12 other partner institutions across the UK to implement e-print repositories and develop guidance on their take-up and use by authors. The preservation of e-print material is also being investigated. SHERPA is being run in association with the Consortium of Research Libraries in the British Isles (CURL).

Outputs from the project so far include the implementation of repository software, the establishment of growing e-print collections within these repositories, a wide range of guidance and advocacy materials (including the RoMEO publisher copyright policy database), a series of reports, and a large number of publications and presentations. SHERPA has made links with related initiatives and is working in tandem with these and other related projects.

Frameworks: systems

Contacts: Bill Hubbard (Nottingham)

E-Mail: `bill.hubbard@nottingham.ac.uk`

URL/FTP: `http://www.jisc.ac.uk/index.cfm?name=fairsynthesis_sherpa`

Comments: See also the project evaluation website at `http://www.cerlim.ac.uk/projects/sherpa/index.php`

References: references

TARDis: Targeting Academic Research for Dissemination and Disclosure –

Theses Alive! –

For other CURL projects, see `http://www.curl.ac.uk/projects/`

F   JISC-funded VRE and other e-Research Portal Projects

`http://www.jisc.ac.uk/name.cfm?programme_vre`

The VRE Programme funded the following projects:

Sakai VRE for Educational Research

F.1 short name

Name:	full name
Description:	description
Frameworks:	systems
Contacts:	contact
E-Mail:	`email`
URL/FTP:	`url/ftp`
Comments:	comments
References:	references

Sakai VRE Portal Demonstrator

F.2 short name

Name:	full name
Description:	description
Frameworks:	systems
Contacts:	contact
E-Mail:	`email`
URL/FTP:	`url/ftp`
Comments:	comments
References:	references

A VRE to Support the Integrative Biology Research Consortium We have taken a scenario and use case from this project [23].

EVIE (integration and deployment of existing components within a portal framework)

F.3 EVIE

Name:	Embedding a VRE in an Institutional Environment

Description: Researchers in all disciplines are increasingly expecting to be able to undertake
                 research-associated tasks online. These range from collaborative activities with col-
                 leagues around the globe through to information-seeking in an electronic library
                 environment. Many of the tools which enable these activities are already available
                 within the local IT infrastructure. However, in many cases, the tools are provided
                 through discrete, bespoke interfaces with little inter-linkage. Researchers face a
                 number of challenges in this environment.
                 The EVIE Project will address these issues by testing the integration and deployment
                 of key software components within a portal framework.
                 The main objectives of the EVIE Project are to:
                 • Establish an integrated VRE infrastructure
                 • Provide additional resources and services through this environment
                 • Deliver simplified-sign-on functionality and explore seamless integration between
                 the identified systems
                 • Provide a set of user validated recommendations for intuitive search and retrieval
                 • Provide enhanced resource discovery mechanisms with relevance indicators via
                 document visualisation techniques
                 • Develop a taxonomy for use within a VRE
                 • Provide support for search and retrieval across disparate information resources
                 • Identify long term options for digital preservation within a VRE
                 • Identify requirements for data integration to provide seamless information flow

Frameworks: uPortal

Contacts: Derek Sergeant

E-Mail: d.m.sergeant@leeds.ac.uk

URL/FTP: http://www.leeds.ac.uk/evie

Comments: We note that the EVIE project carried out a comprehensive user requirements ex-
                 ercise [3] which has been mentioned elsewhere in our reports.

References: references

ELVI: Evaluation of a Large-scale VRE Implementation –

Meeting Memory Technology Informing Collaboration –

Implementing the Kepler Workflow Interface into the Cheshire Digital Library Framework –

CSAGE: Collaborative Stereoscopic Access Grid Environment for Experimentation within the Arts
and Humanities –

CORE: Collaborative Orthopaedic Research Environment –

Silchester Roman Town: A Virtual Research Community – We have taken a scenario and use case
from this project [23].

GROWL: VRE Programming Toolkit and Applications –

ISME: Integration and Steering of Multi-Site Experiments to Assemble Engineering Body Scans –

VRE for the History of Political Discourse 1500-1800 – We have taken a scenario and use case from this project [23].

