

JOINT INFORMATION SYSTEMS COMMITTEE

JISC Circular 04/06 : Appendix F

Virtual Research Environments Programme Phase 2: Pilot, Further Development and Integration Projects

Summary

- F1. JISC invites proposals for projects to pilot Virtual Research Environments (VREs) in authentic single-discipline or inter-disciplinary research settings to support and enhance collaborative research practice, and to undertake further development and integration of such technologies. Proposals are welcome from individual organisations or partnerships that meet the eligibility criteria in the main text of the call. Projects are expected to start in March 2007 and to finish no later than 31 March 2009.
- F2. Total funding of £1.6 million is available for this work, including contributions to full economic costing. It is anticipated that around three or four projects will be funded as part of Phase 2. If JISC does not commission the full amount of funding under this call, another call will be issued in 2007 to address any remaining gaps.

Call	Theme/context	Description	Funds	See
I	VRE Phase 2: Pilot, Further Development and Integration Projects	Projects which pilot, with a wide range of users in authentic research settings within HE institutions in the UK and partner organisations. Proposals to develop VRE solutions that support a complete research execution or research administration life cycle are also encouraged.	Total funds around £1,600,000 3 to 4 projects March 07 – March 09	F3 - F63

This appendix must be read in conjunction with the main body of JISC Circular 4/06 which can be found at: http://www.jisc.ac.uk/funding_circular04_06

Structure of this document:

Summary.....	1
Background.....	2
Aims and Scope of Phase 2 of the VRE Programme.....	2
Programme Outcomes and Benefits.....	3
VRE Development Model.....	3
Stakeholder Analysis and Impact Cycle.....	5
Pilots.....	5
VRE Construction Cycle.....	6
Call I – VRE Phase 2 Nature and Scope of Projects Sought.....	6
Timescale and Budget.....	12
Structure of Proposals.....	12
Submission of Proposals.....	12
Further Information.....	12
Virtual Research Environments Proposal Coversheet.....	13

Background

- F3. In 2004, JISC commissioned its Virtual Research Environments (VRE) Programme. The primary aim of the programme was to build and deploy collaborative VREs, bringing together tools and technologies to demonstrate how researchers can better manage their increasingly complex tasks.
- F4. A VRE can be defined as a set of online tools and other network resources and technologies interoperating with each other to support or enhance the processes of a wide range of research practitioners within and across disciplinary and institutional boundaries. VREs go beyond providing researchers with easy access to data, applications and computational resources; instead they facilitate mobile and distributed researchers, research teams and communities in conducting activities, such as shared problem-solving and shared experimentation. A key characteristic of a VRE, therefore, is that it facilitates collaboration amongst researchers and research teams, providing them with more effective means of collaboratively collecting, manipulating and managing data, as well as collaborative knowledge creation.¹
- F5. Phase 1 of the programme runs from November 2004 to December 2007. To support collaborative research, the JISC VRE Programme is developing generic and domain-specific applications and tools that will allow researchers to perform a variety of tasks. These include collaborative document creation and editing, shared electronic logbooks, as well as remote access to data and computational resources. Some of these tools are being integrated with existing frameworks, such as Sakai. Others are enabling the integration of various resources such as databases, portals and web services with existing technologies, including wireless devices, the Computational and Access Grids.
- F6. A complete list of the current projects is available at http://www.jisc.ac.uk/programme_vre.html
- F7. Further information on the VRE solutions emerging from the current projects and how to access them is available at http://www.jisc.ac.uk/vre_solutions.html

Aims and Scope of Phase 2 of the VRE Programme

- F8. This call aims to build on the current phase of the programme. Therefore, proposals to pilot emerging VREs into authentic research contexts and to further develop and integrate these solutions into interoperable VREs are sought.
- F9. The key aims of Phase 2 are:
- To start deploying VRE solutions amongst the wider HE community, and to stimulate change in research practices through the exploitation of such solutions;
 - To continue involving and engaging the research community in building interoperable VRE solutions;
 - To continue raising awareness of the benefits of VRE solutions amongst stakeholders and the wider research community.
- F10. The focus of Phase 2 will be on pilots, with a wide range of users in authentic research settings within HE institutions in the UK and partner organisations. This would include large- and small-scale pilots addressing real user needs. The applicability and fitness for purpose of emerging VRE solutions to a wider range of research settings needs also to be established, and projects are encouraged to conduct pilots in settings other than the ones for which they have been developed. Proposals to develop VRE solutions that support a complete research execution or research administration life cycle are also encouraged.

