

## JOINT INFORMATION SYSTEMS COMMITTEE

### INVITATION TO TENDER

#### JISC E-LEARNING PROGRAMME - Framework and Tools Strand: Toolkits and Demonstrators

##### Summary

1. The Joint Information Systems Committee (JISC) invites proposals to develop software toolkits and demonstrators that align with the strategic aims of the JISC/DEST e-Framework for Education and Research. This is the fourth call in the JISC e-Learning Programme Framework and Tools Strand for software development projects and will focus on adding web services APIs to existing applications and on demonstrators that use web services APIs to enhance education and research. JISC invites proposals to:
  - a) **DEVELOP A TOOLKIT** - to develop web services APIs for existing applications along with software development kits (SDKs) that enable developers to use the web services APIs in one or more popular programming languages.
  - OR
  - b) **DEVELOP A DEMONSTRATOR** - to develop applications or services that consume documents from web services APIs and/or submit documents to web service APIs. The web service APIs can be either web service APIs from an existing ELF Toolkit<sup>1</sup> or from an institutional system that was not developed as part of the JISC e-Learning Programme.
2. A total of £400,000 is available for this work and as a general guideline it is anticipated that most projects will be awarded funding of between £30,000 and £40,000 depending on the extent and complexity of the work involved. Requests for additional funds, of up to £10,000, will also be considered for projects that need to commission work from previous projects or original application developer(s) in order to support the new project.
3. **The deadline for proposals is 1300 on Monday 16 October 2006.** Project duration will be six months and successful projects will be expected to start as soon as possible and no later than 2 January 2007 **with submission of the final work on or before 30 June 2007.**

##### Background

##### Overview of JISC e-Learning Programme

4. *JISC's e-Learning Programme*<sup>2</sup> aims to identify how e-learning might facilitate learning and to advise on its implementation. It focuses on four areas: e Learning and pedagogy; technical frameworks and tools for e-learning; innovative use of e-learning; and distributed e-learning. Articles on activities within the e-Learning Programme are available through the *e-Learning Focus* website<sup>3</sup>.

##### Framework and Tools Strand

5. The *Framework and Tools strand*<sup>4</sup> of the e-learning programme, concentrates on producing and testing a common technical framework to underpin e-learning systems, and developing integration toolkits to support the framework adoption. Work on this strand began in September 2003 and runs to July 2007; it has a total budget of £2.25 million.
6. The previous work within the Framework and Tools Strand has focussed on projects identified as either a toolkit project or a demonstrator project. Toolkit projects were implementations of discrete web services, supporting documentation, software libraries and artefacts. Demonstrator projects took a toolkit and deployed it in a different institution to the

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<sup>1</sup> See <http://www.jisc.ac.uk/toolkits.html> and <http://www.elframework.org/projects>

<sup>2</sup> JISC e-Learning Programme: [http://www.jisc.ac.uk/programme\\_elearning.html](http://www.jisc.ac.uk/programme_elearning.html)

<sup>3</sup> JISC e-Learning Focus: <http://www.elearning.ac.uk>

<sup>4</sup> JISC e-Learning Framework and Tools Strand: [http://www.jisc.ac.uk/elearning\\_framework.html](http://www.jisc.ac.uk/elearning_framework.html)

one that created the toolkit. This call articulates a changed definition of toolkit and demonstrator projects.

### **The e-Learning Framework**

7. The previous work within the Framework and Tools Strand located learning domain web services within a scheme called the *e-Learning Framework*<sup>5</sup> and began in 2003. However, by 2005 it was clear that the initial conception of an e-Learning Framework was restrictive in geographical reach, organizational structure and domain scope. The e-Learning Framework was enlarged to include international partners, with a governance body and lightweight operational structure. This enlargement engaged the Australian Department for Science and Technology (DEST) and was launched as the JISC/DEST *e-Framework for Education and Research*<sup>6</sup>.

### **The e-Framework for Education and Research**

8. The e-Framework is now a joint activity between the UK JISC and the Australian Department for Education, Science and Training (DEST), which had been actively engaged with the e-Learning Framework on an informal basis. The new approach has been reflected in its re-branding as the e-Framework for Education and Research, which, for brevity, is referred to as the e-Framework.
9. The aim the UK/Australian joint activity is to produce an evolving and sustainable, open standards based, service-oriented technical framework to support the education and research communities.
10. Recent work commissioned by JISC on Service Reference Models<sup>7</sup> has started to identify service descriptions and service usage models to be incorporated into the e-Framework.

