

JISC DEVELOPMENT PROGRAMMES

Project Document Cover Sheet

RIDIR - PROJECT PLAN

Project

Project Acronym	RIDIR	Project ID	
Project Title	RIDIR - Resourcing Identifier Interoperability for Repositories		
Start Date	1 st April 2007	End Date	31 st March 2008
Lead Institution	University of Hull		
Project Director	Ian Dolphin		
Project Manager & contact details	Richard Green r.green@hull.ac.uk		
Partner Institutions	Rightscom Limited, Lincoln House, 75 Westminster Bridge Road, London SE1 7HS		
Project Web URL	www.hull.ac.uk/ridir		
Programme Name (and number)	Repositories and Preservation Programme: Discovery to Delivery		
Programme Manager	Balviar Notay		

Document

Document Title	Project Plan		
Author(s) & project role	Richard Green (Project Manager)		
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Document History

Version	Date	Comments
0.1	26/03/2007	First draft
0.9	17/04/2007	Revised draft following start meeting
1.0	24/04/2007	Submitted to JISC



1. Background

1.1 What does an ISBN identify? This may seem a naïve question – isn't the answer that it identifies "a book"? – but a more thoughtful answer to the question goes to the heart of the issue of identifier interoperability.

1.2 Because in reality an ISBN doesn't identify "a book"; it identifies a class of books, all of which (for the purpose of the ISBN) are regarded as being "the same" – or at least directly substitutable one for another. Two books are never of course completely identical – but for the purpose for which the ISBN was developed, as a *publisher's product identifier* to use in the book supply chain, they can be treated as identical. What is more, the ISBN is extensively used to identify books in contexts other than the one for which it was devised – with greater or lesser problems as a result. In the physical world, where carrier and content are so intimately bound together, the challenges of resource identity are less obvious and identifiers developed for purpose can often act as proxies for another purpose. However, as the primary mechanism for the management and dissemination of content resources migrates from the physical to the digital environment, the challenges of coherent models of resource identity become much more pressing. There is an extensive discussion of many of the issues involved in the introduction to the RIVER project reportⁱ, which it is not necessary to repeat here. In précis, when it is so easy to create and disseminate copies of resources, the exact identity of those resources becomes critical for users in many different contexts – although the ones with which we are particularly concerned for the purpose of this demonstrator are those within the discovery to delivery chain, and in particular those contexts post-discovery, in academic (institutional or subject based) digital repositories. The importance of interoperability between identifiers in supporting preservation is also key.

1.3 The challenge of identifier interoperability is being taken up within ISO TC46/SC9, the part of ISO which responsible for a familiar group of standard identifiers – including ISBN, ISSN, ISRC, ISWC, ISTC, ISAN; the work of this group has been reported extensively in a recent D-Lib article by Norman Paskin.ⁱⁱ The first part of this article, which is based (with acknowledgement) on work undertaken by Mark Bide for TC46/SC9, describes the nature of interoperability from the perspective of the organisations that are responsible for the management of international standards. In particular, it proposes that there are three different areas in which merit attention in exploring what "identifier interoperability" means:

- **Metadata interoperability**, using different identifier metadata schemes
- The creation of standard mechanisms for the **expression of relationships between the referents** of different standard identifiers
- The creation of **common services** which give consistent user experiences using different identifiers

1.4 It is our contention that these three areas of interoperability are at least as appropriate for exploration in the context of academic digital repositories as they are in the context of international standards.

2. Aims and Objectives

2.1 The project has the following aims and objectives:

2.2 Aims

- To engage with the identifier and repository communities to understand better their requirements and highlight the benefits of the clear use of persistent identifiers in order to facilitate interoperability where required.
- To develop and build a fully working demonstrator to showcase the findings of this engagement and demonstrate potential means for addressing the issues raised.

2.3 Objectives

- To raise awareness of persistent identifier interoperability issues within the Higher and Further Education community, influencing repository practices to incorporate these issues and contributing to the understanding of the governance procedures around identifier management
- To provide a clear way of demonstrating issues relating to persistent identifier interoperability and potential solutions for addressing a range of use cases

3. Overall Approach

3.1 User requirements and issue identification

3.1.1 The user requirements analysis will be carried out by:

- Identifying any further stakeholder groups
- Carrying out desk research to scope the requirements
- Running two focus groups (10-15 people each) to further gather and then validate the requirements. One focus group meeting will be held in London and one in Scotland or Northern England.
- Developing a requirements document based on the output from these steps.