¹ From *VRE Programme Phase 2 Roadmap*, June 2006, http://www.jisc.ac.uk/pub_vreroadmap.html.

F11. Proposals that simply continue or replicate current VRE activities will not be supported. Current VRE projects wishing to bid under the second phase of the Programme should clearly explain how the proposed activities extend current ones and address the lessons learned from Phase 1.

F12. More information on the current vision for VREs and the scope of the programme can be found in the VRE Programme Phase 2 Roadmap (http://www.jisc.ac.uk/pub_vreroadmap.html).

Programme Outcomes and Benefits

F13. The anticipated outcomes of Phase 2 of the programme are:

- Piloted VRE solutions that support collaborative research practices within and across subject disciplines and institutions;
- New skills and knowledge of researchers on how to adopt VRE technologies to support their work;
- Capabilities within participating institutions to deploy VREs to support research practice;
- Increased awareness of the capabilities of VRE solutions and their impact on research practice amongst key stakeholders and the wider research community.

F14. The anticipated benefits of Phase 2 of the programme are:

- Increased understanding of user needs, institutional, technical, social and cultural factors influencing the adoption and deployment of VRE solutions within single-discipline and inter-disciplinary research settings within single institutions and across institutions;
- Enhanced interactivity between researchers participating in pilots and increased efficiency and effectiveness of collaborative research processes;
- Enhanced knowledge of the application and impact of deploying VRE solutions in the HE community.

VRE Development Model

F15. Bidders are encouraged to consider the VRE Development Model, illustrated in Figure 1, and demonstrate in their proposals how their development approach maps onto the different processes of the model.

F16. The development model, depicted in Figure 1, suggests a user-driven approach to building VRE solutions, which is based on a profound understanding of the needs and requirements of the target user group and the context of use. The proposed approach takes elements from established software development methodologies, particularly Participatory Design,^{2,3} and Rapid Application Development.⁴ The combination of these emphasises an evolutionary approach to development where users and developers collaborate closely and share common understanding of the application being developed, thus leading to better quality and fitness-for-purpose of the software produced.

F17. The model has three main interconnected elements:

- Stakeholder Engagement Cycle;
- Pilots;
- VRE Construction Cycle.

² Schuler, D. & Namioka, A. (1993). *Participatory design: Principles and practices*. Hillsdale, NJ: Erlbaum.

³ Binder, T., Gregory, J. & Wagner, I. (eds) (2002). *Participation and Design: Inquiring Into the Politics, Contexts and Practices of Collaborative Design Work*. *PDC 2002 Proceedings of the Participatory Design Conference*. June 23–25, Palo Alto, CA: CPSR.

⁴ McConnell, S. (1996) *Rapid Development: Taming Wild Software Schedules*. Redmond, WA: Microsoft Press.

F18. It needs to be highlighted that this is a generic model that describes design and development principles and good practice. Projects are invited to adapt the model to suit their specific development requirements, so long as the three main elements are retained.