BVREH: Building A VRE for the Humanities – We have taken a scenario and use case from this project [23].

IUGO: Conference Information Integration Project –

G   JISC Digital Repositories Programme

This programme runs 1/1/05-30/6/08 `http://www.jisc.ac.uk/index.cfm?name=programme_digital_repositories`. The JISC is bringing together a programme of work relating to digital repositories. Its aim is to bring together people and practices from across various domains (research, learning, information services, institutional policy, management and administration, records management, and so on) to ensure the maximum degree of coordination in the development of digital repositories, in terms of their technical and social (including business) aspects.

DigiRep is the Wiki for this programme `http://www.ukoln.ac.uk/repositories/digirep/`.

Activities, many of which started in 2005, include:

ASK: Accessing and Storing Knowledge – will develop a suite of open source software artefacts that support learners, researchers and teachers in securely accessing and sharing learning objects.

CLADDIER: Citation, Location, And Deposition in Discipline and Institutional Repositories – will build and deploy a demonstration system linking publications held in two institutional repositories (Southampton University and the CCLRC) with data holdings in the British Atmospheric Data Centre.

Community Dimensions of Learning Object Repositories: will identify and analyse the factors that influence practical uptake and implementation of learning object repositories, with a focus on social and cultural issues.

GRADE: Scoping a Geospatial Repository for Academic Deposit and Extraction – will investigate and report on the technical and cultural issues around the reuse of geospatial data within the JISC Information Environment in the context of media-centric, informal and institutional repositories.

IRIScotland: Institutional Repository Infrastructure for Scotland – will provide the organisational and technological framework for a Scotland-wide institutional repository infrastructure for research.

IRS: Interoperable Repository Statistics – will investigate the requirements of UK and international stakeholders for effective research statistics services, and build generic collection and distribution software for all institutional repositories.

MIDESS: Management of Images in a Distributed Environment with Shared Services – will explore the management of digitised content (especially images) in an institutional and cross-institutional context through the development of a digital repository infrastructure.

PERX: Pilot Engineering Repository Xsearch – will develop a pilot service which provides subject resource discovery across a series of repositories of interest to the engineering learning and research communities.

PROWE: Personal Repositories Online:] WIKI Environment – will provide an innovative informal environment to support collaboration and learning amongst part-time, remote tutors on distance education programmes, and will build on and be evaluated alongside the asset repositories and digital library collections which are already available.

R4L: Repository for the Laboratory – will develop prototype services and tools to address the issues of working with, disseminating and reporting on experimental data. In collaboration with scientific equipment manufacturers the project will develop methods to make raw experimental data available and richly annotated with metadata, as it is generated in the laboratory.

RepoMMan: Repository Metadata and Management – will assist the development of repository infrastructure in several key areas by assessing the feasibility of automated population of object metadata, conducting detailed user requirements analysis and review of associated digital rights management issues, adapting and providing a human interface to a generic workflow framework.

Repository Bridge: Automated Linkage of National and Institutional Repositories – will examine the interaction between a regional theses repository based at the National Library of Wales and pilot institutional repositories which are currently under development at the University of Wales Aberystwyth and the University of Wales Swansea.

Rights and Rewards in Blended Institutional Repositories: will focus on the support issues, rights protection and rewards necessary to motivate teaching academics to use repositories and will blend the results with those required by research academics.

SHERPA Plus: is a major initiative to support repository development in all UK Higher Education institutions, building on the work of the SHERPA project, and will produce advocacy strategies and resources for the establishment of new, and further population of existing, repositories; support for policy development, and reviews and analysis of extending repository holdings with datasets, multimedia, grey literature, learning objects and other content types.

SPECTRa: Submission, Preservation and Exposure of Chemistry Teaching and Research Data – will address the provision of Open Access to primary research data in experimental chemistry through the use of institutional repositories.

SPIRE: Secure Personal Institutional and Inter-Institutional Repository Environment – will focus on the setup and working through of the feasibility of peer-2-peer (P2P) technologies to aid the design of learning in the UK.