3.1.2 The outcome from these workshops will be a series of specific and prioritised use cases to guide the development of the interoperability demonstrator; this prioritisation will be discussed with the JISC Programme Manager prior to demonstrator development commencing. This will ground the project in the issues that are being faced today by repository managers and users. We anticipate that the following candidate list may arise in these discussions, based on our current knowledge and desk research:

- The application of identifier interoperability between various different resource types and resource use types, including eResearch, eLearning and new models of scholarly communication (including open access publication).
- Issues that are involved when a User needs to incorporate or refer to items outside their 'own' content, where resources from one repository have either to be linked to from another repository or copied into another repository
- How existing standard identifier schemes can be used in institutional repositories, including consideration of reference descriptive metadata interoperability (see Paskin *op cit*).
- The recognition that, based on an analysis of the insufficiency of XML-based metadata record schemes alone to support identity interoperability – and critically

therefore preservation – requirements, overlaying content models with a network of identifier-rich information can provide a richer solution. Identifiers in such a network must also refer to precise semantics to enable their re-use in differing contexts.

3.1.3 Where appropriate, we propose to use ‘complex objects’ (aggregations, such as eLearning objects) to demonstrate the interplay between digital objects, identifiers and metadata, and therefore to illustrate what the immediate requirements on repository designers/administrators may be. We also propose to provide an insight into appropriate identification policies and practice. In this context, we would expect to develop an exemplary generic ‘content model’ⁱⁱⁱ, along with the mechanisms to use it.

3.2 Abstract Architecture

3.2.1 The development of use cases will be followed by the initial development of an abstract architecture, which will break down into two basic functional areas: a *persistent identifier mediator service* and multiple *client repositories*. From the point of view of the architecture, the respective functional role of each is to securely and robustly represent resources between repositories as an integral infrastructural component, and to supply, consume and manage resources in the traditional institutional repository sense.

3.2.3 A critical ancillary outcome will be to demonstrate that a key element of the appropriate solution is the definition and realisation of a *common underlying content metamodel* common to all client repositories. Such a content metamodel must be extensible and flexible so as not to limit the content model design of any one client repository, with a robust specification of identifiers for re-use in differing contexts. It must be capable of supporting interoperability between the identifiers used to refer to constituent metadata, and allow existing and future repository content models and definitions for particular collections to be registered and subsequently mapped. The project will gather input and build upon existing research regarding content models within an institutional repository context^{iv} using desk-based research, and the relationships Rightscom and Hull have built with the Fedora development team and connections they themselves have. We would specifically seek synergies with the recent Pathways^v and current ORE^{vi} projects that are building on the development of the aDORe federated repository architecture^{vii}, which highlighted the importance of identifiers in supporting interoperability.

3.3 Persistent Identifier Mediator Service

The persistent identifier mediator service is the integral element of the identifier interoperability solution whose function is to sit as a shared service between ‘client’ repositories, and ensure that various resources – and their constituent metadata elements – which have repository identifiers ‘persistent’ within the context of an individual repository, are available to any other client repository. If the persistent identifier mediator service were to be moved into a production context it will be required to interoperate as a shared infrastructural service within the context of other shared services within the JISC IE, in particular those dealing with user identity and rights of access for particular identified contexts of use.

3.4 Client Repositories

In order to verify and demonstrate the satisfaction of a key identifier interoperability use case, we propose to transfer sets of digital objects from one repository to another, preserving the identity of the relations between them and the resource identifiers themselves. Each repository will not only be realised in a different technology but also be constructed with a different content model that will map into the interoperable

metamodel. This will show how the interoperability solution is able to resolve between identifiers minted for various digital objects within each client repository. We shall also investigate the 'edge cases', where preservation of a digital object is difficult, requires manual intervention, or is completely incompatible. Sample content will be provided by the University of Hull or specifically generated for the project.