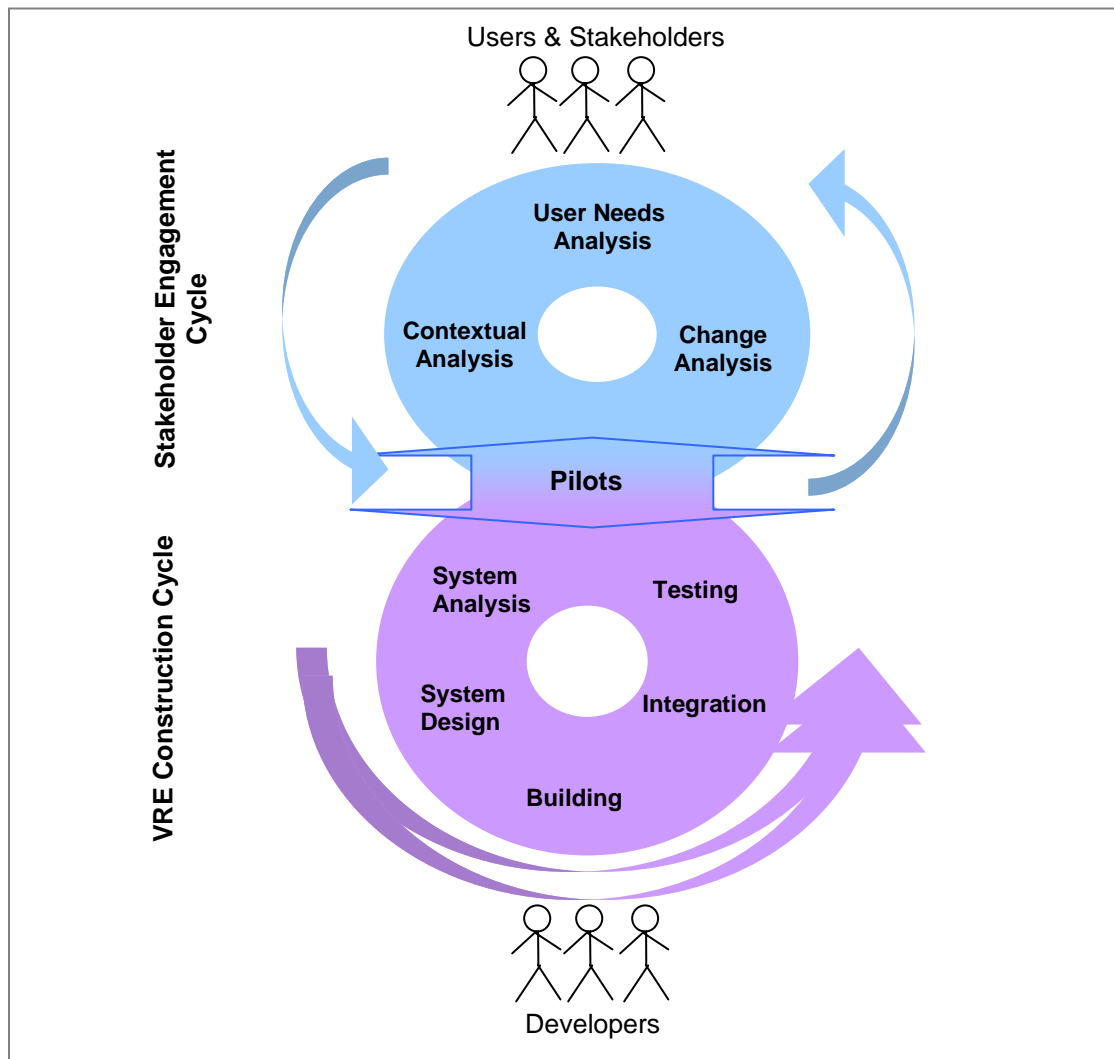


Figure 1: VRE Development Model

F19. The overall principles of the model are described below, followed by a definition of individual elements and processes.

F20. Pilots within authentic research settings are seen as central in the development model, as this is the stage when the VRE solutions are validated against the initial user requirements, new requirements are elicited, and adoption and deployment barriers come to the surface.

F21. The top cycle, called the Stakeholder Engagement Cycle, represents activities that lead to:

- Greater understanding of what the needs of researchers are;
- What factors within the research context can influence the use and deployment of VRE technologies;
- What impact the adoption of VREs has had on research practices.

F22. The bottom cycle, called VRE Construction Cycle, represents activities closely related to how VRE solutions are built and prepared for piloting.