### **Call for Toolkits and Demonstrators**

11. This invitation to tender recognises that recently there has been a trend for functionality in existing applications to become exposed through web services APIs. For example, Google search is now available both as a web application and through a web services API.
12. This exposure of application functionality through web services APIs aligns well with the strategic aims of the JISC/DEST e-Framework for Education and Research that promotes adoption of a service oriented approach to system and process integration.
13. The move to expose functionality as web services APIs has led some to think in terms of the “web as a platform” with new applications written on top of web service APIs<sup>8</sup>. This thinking parallels the way in which applications have been written on top of operating system APIs, but with one very important difference. The distributed nature of the web requires that the new APIs and communication protocols adhere to open technical standards and public schemas rather than closed proprietary approaches.
14. The *call for toolkits* invites proposals to develop web services APIs for existing applications along with software development kits (SDKs) that enable developers to use the web services APIs in one or more popular programming languages. This approach is similar to the way in which the Google search web services API is accompanied by a supporting SDK in the Java programming language. The supporting SDK enables developers to rapidly integrate invocations to the Google web services API from new applications. An intention of the call for toolkits is to increase the number of web services APIs available to the education and research communities.
15. The *call for demonstrators* invites proposals to develop applications or services that consume documents from web services APIs and/or submit documents to web service APIs.

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<sup>5</sup> JISC e-Learning Framework: <http://www.elframework.org>

<sup>6</sup> JISC/DEST e-Framework for Education and Research: <http://www.e-framework.org>

<sup>7</sup> JISC Reference Model Projects: <http://www.jisc.ac.uk/refmodelssept05.html>

<sup>8</sup> Mashup Ecosystem Poised to Explode. <http://blogs.zdnet.com/BTL/?p=2484>

The web service APIs can be either web service APIs from an existing ELF Toolkit<sup>9</sup> or from an institutional system that was not developed as part of the JISC e-Learning Programme.

16. Demonstrator applications or services that *consume* documents typically add value when they are consumers of content from two or more loosely coupled services. Such applications are variously labelled “composite applications”, “mash-ups”, “recombinant software” and so on. An intention of the call for demonstrators is to build software that exemplifies the added value that comes from transforming and combining data from different services.
17. Demonstrator applications or services that *submit* documents typically add value when they act as a conduit for the addition of user created content and comment to existing documents. An intention of the call for demonstrators is to build software that promotes a culture of participation amongst users as they tag, add content to or comment on existing documents.
18. This ITT for toolkits and demonstrators assumes that existing web services APIs are available to be used or that web services APIs will be added to existing applications. To support the further development of existing web services APIs or existing applications, up to a further £10,000 may be made available to the toolkit or demonstrator project to fund any required development work on the existing application or web services API (as indicated in section 2).

## Scope of the Invitation to Tender

### a) DEVELOP A TOOLKIT

#### 19. Terms of Reference

Each toolkit project should meet the following criteria:

- A web services API for an existing application or data store will be developed and deployed.
- The web services API will be accompanied by a software development kit (SDK) that enables developers to use the web services APIs in one or more popular programming languages.
- The toolkit project is expected to embed the principles and practices of Software Quality Assurance and the Open Source Maturity Model<sup>10</sup> to ensure long term sustainability of the web service API and supporting integration pack.
- License outputs under an Open Source agreement that promotes their reuse
- Be freely available to the education and research communities.

#### 20. Technologies

The toolkit project will make use of open standards and specifications for web services:

- Each toolkit project will need to justify their choice of web services design, typically SOAP based design or RESTful<sup>11</sup> design. The design choice justification will likely depend on the context of the web service, rather than its functionality. For example, a web service that has contextual requirements for security, co-ordination or transaction support will typically use a SOAP based approach.
- RESTful design approaches have no formal way to describe the web services interface beyond the HTTP operations of PUT, GET, POST and DELETE that correspond to the create, read, update and delete (CRUD) actions. The supporting integration pack for such projects will need to describe the schemas being exchanged and the way in which the documents should be processed.
- SOAP based designs use remote procedure call (RPC) style or document style web services interfaces. The e-Framework recommendations for service design strongly favour a document style with operations that reflect business orientated functions and