4. Project Outputs

4.1 The project will have the following deliverables:

- A prioritised list of use cases and associated reports highlighting the issues surrounding persistent identifier interoperability and how these can be dealt with in the context of digital repositories based on the outcome of two workshops
- A fully working demonstrator that will highlight issues of persistent identifier interoperability and showcase how such interoperability can support repository use and management.
- A final report summarising the discussions and work of the project and capturing its experiences. As well as being a requirement of JISC funding, we regard this final report as a vital contribution to ensuring that the learning from the project is disseminated in tandem with use of the demonstrator.

5. Project Outcomes

5.1 Persistent identifier interoperability is an area of repository management use that is not yet fully understood or put into practice. Why this should be so is uncertain, but may be due to repositories being focused on their own collections and their internal management, where identifier interoperability is not necessarily a high priority. Whilst an internal focus is understandable at a time where many repositories are concentrating on building up their collections, it will be important for repository managers to consider the implications of dealing with the use cases described above, amongst others. Such situations will expose a repository to many different identifiers and an understanding of the issues of interoperability between them will be vital to building wide and heterogeneous collections. Ultimately, the demonstrator will produce insights that will contribute to the development of forward-looking recommendations on repository design and administration, and approaches to supporting repository federation for both for contemporary interoperability and for future preservation.

5.2 It is intended that the project will also generate a wider understanding of the issues surrounding persistent identifier interoperability, and how this interoperability between them can be effectively managed to break down barriers of access across digital repositories. The project will raise awareness of the value of robust and well-defined content models as a mechanism for effective digital content management in general, of which persistent identifiers will be key. An outcome from this awareness raising will be to build confidence in the repository arena for looking externally and developing repository infrastructure on a collaborative basis that can be oiled through persistent identifier interoperability practices.

5.3 The application of persistent identifiers to resources is an area with which the demonstrator will assist. It will be demonstrated how consistent use of persistent identification aids interoperability, and allows value-added services such as aggregations, search services and linking services to provide a more stable and coherent view of repository content. Interoperability between persistent identifiers will enable these user-facing services to become trusted sources of information. Other, more manager-facing,

value-added services, including publishing, statistical and analytical services, will also benefit from increased awareness and use of persistent identifiers.

6. Stakeholder Analysis

Stakeholder	Interest / stake	Importance
Repository managers	Identifier interoperability will facilitate internal repository management by providing consistency across repository contents. It will also facilitate the importing and exporting of content and the management of identifiers already associated with externally sourced content.	High
Repository users	Identifier interoperability will enable more seamless access to repository content across institutions, facilitate connections between digital objects and allow complex objects to be clearly defined and presented.	High
Content owners	Identifier interoperability will allow content owners to present their content more effectively to potential users and to raise awareness of its existence.	Medium
Content aggregators	Aggregators can use identifiers to create aggregations of repository content by reference. Interoperability between identifiers will enable these aggregations to be based on a greater spread of repositories whilst avoiding issues of duplication.	Medium/High
Repository search services	Repository search services may provide access via a search by identifier. Interoperability between identifiers can assist with gathering the results of searching and provide a more comprehensive set of search results to the user.	Medium/High
Linking services	Services that enable links between different sources of content, including repositories, rely on identifying elements of a digital object that can be used to create a link. Identifier interoperability will ease this task by enabling the clear use of identifiers for such linking purposes	Medium/High

7. Risk Analysis

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
Staffing				
Staff retention (Hull)	1	3	3	All proposed staff for the project are in place. Staff will be managed to ensure they are comfortable with the work and to highlight any difficulties early
Staff retention (Rightscom)	2	4	8	All proposed staff for the project are in place. Staff will be managed to ensure they are comfortable with the work and to highlight any difficulties early