F23. The three elements are interconnected, i.e. they are intended to inform each other and depend on each other. The arrows around the model indicate a suggested direction and sequence of activities. The double-arrow around the VRE Construction Cycle represents that a number of development and deployment cycles could be implemented to suit a rapid style of development. The model aims to facilitate an evolutionary and incremental development of VRE solutions with the active participation of users and other stakeholders throughout the development.

F24. Each project would be required to complete at least one full cycle along the proposed model.

Stakeholder Analysis and Impact Cycle

F25. There are three stages within this cycle (Figure 1).

User Needs Analysis

F26. Understanding the needs and requirements of the target audience is considered very important. In this stage detailed user requirements are elicited, including those of individual researchers and research teams as a whole. Analysis of research practices and types of collaboration in which researchers engage, as well as group dynamics and social aspects of research collaboration will also be conducted in this stage.

Contextual Analysis

F27. This stage will examine the broader environment in which the target audience operates, including the technical, legal, disciplinary and cultural factors that impact on their work, together with issues arising from the inter- and intra-organisational nature of research collaboration. Barriers to the deployment and adoption of VREs in the chosen environment will also need to be investigated and actions for their mitigation identified. It is likely that a range of stakeholders will need to be consulted in this process.

Change Analysis

F28. In this stage qualitative and quantitative evidence should be sought to establish what impact the adoption of VREs has had on research practice and the productivity of researchers. A range of methods could be used to achieve this, including longitudinal ethnographic user studies that include a wide range of users.

Pilots

F29. Pilots can be conducted as soon as user requirements have been identified and contextual analysis has been performed by using existing VREs and other suitable tools that meet the needs of users. Pilots can be staged to include the testing of only some of the tools or services or initial versions of stable software first, followed by subsequent releases of new tools, services or improved versions of the software.

F30. The pilots can include three stages:

- Pilot Preparation: this includes system installation, technical and architectural set up on the user site if necessary, user training, and any other steps needed to prepare the VRE for usage.
- Pilot Implementation: where users use the VRE in their authentic environment over a period of time.
- Pilot Evaluation: this is a crucial step as it comprises the collection of feedback from users and other stakeholders on the use of the VRE and its impact on their work and the wider environment. The information collected in this stage feeds into both the top and bottom cycles. Firstly, it can be used to identify usability problems, technical bugs, and additional requirements that feed into the development and incremental

improvement of the software. Secondly, it aims to assess adoption barriers, and feed into the research practice change analysis.

F31. Multiple pilots with different user groups could also be included.

VRE Construction Cycle

F32. The construction of the VRE should be guided by the user needs and contextual analyses conducted in the Stakeholder Analysis and Impact Cycle (Figure 1), as well as the results from the pilot evaluation. To ensure that the VRE meets the requirements of the target audience, selected users can be involved in the System Analysis and Design stages, where the system is specified and its architecture created.

F33. VREs can be built using existing components or services either from within the current VRE solutions or the wider e-framework. New tools and functionality should be developed only in cases where significant gaps have been identified and no existing open source tools or services exist. To suit a rapid style of development, projects should strive for short releases (eg every 8–12 weeks). Updates and bug fixes should also be made more frequently, especially during the pilot periods. As the software will be used in real-life conditions, its components must meet higher standards of quality, which puts an additional emphasis on the quality of the technical design as well as on system testing.

F34. Integration is also an important stage in this cycle to ensure the interoperability of tools, services and other VRE components. Early this year, JISC commissioned the 'VRE Tools and Resources Interoperability' project (<http://www.hull.ac.uk/esig/eress.html>), which started in March 2006 and will run alongside all projects funded under this call to support them in the adoption of interoperability standards, specifications and good practice.

F35. Finally, to prepare VRE solutions for wider take-up appropriate system documentation and user manuals will need to be created in this cycle.

Call I – Nature and Scope of Projects Sought

Project Scope

F36. Proposals are invited to develop and pilot of Virtual Research Environments in authentic single-discipline or inter-disciplinary research settings to support and enhance collaborative research practice, and for further development and integration of such technologies.