StORe: Source-to-Output Repositories – will address the area of interactions between output repositories of research publications and source repositories of primary research data.

Trust DR Project: will explore in detail the emergent issues relating to the use of digital repositories within the UK HE/FE sectors, with particular reference to business processes and digital rights, from multiple stakeholder perspectives.

UK collaboration for a digital repository to support sharing high quality, high-stakes assessment items will develop, evaluate and document a practical approach, building on existing tools and good practice, to implement a UK-wide infrastructure for collaborating to develop and share high quality, high-stakes assessment items involving a range of agencies and institutions in the UK.

User Needs and Potential Users of Public Repositories: An Integrated Analysis – will evaluate five different types of public repositories in the UK, i.e. repositories that are intended for use by people outside a hosting institution.

VERSIONS: Versions of Eprints – User Requirements Study and Investigation Of the Need for Standards – by reference to user needs and practices, will clarify researchers' requirements for deposit, storage and accessibility of different versions in the lifecycle of a digital resource.

We have referenced user requirements, scenarios and use cases from some of these projects (GRADE, R4L, StORe) in our other background documents [24, 23]. Many of these projects are of relevance from a research perspective.

Work within the Digital Repositories Programme, but funded outside the 2005 call for proposals, includes:

EThOS: (co-supported by the British Library and the Consortium of University Research Libraries, CURL), which aims to develop a prototype e-thesis service and scope a national infrastructure.

OpenDOAR: (co-supported by the Open Society Institute, SPARC Europe and CURL), is a Directory of Open Access Repositories. It will categorise and list the wide variety of Open Access research archives that have grown up around the world.

GNU Eprints: (Eprints.org). This is free software that creates online archives. It is being developed primarilly at Southampton University. Current development work aims to move key support infrastructure for Eprints into the user community. This means progressively devolving and sharing responsibility for management, code development, user support and marketing.

Institutional Repositories and Research Assessment: This project is investigating and developing institutional repository infrastructure for EPrints and DSpace to enable Research Assessment, specifically for the UK Research Assessment Exercise 2008.

Two studies focusing on community image collections: • a study looking into the feasibility of creating a network of community based image archives;

- an associated study investigating models and developing an agreed framework for clinical recordings deposit and access, including exploring the potential for a user-driven service. Final Report now available.

A scoping study on repository services: called *Linking UK repositories*. The final report (with appendix) is available.

H   Other related projects in the UK

H.1   HERO

Another portal concerned with funding opportunities is HERO: Higher Education and Research Opportunities in the UK `http://www.hero.ac.uk`. HERO is run as a a private company with the

following member organisations: Dept. of Employment and Learning (Northern Ireland); Graduate Prospects; HEFCE; HEFCW; Scottish Funding Council; SCOP; Training and Development Ageency for Schools, UCAS; Universities UK.

I International Activities

Other international e-Research and information management portal activities will be added following the *Portals and Portlets 2006* workshop, NeSC, 17-19/7/06. [Ongoing.]

The following projects are ones that we came across which seemed interesting, there are probably many more.

I.1 MADIERA

Name:	Multilingual Access to Data Infrastructures of the European Research Area
Description:	The Madiera project is funded by the EU under FP 5. The date of completion is 28/2/06.
	The overall goal was to develop an effective infrastructure for the European social science community by integrating data with other tools, resources and products of the research process.
	The main outcome is the Madiera portal. This provides access to an unprecedented quantity of social sciences quantitative datasets. It harvests statistical datasets and variables published on the Semantic Web from all the largest European social sciences data archives, organizes them using a set of multilingual thesauri and taxonomies and makes them available through a responsive and highly customizable Web interface.
	The Madiera project has provided a common integrated interface to the resources of the majority of the existing 20+ social science data archives in Europe. The infrastructure will, as the Web itself, have the capacity to grow and diversify even after the initial construction period. Indeed, one of the main objectives of the project is to create a sustainable system, nurtured by the collective energy of the data and knowledge producing communities of the European Research Area.
	Current data publishers include: DANS (69 studies); DDA (132 studies); ESS (2 studies); FSD (938 studies); Nesstar Ltd (41 studies); NSD (671 studies); NSD Demo (93 studies); SIDOS (576 studies); SSD (432 studies); UKDA (145 studies); ZA (16 studies) with a total of 3115 studies available.
	The portal provides tree-based indexing facilities by topic, topic detailed, topic free text search and data publisher in 9 languages.
Frameworks:	Hosted at Essex. Portal written in HTML 4.0.1, XHTML 1.0 and JavaScript, e.g. using tree navigation example from *JavaScript and DHTML Cookbook* by Danny Goodman (O'Reilly, 2003)
Contacts:	Atle Alvheim or Alette Gilhus at NSD, Bergen, Norway
E-Mail:	`madiera@nsd.uib.no`