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
Staff absence (due to sickness etc.)	1	3	3	The work of the project will be reported and cascaded within both the University of Hull and Rightscom to ensure other staff can pick up the project in case of core staff absence
Impact of other JISC projects (Rightscom)	2	3	6	Rightscom currently has no other projects that would cause any resource conflicts with this one: We believe that we can carry out the project effectively given the timescales and the timescales for other projects with which we are involved. However, we are also involved in tendering or negotiating for other projects: we are not yet certain of the outcome of these negotiations or their potential impact but we will include the delivery of RIDIR as a key factor in our planning. In the unlikely event of resourcing issues, other Rightscom staff understand this field and will be able to assist with the project if necessary, and we also have associates who have worked in this field.
Organisational				
Misunder- standing or disagreement between partners	2	4	8	Partners have established links and a close working relationship to date. Problem reporting within either partner will be encouraged at an early stage to help identify solutions. A consortium agreement will be signed agreeing each partner's role and responsibilities
Breadth of work outgrows project	3	3	9	Ensure initial scoping of the issue and aims of the demonstrator are realistic, in conjunction with JISC
Technical				
Chosen technical platform cannot deliver demonstrator	2	3	6	Previous experience using Fedora to build a demonstrator has proved successful. The Fedora platform will be tested against the Use Cases to ensure that the requirements can be met. Alternative technologies will be reviewed as potential fallback alternatives. The project will use existing relationships with the Fedora core team and developer community to identify and resolve potential issues from an early point in the project.

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
Identifier interoperability not possible (due to incompatibilities etc.)	3	4	12	Highlight potential difficulties early in the project (through the workshops) and identify areas where additional work would be required to support future interoperability
Demonstrator doesn't meet JISC requirements	2	3	6	Early demonstration to JISC to ensure the demonstrator is meeting requirements leaving time to adjust where necessary
Inability to test across multiple repository systems	3	2	6	Base demonstrator around interoperable methods (standards and protocols) to enable demonstration of concepts with bespoke client repositories developed in-house rather than full product installations. (Fedora will be retained as a full client repository installation).

8. Standards

8.1 The demonstrator will use enabling standards and technologies appropriate to the project, but also within the context of the JISC IE and e-Framework. Examples will include the OAI-PMH in the context of resource and repository linkage, and OpenURL for location facilities where some element of user identity may be appropriate. Further examples include METS for a standard "packaging" format for metadata record ingest and XACML for specification of rights in association with resource identifiers should this prove to be a requirement.

8.2 The project will be using a number of persistent identifier standards to highlight the issues of identifier interoperability. These will aim to include identifier standards from the work of ISO TC46/SC9, including ISBN and ISSN, and identifiers used commonly within the digital repository field, including CNRI Handle and PURL/DNS for identity management and resolution services. The use of the info URI and related schemes will also be tested to examine their role in facilitating identifier interoperability. As indicated above, we shall also be using the standards-based Fedora system as the basis of the demonstrator. We strongly anticipate that this standards platform will allow demonstrator artefacts to be reusable within the context of related projects, both within the e-Framework and the JISC IE.

8.3 A full range of relevant identifiers will be considered. The precise range and function of each identifier scheme will be elicited and scoped within the workshop process in WP2. However, we have provided some outline assumptions below, which we will seek to validate within WP2 and ongoing throughout WP3.

8.4 At the heart of the proposal is the recognition that the interoperability of identifiers is facilitated through making explicit the definition of what they refer to. To this end we anticipate an investigation of the W3C standards that address this, primarily RDF (and associated standards such as RDF-S and OWL) and XML/W3C XML Schema Language, both of which use the URIs/IRIs schemes as their basic means of identification. This aspect should also cover the identity issues that exist in introducing referents to other

(potentially physical) entities, such as ISBN, ISWCs and ISANs, should this prove a relevant outcome of the workshops.

8.5 In terms of investigating identifier persistence and resolution mechanisms, we anticipate considering those based on CNRI Handle (such as DOI) as well as DNS and PURL.

8.6 In terms of demonstrating the role interoperating identifiers play between repositories, the proposal recognises the need to mediate between identifiers and their schemes that are locally scoped to a repository implementation, and those designed to be shared. The formulation of practices and schemes that can be used with these repositories is also central to the proposal. We recognise the need to work with existing schemes designed for sharing identified resources, and anticipate investigating compatibility with OAI-PMH and RSS for example.

8.7 Finally, where user identity is concerned, we will investigate federation standards such as Shibboleth to enable interoperability between repository implementations in the context of persistent identifier interoperability for content discovery to delivery.