F37. Projects must:

- Address the strategic aims of this call and fall within the specified scope (paragraphs F8–F12)
- Conduct activities along the full VRE development model (paragraphs F15–F35) and produce the deliverables and outcomes suggested in Table 1
- Follow the recommendations regarding consortia and team structure (paragraphs F40–F42)
- Work within a service-oriented approach and be compliant with the e-Framework for Education and Research (paragraphs 45-53)
- Use open standards where appropriate and normally be open-source unless a case is made to the contrary (paragraphs F54–F55) and follow the guidance provided by the VRE Tools and Resources Interoperability project <http://www.hull.ac.uk/esig/eress.html>

Project Structure, Deliverables and Outcomes

F38. This circular invites proposals for projects to conduct activities along the VRE development model, as described in paragraphs 15–35, and complete at least one full cycle within the model. Where gaps are perceived as a result of this call, JISC reserves the right to issue a further call for supplementary activities to complement the activities funded under this call. Further projects commissioned will be required to work collaboratively with projects commissioned under this circular.

F39. Table 1 below describes some of the expected outputs and desired outcomes within each stage of the VRE development model. These are only examples and bidders are encouraged to use them as a guide.

Table 1: *Example Project Outputs, Outcomes and Quality Expectations*

Activity/Stage	Outputs	Outcomes	Quality Expectations
Stakeholder Analysis and Impact Cycle (Figure 1)			
User Needs Analysis	– Use case scenarios, user needs and requirements, including collaboration, social and cultural requirements.	– In-depth understanding of the needs and requirements of target audience and the nature of their work. – Knowledge of social and cultural requirements for collaboration.	– Adopt established user needs analysis methodologies and apply good practice in the area.
Contextual Analysis	– Accounts of technical, institutional, disciplinary and environmental factors and requirements for VRE deployment & adoption. – Accounts of issues relevant to intra- and inter-institutional use and implementation of VREs.	– Greater understanding of the context of research and the broader institutional setting. – Better preparedness to mitigate adoption & deployment barriers.	– Adopt established contextual analysis methodologies and apply good practice in the area.
Change Analysis	– Qualitative and quantitative accounts of the impact of VRE technologies on the productivity and research practices of the target audience. – Success stories & lessons learned.	– Increased understanding of the potential of VREs to enhance and facilitate collaborative research practices.	– Adopt appropriate methodologies and apply good practice in the area.
Pilots			
Pilot Preparation	– Technical, infrastructural and policy capabilities within pilot institutions for the deployment of VREs.	– Greater capacity for VRE deployment within target institution/s. – New skills and knowledge needed	– Timely installation and set-up. – Quality of training.

Activity/Stage	Outputs	Outcomes	Quality Expectations
	<ul style="list-style-type: none"> – VRE installations and set-up. – Pilot evaluation criteria and methodologies. – Guidance on issues of adoption and embedding VRE solutions. 	by the target audience to use VREs.	
Pilot Implementation	<ul style="list-style-type: none"> – Accounts of the implementation and validation of collaborative VREs in authentic research settings. 	<ul style="list-style-type: none"> – Improvements in the practice of target audience as a result of the exploitation of VRE solutions in their authentic work environment. 	<ul style="list-style-type: none"> – VRE implementations must support the research practices of the target audience. – Provision of appropriate technical support.
Pilot Evaluation	<ul style="list-style-type: none"> – Evidence of the effectiveness of the pilot. – Feedback from users. – Feedback from other stakeholders. 	<ul style="list-style-type: none"> – Better understanding of the match between user, social and other requirements and VRE design and implementation. 	<ul style="list-style-type: none"> – Adopt established evaluation methodologies and criteria created during Pilot Preparation.
VRE Construction Cycle			
System Analysis	<ul style="list-style-type: none"> – Specifications of VRE solutions. – Reports from the assessment and benchmarking of existing tools, service specifications and components (eg those gathered in the e-Framework). 	<ul style="list-style-type: none"> – Informed decisions as to the best features to build into a VRE. 	<ul style="list-style-type: none"> – Adopt established methods and good practice.
System Design	<ul style="list-style-type: none"> – VRE architectures. – Design diagrams. 	<ul style="list-style-type: none"> – Informed decisions as to the best design and architecture of a VRE. 	<ul style="list-style-type: none"> – Adopt established design techniques and good practice. – Use a unified design notation.
Building	<ul style="list-style-type: none"> – Tools, services and other resources for collaborative work in distributed VREs settings. – System documentation. – User manuals and training materials. 	<ul style="list-style-type: none"> – Collaborative VRE solutions that address user and other requirements. 	<ul style="list-style-type: none"> – Implement appropriate (service) standards. – Work in cooperation with VRE Tools and Resources Interoperability Project. – Make use of versioning tools. – Compliance with JISC Open Source Strategy.
Integration	<ul style="list-style-type: none"> – Integrated VRE tools, services and 	<ul style="list-style-type: none"> – Interoperable VRE solutions addressing 	<ul style="list-style-type: none"> – Adopt a service-oriented approach.