<sup>9</sup> See <http://www.jisc.ac.uk/toolkits.html> and <http://www.elframework.org/projects>

<sup>10</sup> Software Quality Assurance and the Open Source Maturity Model:  
[http://www.jisc.ac.uk/uploaded\\_documents/SQA\\_OSMM\\_09.06.doc](http://www.jisc.ac.uk/uploaded_documents/SQA_OSMM_09.06.doc)

<sup>11</sup> RESTful web services: <http://java.sun.com/developer/technicalArticles/WebServices/restful/>

behaviours, rather than direct (CRUD) manipulations of documents. The Web Services Interoperability (WS-I) Basic Profile<sup>12</sup> also gives strong recommendations for design using document style web services.

## 21. References

- A list of many public web services APIs is maintained on the Programmable Web<sup>13</sup> website.
- Google, Yahoo and Amazon support their web services APIs with software development kits (SDKs). These SDKs are good examples of the software that is needed to support the wide uptake of web services APIs.

## 22. Deliverables

- Deployed web service and demonstration of the web service API in action.
- Software Development Kit (SDK) that enables developers to use the web service APIs in one or more popular programming languages.
- Reasonable evidence that the project has embedded the principles and practices of Software Quality Assurance and the Open Source Maturity Model<sup>14</sup> to ensure long term sustainability

## 23. Other Expectations

- Web services that are created around existing applications or data stores should adhere to established principles and good practice for factoring within a Service Oriented Architecture (SOA).
- Established principles recommend that web services should be designed to be:
  - *loosely coupled*
  - *stateless*
  - *autonomous*
  - *discoverable*
  - *abstract*
  - *described by a formal contract (e.g. WSDL)*
  - *reusable*
  - *composable*

Services that are designed to be *loosely coupled* and *stateless* will not have dependencies on other services.

Services that are designed to be *autonomous* have governance over an underlying resource and maintain an explicit control boundary over that resource.

Services that are *discoverable* and have an *abstract description* can then use the loose coupling, statelessness and autonomy principles to promote the reuse of the service in infinite number of service workflows or service compositions.

These principles may need to be relaxed in the case of RESTful designs (which may not fulfil the discoverable and WSDL principles, for example). In this case however, the toolkit will be able to justify the use of RESTful style on other grounds such as the context in which it is intended to be used and will provide details of schemas used in the supporting SDK.

## b) DEVELOP A DEMONSTRATOR

### 24. Terms of Reference

Each demonstrator project should meet the following criteria:

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<sup>12</sup> Web Services Interoperability: <http://www.ws-i.org>

<sup>13</sup> The Programmable Web: <http://www.programmableweb.com/apis>

<sup>14</sup> Software Quality Assurance and the Open Source Maturity Model: [http://www.jisc.ac.uk/uploaded\\_documents/SQA\\_OSMM\\_09.06.doc](http://www.jisc.ac.uk/uploaded_documents/SQA_OSMM_09.06.doc)

- An application or service that consumes documents from web services APIs and/or submits documents to web service APIs will be developed and deployed.
- The web service APIs can be either web service APIs from an existing ELF Toolkit<sup>15</sup> or from an institutional system that was not developed as part of the JISC e-Learning Programme
- If the application or service only *consumes documents*, it will typically add value by combining content from two or more loosely coupled services. Such applications are variously described as “composite applications”, “mash-ups”, or “recombinant software”.
- If the application or service *submits documents* to web services APIs it will typically add value by promoting a culture of participation amongst users by enabling them to comment, tag or add content to existing documents. This type of functionality aligns with a social constructivist view of learning, emergent behaviour based on user interest and software that becomes more useful as users numbers increase.
- The application or service is dependent on the availability of remote web service APIs, and so issues of sustainability may be transient. However, it is expected that the demonstrator projects embed the principles and practices of Software Quality Assurance and the Open Source Maturity Model<sup>16</sup> as appropriate to the context of use.