9. Technical Development

9.1 Development methodology

9.1.1 For the technical development itself we propose to adopt an approach based upon proven open source components to realise functionality where possible, rather than embark on ground-up development. We will take the prioritised use cases identified and adopt a "time-boxing" approach to managing the delivery within the budget available. This will allow the project to focus on delivery of the highest priority Use Cases first, continuing through the lesser priority use cases for the duration of the project.. The demonstrator development itself will adopt an agile methodology, and deliver the demonstrator in iterative cycles, according to the key milestones identified during the user requirements phase. Rightscom personnel have experience in successfully deploying these methodologies on previous development projects.

9.1.2 We do not propose to focus on the demonstration of non-functional requirements, such as scalability, resilience and cross-operating system support, within the scope of this project. However, we do anticipate that the adoption and proper configuration of a recognised production-grade platform will ensure that there is a clear transition path for JISC to move the demonstrator forward into a pilot project or production without undue difficulties. Recommendations on the process to manage such a transition will be provided as part of the final project deliverable.

9.1.3 Following these development principles, the project will adopt the Fedora digital repository system^{viii} as the basis for the demonstrator. Both the University of Hull and Rightscom have extensive knowledge of this system: Hull is basing its institutional repository around Fedora; Rightscom has used Fedora as the basis the JISC-funded TIME project^{ix} and subsequently as an R&D platform and demonstrator for client solutions. The Fedora system is standards-based and provides a platform for testing and demonstrating issues of persistent identifier interoperability that can be adopted within other repository systems. Fedora has been used as the basis for previous demonstrators including, within the aforementioned TIME project, a service-oriented architecture with a front-end application driven by RDF-based metadata, demonstrating interoperability of e-book metadata, and the JISC-funded metadata+ project^x highlighting issues of metadata interoperability for resource discovery. Both projects shared a critical

functional role in terms of metadata interoperability, and independently adopted the same fundamental architecture. We intend to build a successful demonstrator through the learning gained and direct use of the technology elements found to be successful and re-usable within those projects.

9.1.4 The first workshop focus group held in WP2 will provide the initial input to the demonstrator design. From a system design point of view, it will be here that the basic domain requirements and project scope will be elicited, allowing assumptions made within the proposal will be validated at an early stage. A draft sketch of the technical architecture will then be formulated and subsequently refined by input from the second workshop discussions. Following the workshops a draft prioritised list of use cases and an accompanying draft report will be produced; these will be discussed with one or more domain experts by telephone before the final versions are published. [This replaces the method put forward in the project proposal to conduct a wider range of telephone interviews. Ultimately this was felt to be too time consuming in a short project.]

9.1.5 In general, the development during WP3 will be conducted in an iterative fashion, taking advantage of the benefits to risk management and maximising productivity offered through established agile development techniques. Agile projects are characterised by early releases, regular testing (including testing of assumptions), low-formality project management and factoring back into the design learning gained throughout the development process. This will also help the project benefit from factoring in developments else where in the repository and open source community, both Fedora and elsewhere.

9.1.6 WP3 will start with a refinement of the architecture during an 'elaboration phase'. Also during this phase, any prototyping, technical research and experimentation will be conducted. The phase will complete after approximately 4-6 weeks with a more detailed design and any prototype work (prototypes are not intended to be carried through into the demonstrator build proper, but are designed to help understand better any relevant areas).

9.1.7 The remainder of the development will consist of regular releases according to iteration lifecycles; we would anticipate a release every month after the 'elaboration phase'. The final iteration would be considered a 'transition phase', where the release is prepared for delivery to JISC.

9.2 Project Environment and Support Tools

9.2.1 Rightscom has existing tool support for distributed working environment through web-based applications. This includes bug/issue tracking, available to the project team as a whole during test phases via Rightscom's extranet facilities. We will use our integration server environment to support continuous testing of the overall system, and standard functional unit tests will be conducted. Software will be developed and tested using specific tools for the Orbeon Presentation Server (OPS) XML (as used within the TIME project) and other server-side components, web applications and workflows, and custom code, within the industry-standard Eclipse integrated development environment. Aspects of development and non-functional testing such as security and scalability will use staging servers within virtual networks built using Rightscom's existing VMware Server^{xi} installation.