Activity/Stage	Outputs	Outcomes	Quality Expectations
	other resources, to be submitted to the e-Framework.	the needs of the target audience.	<ul style="list-style-type: none"> – Compliance with appropriate standards. – Work in cooperation with VRE Tools and Resources Interoperability Project. – Compliance with JISC Open Source Strategy.
Testing	– Test plans and test reports pertinent to the type of test conducted.	– VRE solutions of proven technical quality.	<ul style="list-style-type: none"> – Adopt established methodologies and apply good practice in the area. – Implementation of JISC Software Quality Assurance Guidance.

Nature of the Bidding Consortia and Teams

F40. Proposals are welcome from individual institutions or consortia of institutions that meet the eligibility criteria specified in the main text of the circular.

F41. To effectively complete all stages within the VRE Development Model, multidisciplinary teams with relevant expertise will be required. The level of user engagement needed will also necessitate the involvement of a usability specialist, ethnographer or a professional with similar skills.

F42. Finally, to ensure that user needs are leading the development of VRE tools and the buying-in of users and institutional stakeholders, leadership from a pilot institution or a discipline-based research group is strongly encouraged.

Technological Approach to be Employed

Technical Characteristics of VREs

F43. The key generic technical characteristics that a VRE should exhibit include:

- Distributed: Facilitate the mobility of researchers in a cross-institutional and possibly cross-national environment;
- Usable and accessible: Be designed to meet user requirements and address usability and accessibility guidelines and standards;
- Modular: Be based, as far as possible, on loosely-coupled, distributed, interoperable services, rather than a monolithic piece of software;
- Interoperable: Enable the seamless integration of the diverse range of VRE applications, tools, services and other resources;
- Extensible: Be extensible with enhanced or new tools by any developer, through use of existing and emerging standards. It should be as easy as possible to make existing software and services, including proprietary software, compatible with the VRE;
- Based on open standards: Adopt and use appropriate open standards wherever possible;

- Secure and trustworthy: The VRE components should interoperate with federated cross-institutional authentication and authorisation mechanisms;
- Customisable: Support tailoring of the environment by individuals or groups to reflect their interests and preferences.

F44. Because the building of a sustainable and portable infrastructure is so important, and because VREs need to function in a heterogeneous and distributed context, a dedicated service project is available to help with the implementation of web services and other interoperability specifications and technology. Successful projects will be required to collaborate with the 'VRE Tools and Resources Interoperability' project and follow the guidance provided on the project's wiki <http://www.hull.ac.uk/esig/eress.html>. In addition, bidders should work with the National Grid Service (www.ngs.ac.uk) to ensure that developments can both inform and remain consistent with emerging national and international e-infrastructures and that, where appropriate, developed services can be supported beyond the life time of the projects.

e-Framework

F45. The e-Framework for Education and Research is an international initiative, by JISC and Australia's Department of Education, Science and Training (DEST), to explore the potential benefits of applying a service-oriented approach to the provision of ICT infrastructure for education and research, and where successful to support its broader adoption by institutions and their suppliers (see: e-Framework Overview Briefing⁵).