## 25. Technologies

- The technologies for consuming and integrating documents from web services APIs are heterogeneous, from formal approaches on the server-side (such as Business Process Execution Language – WS-BPEL) to client-side approaches (such as Asynchronous JavaScript and XML – AJAX) .Technology choices will be highly context dependent.
- Even though consumption and integration technologies are varied it is important that the demonstrator applications or services consume data or utilize functionality from standards based services. Typically this means that the demonstrator application or service will be using REST or SOAP messaging, or from feeds that use XML metadata (e.g. RSS/Atom), or RDF metadata.
- Even though consumption and integration technologies are varied it is important that the demonstrator applications or services are built using design patterns and approaches that are reusable in other projects. A key intent of the demonstrator call is to build community skill capacity: to have skills sets and designs that are transferable to future projects.

## 26. References

- Matrix of applications that consume documents from two web services APIs. See <http://www.programmableweb.com/matrix>.
- Example of composite application that uses Wikipedia and the Yahoo Search API. See <http://www.hackdiary.com/archives/000070.html>.
- The JISC Personal Learning Environment Reference Model <sup>17</sup>project builds a strong case for applications and services that both consume documents from services and submit annotated documents to web services APIs.

## 27. Deliverables

- Deployed instance of the demonstrator application or service and a live demonstration in action.
- Reasonable evidence that the project has embedded the principles and practices of Software Quality Assurance and the Open Source Maturity Model<sup>16</sup> to ensure long term sustainability
- A substantial body of dialogue to the support forum of the Toolkit project website (where applicable) including contribution of text to the FAQs and public project diary **OR** a completion report detailing issues encountered during the demonstrator process intended for publication to the wider community.

<sup>15</sup> See <http://www.jisc.ac.uk/toolkits.html> and <http://www.elframework.org/projects>

<sup>16</sup> Software Quality Assurance and the Open Source Maturity Model: [http://www.jisc.ac.uk/uploaded\\_documents/SQA\\_OSMM\\_09.06.doc](http://www.jisc.ac.uk/uploaded_documents/SQA_OSMM_09.06.doc)

<sup>17</sup> Personal Learning Environment Reference Model: <http://www.bolton.ac.uk/staff/mwj1/PLE/pmwiki.php?n=Main.Report>

## 28. Other Expectations

- Demonstrator applications and services are expected to be cognisant of the design tenets emerging in the concept of “Web 2.0” applications<sup>18</sup>. Although there is still disagreement about the exact meaning of “Web 2.0”, a number of themes are gaining currency. Below is a list of these tenets, along with well known examples that demonstrate principle.
  - *Radical trust of users*. Example is the Wiki, and particularly Wikipedia, the online encyclopaedia that allows a visitor to freely edit its content.
  - *Tagging, not taxonomy*. Example is the Flickr photo sharing site where categorization of content is emergent based on user participation with a resulting emergent “folksonomy”.
  - *Participation, not publishing*. Example is blogging and commenting around posts.
  - *Harnessing the collective intelligence*. Examples include Google page rank, eBay reputations and Amazon reviews.
  - *The page as an application*. Example is AJAX technology that enables a rich user experience without the need for a full page refresh.
  - *Cost-effective scalability through user self-service*. Example is eBay auctions.
  - *Remixing data of certain classes of core common data (location, identity, calendaring and identifiers) with domain specific data*. Example is the many “mash-ups” of location data from Google Maps with domain specific data.
- It is expected that demonstrator applications and services will exemplify some of these and other emerging themes of “Web 2.0”.

## Further Expectations of Toolkit and Demonstrator Projects

### 29. Further expectations are:

- Projects are expected to pair with peer projects for the purpose of peer review and peer support.
- Projects will be expected to join JISC programme meetings and/or an appropriate CETIS Special Interest Group (SIG) to ensure they keep fully aware of standards developments (<http://www.cetis.ac.uk>).
- Projects are expected to make use of publicly visible Wikis, blogs and other development process tools. For those projects that make extensive use of these tools, shorter project reports will be acceptable
- It is highly desirable that any software components of the deliverables are released under appropriate open source licences to ensure that they can also be freely shared with organisations and communities with which the JISC has close working arrangements. Bidders should refer to JISC’s Open Source Policy ([http://www.jisc.ac.uk/about\\_opensourcepolicy.html](http://www.jisc.ac.uk/about_opensourcepolicy.html)). JISC also funds an open source software advisory service (OSS Watch) for the community<sup>19</sup>. For other outputs such as reports or model strategies, a non-exclusive licence allowing JISC or its representatives to utilise, archive and disseminate the work will be required.
- Projects will be expected to adopt the JISC programme management guidelines (available at [www.jisc.ac.uk/proj\\_manguide.html](http://www.jisc.ac.uk/proj_manguide.html)).