9.2.2 Subject to JISC approval, we propose to deliver the demonstrator as a readily-built networked server environment based on executable VMWare virtual machines, as for the TIME demonstrator test-bed. There is a significant cost reduction associated with this approach as installation, hosting and support is not required: the entire environment

is accessible by loading the pre-built virtual machines, which run on any major contemporary operating system and system hardware without a licence fee.

10. Intellectual Property Rights

The University of Hull and Rightscom retain rights in all outputs in accordance with the terms of the partnership agreement to be agreed at the start of the project. In accordance with the Terms & Conditions of JISC grants, all project outputs will be made available, free at the point of use, to the UK HE and FE community in perpetuity, and may be widely disseminated in partnership with the JISC. The demonstrator will be packaged for use in JISC dissemination under these terms, but as a demonstrator will not require a specific open source license. Elements embodied within the demonstrator may themselves be the subject of open source licences which will need to be respected.

Project Resources

11. Project Partners

11.1 University of Hull

Project management, workshops, dissemination and evaluation

Contact: Ian Dolphin, Project Director (i.dolphin@hull.ac.uk)

11.1.1 Richard Green, IT Consultant (subcontractor)

Project management and coordination on behalf of the University of Hull.

Contact: Richard Green, Project Manager (r.green@hull.ac.uk)

Note: This is the main project contact

11.2 Rightscom Limited

Workshops, technical development, dissemination and evaluation

Contact: Hugh Look, Senior Consultant (hugh.look@rightscom.com)

11.3 Consortium Agreement

The Consortium Agreement will be signed on 26th April 2007.

12. Project Management

12.1 University of Hull based staff

Ian Dolphin, Project Director	i.dolphin@hull.ac.uk	
Richard Green, Project Manager (0.5FTE)	r.green@hull.ac.uk	(subcontractor)
Chris Awre, Repository Domain Specialist	c.awre@hull.ac.uk	

12.2 Rightscom Limited staff

Hugh Look, Workshops management	hugh.look@rightscom.com
Mark Bide, Identifier Consultant	mark.bide@rightscom.com
Martin Dow, Lead Software Architect and Developer	martin.dow@rightscom.com

12.3 Training needs

The project has no currently identified training needs.

13. Programme Support

The project team would be grateful if the JISC would:

- provide adequate advanced notice of programme meetings and non-standard reporting requirements

- provide a facility for interaction with other projects in this and related programmes
- identify potential areas of collaboration or communication with projects in other programmes
- formally support the establishment of links with other initiatives

14. Budget

See Appendix A

Detailed Project Planning

15. Workpackages

See Appendix B.

16. Evaluation Plan

Timing	Factor to Evaluate	Questions to Address	Method(s)	Measure of Success
June/July 2007 (following workshops)	Usefulness of workshops		Participant questionnaire	Positive response
June/July 2007 (following workshops)	Draft use cases and report	Coverage, prioritisation	Telephone conversation with domain expert(s)	Positive response
10/2007 - 03/2008	Effectiveness of demonstrator		Stepped evaluation of technical work	Peer comment

17. Quality Plan

Output	D1 Use cases and report on workshop findings				
Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities	Quality tools (if applicable)
May and June 2007	Usefulness of workshops	Participant questionnaire	Positive response	HL with RG and CA	
May and June 2007	Use cases and report	Peer review by telephone	Positive response	HL with RG and CA	

Output	D2 Demonstrator				
Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities	Quality tools (if applicable)
10/2007 - 3/2008	Fitness for purpose	User testing and development	Successful interoperation	MD with development team	

Output	D3 Full report on Project findings				
Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities	Quality tools (if applicable)
3/2008	Fitness for purpose	Peer review	Positive comment	RG with CA, HL, MD	

18. Dissemination Plan

18.1 The purpose of this project is to demonstrate persistent identifier interoperability and the issues related to this. As such, dissemination is at the core of the projects aims.