F46. Its main provision is an evolving knowledge base, presented as the e-Framework web site, containing information and links to further information on services and their effective use. There is thus technical information about open service standards covering pre-specification prototypes, specifications and standards under development, those being implemented and those in general use. There is also information about the usage of services, the domains and context of use, the human level, tasks and processes being supported, scenarios and case studies of how humans make use of service-based applications to accomplish these and technical information about the ways in which the services were brought together (see: Domain, Process and Service Models Briefing⁶).

F47. These two aspects interact and are expected to evolve as it becomes clear which areas benefit most from a service-oriented approach, and which less. Also commonalities across tasks will refine the services that support them and the provision of services will enable more flexible implementations that allow new practices and processes to evolve.

F48. Projects are expected to work within the e-Framework by making use of its available information and by contributing to its further development, with the emphasis on the latter in the early stages. How this happens will depend on the nature of the project.

F49. Where projects carry out technical development, this should be done within the service-oriented approach of the e-Framework, and, where possible, should expose and consume functionality via Web Services (SOAP or REST). However, other technical approaches are permissible, where appropriate, eg where existing standards are already in use (such as Z39.50), or where Web Services do not yet meet performance or functional needs (such as for secure transactions) (see: Web Services & SOA Briefing⁷).

F50. Other projects that will not be providing services themselves are encouraged to use web service-enabled tools and applications within their own environment. All projects should be able to contribute to the knowledge base that the e-Framework is developing. This can include domain, practice and process models, scenarios and use cases, and good practice guidelines on the internal and cross-institutional implementation of the

⁵ e-Framework and SOA Briefing http://www.jisc.ac.uk/circular04_06_briefing_papers

⁶ e-Framework DP and SM Briefing http://www.jisc.ac.uk/circular04_06_briefing_papers

⁷ e-Framework Web Services and SOA Briefing http://www.jisc.ac.uk/circular04_06_briefing_papers

technology, as well as information about the service definitions they have used or developed.

- F51. At the interface between users and services there is emerging a thinner but more flexible and capable technical user environment layer. This is taking two forms: the continued development of portal technology and the so-called rich client platform. Both of these provide a capable plug-in software framework that can take much of the work out of developing the user interface, allowing concentration on the coordinating functionality of the tool or application (see: Service Oriented Application Integration Layer Briefing⁸).
- F52. The goal is both to record relevant project outputs and outcomes, in order to support those seeking to implement a service-oriented approach. By sharing developments and experiences internationally, we hope to be able to do this more effectively and rapidly than if done alone, and by developing and adopting open standards, establish a wider and more open market enabling costs to be reduced.
- F53. Where appropriate, all projects will contribute the following to JISC and the e-Framework:
- Domain maps that reflect consensus-based practices, processes and supporting systems. These will take the form of a functional specification and technical architecture model of the services and components.
 - Service usage models (SUMs). These provide a description of the needs, requirements, workflows, management policies and processes within a domain and the mapping of these to a design of a structured collection of service genres, service expressions and other resources, that can be used to implement software applications within the domain.
 - Services – where not already recorded in the e-Framework, additional service genres or expressions identified in the course of the projects, or any emergent interoperability specifications that could become part of a service expression, should be contributed.

Open Standards

F54. Interoperability and data transfer are key to the VREs, and projects are expected to address these issues. Open standards should also be used wherever possible, and any deviation from these should be justified in the proposal. A list of relevant standards is provided on the VRE Tools and Resources Interoperability wiki <http://www.hull.ac.uk/esig/eress.html>. If they do not have an up-to-date knowledge of this area, bidders are strongly encouraged to consult with the project while preparing their proposals. Bidders must also ensure that they request adequate funding for any additional costs that may be incurred by adopting a standards-based approach.