## Intellectual Property Rights

30. As a general rule the JISC does not seek to retain IPR in the project deliverables created as part of its programmes. However funding is always made available on the condition that project outputs are made available, free at the point of use, to the UK HE and FE community in perpetuity, and that these may be disseminated widely in partnership with the JISC.
31. The JISC programme support team will provide development projects with:

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<sup>18</sup> What is Web 2.0: <http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>

<sup>19</sup> For further information about OSS Watch see <http://www.oss-watch.ac.uk>

- An initial workshop with the opportunity for development teams to pair with other development teams for the purpose of peer review and support.
- advice and guidance on implementing specifications and standards;
- advice and guidance on ensuring sustainability by embedding the principles and practices of Software Quality Assurance and the Open Source Maturity Model
- organisation of demonstration events and peer reviews/support events
- help with the dissemination of outputs and outcomes to the community.

## Timescale

32. The deadline for proposals is **1300 on Monday 16 October 2006**. The JISC will endeavour to notify bidders of the outcome of the evaluation process by 20 November 2006. It is expected that projects will start as soon as possible and no later than 2 January 2007 and complete on, or before, 30 June 2007. There may be scope to vary the end date by up to two/three months provided there are cogent reasons to do so. The proposal must state the intended start and end dates of the project, and if appropriate, the reasons for any proposed change of dates.

## Structure of Proposals

33. The content of the proposal should reflect the evaluation criteria as set out below. To assist in the assessment of all proposals against a common baseline, proposals should be structured as below:
- Cover Sheet**  
All proposals must include a completed cover sheet. This can be found at Appendix A. The completed cover sheet will not count towards the page limit.
  - Introduction**  
A brief outline of the nature of the work to be undertaken, the length of the project, start and end dates, and a summary of how the project will contribute to the programme.
  - Project Description**  
A description of the intended project plan, timetable and deliverables, risks and an explanation of how the detailed project outcomes will be of value to the JISC community. Proposals should also include statements regarding IPR and sustainability issues. Proposals should clearly and fully demonstrate:
    - a description of the toolkit or demonstrator to be developed
    - the standards they intend to employ
    - technologies to be used and justification for design choices
    - a plan to embed elements of Software Quality Assurance (SQA) and Open Source Maturity Model (OSMM).
    - a work plan with milestones and deliverables;
    - an analysis of the risks to the successful completion of the work.
  - Budget**  
A summary of the proposed budget which in broad outline identifies how funds will be spent over the life of the project. The budget should be broken down across academic years (August - July) or parts thereof and should include itemised staff costs, any equipment and consumables, travel and subsistence, dissemination, evaluation, and any other costs required.  
TRAC<sup>20</sup> methodology must be used to calculate costs in bids from UK HEIs with institutional contributions determined by taking into account the benefits to the lead institution and any project partners. Bidders should provide a summary of the qualitative and any quantitative benefits the lead institution and any project partners as a whole expect to receive from the project in order to inform the funding to be requested from JISC and the costs being borne by the host institution and any project partners.

<sup>20</sup> For more information about TRAC, see the HEFCE web site at <http://www.hefce.ac.uk/finance/costing/>. The consolidated TRAC Guidance can be found at <http://www.icpsg.ac.uk/guidance/>.

- e. **Key Personnel**  
Names and brief career details of staff expected to contribute to the project, including qualifications and experience in the area of work proposed and evidence of any projects of a similar nature successfully completed.
- f. **Supporting Letter**  
A copy of the letter/s of support from a senior representative of the institution. The supporting letter/s will not count towards the page limit.

### **Freedom of Information**

34. JISC is subject to the Freedom of Information Act 2000 (FOIA). Therefore potential bidders should be aware that information submitted by them to JISC during this tender process and throughout the life of any project subsequently funded may be disclosed upon receipt of a valid request.
35. JISC will not disclose any information received during this tender process whilst the evaluation of the bids received is still underway. The evaluation process is still deemed to be active until such time as all grant letters to successful projects have been sent out.
36. It is JISC policy to make the content of any bid funded by JISC publicly available via the JISC website shortly after funding has been awarded. Unsuccessful bids will be destroyed one month after the lead institution has been notified that their bid was not successful. However, it should be noted that the contents of unsuccessful bids *may* be disclosed should JISC receive a relevant FOI request prior to destruction taking place.