18.2 Dissemination will take place in two phases, relating to the two major workpackages within the project.

- The workshops will disseminate the aims and objectives of the project as the basis for gathering views and input to assist in the development of the demonstrator. The reports from these workshops will also help to further disseminate the aims and objectives, whilst also disseminating the accumulated knowledge gathered from the discussions.
- The demonstrator will be provided to the JISC for use in dissemination activities as required. Project staff will be available to assist with these demonstrations for the duration of the project and welcome discussions with the JISC on potential involvement in subsequent dissemination activities.
- Documentary outputs from the project will be made available through the JISC and a project website.

18.3 It will be important in considering dissemination to address the needs of the identified stakeholder groups and recommendations will be made of potential routes to enable this. This analysis will also guide the development of the demonstrator to ensure that this clearly addresses and can meet the needs of stakeholders.

Timing	Dissemination Activity	Audience	Purpose	Key Message
April 2007	A project website will be established and updated regularly.	Community	Awareness Inform Engage Promote	Information about RIDIR and identifier interoperability

Timing	Dissemination Activity	Audience	Purpose	Key Message
As appropriate	Appropriate papers at conferences/meetings in the following areas: repositories (eg Open Repositories 2008), Fedora (eg Fedora UK & Ireland User Group), information management, SOA, web services, academic publishing	Repository managers; repository users; content owners	Engage Promote	Information about RIDIR and identifier interoperability
JISC calendar	Programme meetings	JISC Repository managers; repository users; content owners	Engage Promote	Sharing experience
As appropriate	Article in an appropriate journal, eg Ariadne	Repository managers; repository users; content owners	Inform	Information about RIDIR and identifier interoperability
As appropriate	Engagement with other projects within the D2D group of JISC projects and others as communicated by the Programme Manager	Community; Repository managers; repository users; content owners	Awareness Inform Engage Promote	Information about RIDIR and identifier interoperability and its importance across domains of practice
As appropriate	Engagement with repositories, especially Fedora, and broader Open Source communities via conferences, meetings and discussion lists	Community; Repository managers; repository users; content owners	Awareness Inform Engage Promote	Information about RIDIR and identifier interoperability

19. Exit and Sustainability Plans

19.1 The documentary outputs from the project will, as indicated above, be made available through the JISC and a project website for ongoing reference. This will address the sustainability of the workshop reports and the final report capturing the experience and learning of the project. The persistent identifier interoperability demonstrator to be developed will be delivered to the JISC in a format that allows it to be used as required beyond the project's lifetime. The demonstrator itself will thus be sustainable to a point where developments have occurred that supersede the value of the demonstrator. The project is structured so as to provide a clean exit with sustainability for each of the project outputs planned as described above. Where additional work is identified that will be of value to extend or follow on from the current project, discussions with the JISC will take place to scope and define how this should be taken forward.

Project Outputs	Action for Take-up & Embedding	Action for Exit
Reports	Effective dissemination within JISC and the wider repositories community	Ensure final versions on website
Demonstrator	Fully working, self-contained demonstrator passed over to JISC	Ensure copies of demonstrator available as planned

Project Outputs	Why Sustainable	Scenarios for Taking Forward	Issues to Address
Reports	Ongoing usefulness; promotion of the issues of identifier interoperability	Project and JISC websites	
Demonstrator	Ongoing usefulness; promotion of the issues of identifier interoperability	Distribution as directed by the JISC	

Appendixes

Appendix A. Project Budget

	JISC contribution requested			Institution contribution			Total
	YR1	YR2	YR3	YR1	YR2	YR3	
Staff							
Project manager 0.5 FTE - subcontractor							
Lead architect and developer (29 days - Rightscom)							
Workshop planner and facilitator (11 days - Rightscom)							
Domain specialist (6 days - Rightscom)							
Development team (43 days - Rightscom)							
VAT on Rightscom staff time and costs							
Project Director (0.05FTE)							
Domain specialist (0.1FTE - Hull)							
Travel & Subsistence (inc dissemination)							
Workshops							
Other							
Estates							
Indirect costs							
Total							
Total requested from JISC							

A1.1 No requested FEC component is factored into this budget as there will be no directly incurred funding for staff members directly employed at the University of Hull. Ian Dolphin and Chris Awre's time does attract an FEC component, but this is included within the institutional contribution to the project.