URL/FTP: http://www.madiera.net

Comments: Madiera project partners: Norwegian Social Science Data Services, UK Data
              Archive, Danish Data Archive, Finnish Social Science Data Archive, Nesstar Ltd,
              Greek Social Data Bank, Swiss Information and Data Archive Service for the Social
              Sciences, Zentralarchiv für Empirische Sozialforschung

References:

I.2   IReL

Name: Irish Research e-Library

Description: The Higher Education Ireland Portal (HEIP) is linked to the IReL (Irish Research
              eLibrary), "access by researchers to electronic journals is a vital element of the
              infrastructure required to attract, recruit and retain leading researchers in Ireland.
              It is recognised standard practice in major research-driven countries".
              The first phase of the scheme provided access to the electronic content of eleven
              major publishers of science periodicals and approximately fifty other individual e-
              journals, involving a total of 2,000 individual titles. The selection of these journal
              titles followed a polling exercise to identify the journals most urgently required by
              the science research community. The second phase of the project is now under way
              and this will deliver the contents of an additional 850 titles to further support higher
              education research activities across the country. The benefits of the IReL initiative
              in terms of Irish research infrastructure are hugely significant in that all researchers
              will have desktop electronic access to the published research output of the leading
              journals in their fields. Resources extended to the Humanities and Social Sciences
              (HSS) in February 2006.

Frameworks: not known

Contacts: not known

E-Mail: notknown

URL/FTP: http://www.tcd.ie/Library/Irel.php

Comments: IReL initiative was launched on 6th June 2006, Funded by Irish National Develop-
              ment Plan, Science Foundation for Ireland, Higher Education Authority and Irish
              Universities Association. 37M Euro budget to 2009.

References:

I.3   BEC

Name: Biblioteca Electrnica de Ciencia y Tecnologa

Description: Argentinian portal for scientific information. Provides access to a wide variety of national and international journal and other publications with full text if possible. Whilst its called a portal, this is really jst a conventional Web site with a long list of links to publishers' own interfaces. Links to universities in Argentina and provides a list of journals and other sources.

Frameworks: not known

Contacts: not known

E-Mail: `info@biblioteca.secyt.gov.ar`

URL/FTP: `http://www.biblioteca.secyt.gov.ar/`

Comments: Interestingly however it is using an open resolver so that, for instance when I (Rob Allan) clicked on the European Journal of Physics link I was served a page by the CCLRC Library Services.

References:

I.4   Scholars

Name: Scholars

Description: Canadian portal. As its name implies this is principally used for teaching. It does however include links to electronic journals as well as reference books. It has a search facility (Illumina) works across Canadian university databases and a mechanism for getting full text of articles (SFX from exLibris).

Frameworks: not known

Contacts: OCUL: Ontario Council of University Libraries

E-Mail: `notknown`

URL/FTP: `http://www.scholarsportal.info/`

Comments: Seems to be not very intuitive and little content.

References:

I.5   Vascoda

Name: Vascoda

Description: German information discovery portal. Driven by a keyword search interface. Currently has categories for science and engineering, medicine and bio-sciences, law, economics and social sciences, arts and humanities.

Frameworks: not known

Contacts:	BMBF: German ministry for education and research
E-Mail:	`notknown`
URL/FTP:	`http://www.vascoda.de`
Comments:	Whilst it has an interesting interface the content in the system is somewhat limited.
References:	