### **Evaluation criteria**

37. Proposals will be evaluated on the basis of the following criteria (in no particular order):
- Feasibility of the proposed toolkit or demonstrator;
  - Feasibility of the work plan, detailed deliverables, project management and development activities;
  - Relevance of the previous experience of the tendering organisation(s) and of the particular consultants/researchers to the project;
  - Value for money;
  - Risk analysis.
38. In making awards under this invitation to tender the JISC will take into account the need for an appropriate, varied and affordable portfolio of projects and partners. It is not, therefore, necessarily the case that the projects with the highest raw scores will be those funded in all instances.

### **Funding**

39. As a general guideline it is anticipated that most projects will be awarded funding of between £30,000 and £40,000 depending on the extent and complexity of the work involved, although exceptional cases will be considered. Funding to undertake this work is inclusive of all costs including VAT if applicable. Projects are reminded that funding is dependent on delivery of satisfactory outputs.

### **Submission of proposals**

40. Proposals of no more than six pages of A4, typeset in Arial or a similar font at 10 point size. All key information as outlined above in paragraph 33 **MUST** be included within the six page limit unless otherwise indicated. CVs may be included as appendices but should be no longer than 1 side of A4 each. The evaluators will discount any information provided

beyond the indicated page limit and additional CVs.

41. Proposals **MUST** include a completed cover sheet (see Appendix A),
42. One electronic copy, including all appendices, the cover sheet and letter(s) of support **MUST** be submitted in Word or Rich Text format via email as one file or in a zipped folder by the deadline. The subject of the email should read, 'ITT TOOLKIT PROJECT' or 'ITT DEMONSTRATOR PROJECT'.

### **Bidding Process**

43. A guide to bidding for JISC projects can be found at <http://www.jisc.ac.uk/bidguide.html>.
44. **The deadline for submissions is 1.00 pm on Monday 16 October 2006. Late proposals will NOT be accepted.**
45. The electronic copy of the proposal should be sent to [l.hawkins@jisc.ac.uk](mailto:l.hawkins@jisc.ac.uk).
46. JISC will endeavour to notify all bidders of the outcome of the process by 20 November 2006.
47. Notwithstanding the weightings of the evaluation criteria, proposals that fail badly on any one criterion may be rejected, and proposals showing exceptional strength in one or more areas with serious weaknesses in others may be funded. In making awards under this circular JISC will take into account the need for an appropriate, varied and affordable portfolio of projects and partners. It is not, therefore, necessarily the case that the projects with highest raw scores will be those funded in all instances.
48. The JISC reserves the right not to award any funding.

### **Further Information**

49. General queries regarding this ITT should be sent to Heather Williamson, Programme Manager, email [h.williamson@jisc.ac.uk](mailto:h.williamson@jisc.ac.uk), tel. 07810 814468.
50. Any enquiries regarding the proposal submission process should be sent to Lesley Hawkins (tel: 0117 931 7277: email: [l.hawkins@jisc.ac.uk](mailto:l.hawkins@jisc.ac.uk)).

**September 2005**

**JISC Executive  
Northavon House  
Coldharbour Lane  
Bristol  
BS16 1QD**

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| <p><b>Cover Sheet for Proposals</b><br/>(All sections must be completed)</p> | <p><b>*Toolkit Project</b><br/>or<br/><b>*Demonstrator Project</b></p> <p>*Delete as appropriate</p> |
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| <p><b>Name of Institution/Organisation:</b></p>   |
| <p><b>Name of Partners (if any)</b></p>   |
| <p><b>Name of Proposed Project:</b></p>   |
| <p><b>Full Contact Details for Primary Contact:</b></p> <p><b>Name:</b><br/><b>Position:</b><br/><b>Email:</b><br/><b>Address:</b></p> <p><b>Tel No:</b><br/><b>Fax No:</b></p> |
| <p><b>Length of Project:</b></p>  |
| <p><b>Project Start and End Dates:</b></p>  |
| <p><b>Total Funding Requested from JISC:</b></p>  |
| <p><b>Outline Project Description</b></p>   |