Appendix B. Workpackages

RIDIR Project April 2007 - March 2008		2007									2008		
		A	M	J	J	A	S	O	N	D	J	F	M
		1	2	3	4	5	6	7	8	9	10	11	12
WP1	Project management												
WP2	Workshop focus groups												
	D1 Report from first workshop												
	D2 Report from second workshop												
WP3	Demonstrator development												
	D3 Fully working demonstrator												
WP4	Dissemination and evaluation												

Workpackage and activity	Earliest start date	Latest completion date	Outputs	Milestone	Responsibility
YEAR 1					
WORKPACKAGE 1:	01/04/07	31/03/08			RG, CA, ID, HL, MB, MD
<i>Project management</i>					
1. Interim project report				31/09/07	RG, MD
2. Final project report and completion report				31/03/08	RG, CA, ID, HL, MB, MD
3. Establish internal mailing list				17/04/07	RG
4. Establish internal wiki				27/04/07	MD

Workpackage and activity	Earliest start date	Latest completion date	Outputs	Milestone	Responsibility
WORKPACKAGE 2: Workshop focus groups	01/04/07	31/07/07			HL, MB, RG, CA
5. Liaison with PILIN Project (DEST)				26/04/07	
6. Identify first workshop participants				16/04/07	
7. First workshop	May 2007			end May 2007	
8. First workshop interim report				mid June 2007	
9. Identify second workshop participants	July 2007			16/04/07	
10. Second workshop				end June 2007	
11. Second workshop interim report				early July 2007	
12.			Prioritised list of use cases and associated report based on the outcomes of the two workshops	31/07/07	
WORKPACKAGE 3: Demonstrator development	01/08/07	31/03/08			MD, RDT, RG
13. Development work				Start meeting mid 07/07 - will also fix future review meetings	MD and RDT
14.			Fully working demonstrator with accompanying documentation and report	31/03/08	MD, RDT, RG

Workpackage and activity	Earliest start date	Latest completion date	Outputs	Milestone	Responsibility
WORKPACKAGE 4: <i>Dissemination and Evaluation</i>	01/05/07	31/03/08			RG, CA, HL, MB, MD
15. Dissemination opportunities for the project outputs will be sought, whilst evaluation of the project will be undertaken through peer review of both the discussions within the workshops and presentation of the final demonstrator.			Dissemination opportunities and wide awareness of the project's work		All
16.			Project website	21/04/07	RG

University of Hull

ID Ian Dolphin, Project Director
 RG Richard Green, Project Manager (0.5FTE)
 CA Chris Awre, Repository Domain Specialist

Rightscom Limited

HL Hugh Look, Workshops management
 MB Mark Bide, Identifier Consultant
 MD Martin Dow, Lead Software Architect and Developer
 RDT Rightscom development team

References

- ⁱ http://www.jisc.ac.uk/uploaded_documents/RIVER%20Final%20Report.pdf
- ⁱⁱ Paskin N (April 2006) "Identifier Interoperability: A Report on Two Recent ISO Activities" *D-Lib Magazine* 12.4 <http://www.dlib.org/dlib/april06/paskin/04paskin.html>
- ⁱⁱⁱ Giving full recognition to the work of FRBR and the <indecs> project
- ^{iv} For discussions of content models in the context of reuse of "semantic" identifiers, see <http://www.ukoln.ac.uk/nkos/nkos2006/presentations/kruk.pdf> and <http://www.fedora.info/presentations/cmodel-intro.ppt> within the context of the Fedora architecture.
- ^v The Pathways project, <http://www.infosci.cornell.edu/pathways/>
- ^{vi} The Object Re-use and Exchange project, <http://www.openarchives.org/ore/>
- ^{vii} The aDORe archive architecture, <http://african.lanl.gov/aDORe/projects/adoreArchive/>
- ^{viii} Fedora, <http://www.fedora.info/>
- ^{ix} TIME project, final report, http://www.jisc.org.uk/uploaded_documents/TIMEfinalreport24apr2006.pdf
- ^x metadata+ PALS II project, http://www.jisc.ac.uk/whatwedo/programmes/programme_pals2/project_metadata_plus.aspx
- ^{xi} VMware Server, <http://www.vmware.com/products/server/>