Open Source Software

F55. It is expected that software outputs will use open standards and will normally be open-source unless a case is made to the contrary and accepted by the Panel. Applicants should make clear the licence under which software outputs will be released, mechanisms that will be put in place for community contribution (users and developers) throughout the project, and the sustainability plan for the project beyond the period of project funding. Applicants are encouraged to consult with JISC's open source software advisory service OSS Watch (www.oss-watch.ac.uk), and the Open Middleware Infrastructure Institute UK (OMII-UK: www.omii.ac.uk), on matters relating to open source software development, Grid standards, best practice in software engineering, and use of the OMII-UK software and repository. Applicants should refer to JISC's Policy on Open Source Software for JISC Projects and Services (see http://www.jisc.ac.uk/about_opensourcepolicy.html).

⁸ *e-Framework Service Oriented Application Integration Layer Briefing*
http://www.jisc.ac.uk/circular04_06_briefing_papers

Timescale and Budget

F56. Projects are expected to start in March 2007 and to finish no later than 31 March 2009. At least one year of the project time is expected to be spent on piloting and evaluation of VRE technologies with researchers in authentic research settings.

F57. Funding of up to £1.6 million is available for this work. It is anticipated that around three or four projects will be funded under this circular. If JISC does not commission the full amount of funding under this call, another call will be issued in 2007 to address any remaining gaps.

Structure of Proposals

F58. The structure of proposals is set out in the main text of the circular. In addition to the material listed there, proposals should include in the project description:

- A statement of who the target audience for the pilots is, including its size, as well as one or more scenarios showing how the research practice of the target audience is likely to be enhanced by the adoption of VRE technologies;
- The sequence of proposed activities and how they map onto the VRE Development Model (Figure 1);
- Information about existing tools that are to be integrated (including a brief description, location of the source code/executables and a statement on the licence) to allow markers to assess their suitability;
- The steps bidders propose to take to sustain the environments produced beyond the end of the project;
- Current VRE projects wishing to bid under the second phase of the programme should clearly explain how the proposed activities extend current ones and address the lessons learned from Phase 1;
- A clear description of the methodology for disseminating its work to the wider community both during and after the project.

F59. In addition to the budgetary guidance provided in the main call, the budget information on the cover sheet should clearly indicate a breakdown of costings of resources for the different stages of development.

F60. Proposals must also contain CVs of all key staff, attached as appendices.

Submission of Proposals

F61. Information on the bidding process and submission of proposals is set out in the main text of the circular. Bids in response to this call for projects should be sent to vre-bids@jisc.ac.uk, with the name of the lead institution in the subject line. If more than one bid is submitted by an institution, these must be submitted in separate messages.

Further Information

F62. All general enquiries regarding this appendix should be sent to Matthew Dovey (tel: 07876 445 403; email: m.dovey@jisc.ac.uk).

F63. Any enquiries regarding the proposal submission process should be sent to Avalon McAllister (tel: 0117 931 7124; email: a.mcallister@jisc.ac.uk).

Virtual Research Environments Proposal Cover Sheet

Cover Sheet for Proposals (All sections must be completed)		JISC Capital Programme	
Name of Capital Programme: Virtual Research Environments			
Name of Lead Institution:			
Name of Proposed Project:			
Name of Project Partners:			
Full Contact Details for Primary Contact:			
Name: Position: Email: Address:			
Tel: Fax:			
Length of Project:			
Project Start Date:		Project End Date:	
Total Funding Requested from JISC:			
Funding Broken Down over Financial Years (April – March):			
Apr06 – Mar07	Apr07 – Mar08	Apr08 – Mar09	
Total Institutional Contributions:			
Percentage Contributions over the Life of the Project:	JISC	PARTNERS	

Outline Project Description

Mapping of Project Activities onto VRE Development Model

Proposed VRE development activities:

For each activity complete the funding requested and the number of pilot implementations.

Stage	Activities	Funding Requested
Stakeholder Participation	User Needs Analysis	
	Contextual Analysis	
	Change Analysis	
Pilots	Pilot Preparation	
	Pilot Implementation	
	Pilot Evaluation	
VRE Construction	System analysis and design	
	Building	
	Integration	
	Testing	
Total funding requested:		

I have looked at the example FOI form at Appendix A and included an FOI form in the attached bid (Tick Box)	YES	NO
I have read the Circular and associated Terms and Conditions of Grant at Appendix B (Tick Box)	YES	NO