


<b>Cover Sheet for Proposals</b> <i>(All sections must be completed)</i>			
<b>Name of Tender:</b>	<b>JISC ITT: Advanced e-Assessment Techniques</b>		
<b>Name of Bidder:</b>	<b>Martin Ripley Ltd</b>		
<b>Name of Proposed Project:</b>	<b>Review of Advanced e-Assessment Techniques</b>		
<b>Name(s) of Project Partner(s):</b>			
<b>Full Contact Details for Primary Contact:</b> <b>Name:</b> Martin Ripley <b>Position:</b> Director <b>Email:</b> martin.ripley1@btinternet.com <b>Address:</b> 3 Hampstead West, 224 Iverson Road, London NW6 2HX <b>Tel:</b> 02076241418			
<b>Length of Project:</b>	<b>5 months</b>		
<b>Project Start Date:</b>	<b>31 October 2008</b>	<b>Project End Date:</b>	<b>31 March 2009</b>
<b>Total Funding Requested from JISC:</b>	<b>£40,000</b>		
<b>Outline Project Description</b> This JISC study is designed to build a significant body of information about who is using different techniques, the associated issues and the benefits of advanced e-assessments. The project will: <ul style="list-style-type: none"> <li>▪ identify a range of Advance e-Assessment Techniques in use in HE and the wider environment;</li> <li>▪ select and study in depth 5-10 case studies covering the major areas of test and assessment systems: task/test design; administration; marking, scoring and making judgements.</li> <li>▪ obtain information about: <ul style="list-style-type: none"> <li>○ the range of users of the selected techniques;</li> <li>○ the educational and technological benefits;</li> <li>○ the key issues.</li> </ul> </li> </ul> Our proposals will deliver to JISC: <ul style="list-style-type: none"> <li>▪ A catalogue with descriptions of 40 applications of advanced e-assessment techniques;</li> <li>▪ 5-10 case study reports, fully compliant with JISC's case study template;</li> <li>▪ An interim report;</li> <li>▪ A draft final report;</li> <li>▪ A final report with an executive summary.</li> </ul>			

## A proposal for a Review of Advanced e-Assessment Techniques

### 1. Introduction

Through the **Review of Advanced e-Assessment Techniques** JISC aims to review advanced e-assessment techniques in use around the world. The purpose of the study is to document those techniques in use, and to provide advice on which techniques offer educational and/or technical promise to HE and FE environments. The proposals set out in this document will deliver to JISC:

- A catalogue with comprehensive descriptions of at least 40 applications of advanced e-assessment techniques;
- 5-10 case study reports, fully compliant with JISC's case study template;
- An interim report;
- A draft final report;
- A final report with an executive summary.

These deliverables will be produced with over 90 person days, at a total price of £40,000. Our work programme will at all times be discussed and agreed with JISC. Our methodology and products will be reviewed by independent experts in the field. We are providing, at no cost to JISC, up to 20 days of Martin Ripley's time. In addition we will be covering our own VAT liability and any office or other overhead costs.

Martin Ripley Ltd (MRL) was set up in 2006 and is wholly owned by Martin Ripley. MRL focuses on e-assessment developments and in the past two years has achieved turnover of over £250,000. MRL has:

- created an e-assessment update for Futurelab;
- worked with JISC on the e-assessment glossary and *Effective Practice with e-Assessment: An overview of technologies, policies and practice in further and higher education*.
- provided e-assessment advice to West Virginia State Education Department;
- provided e-learning and assessment support for the University of Warwick;
- worked with the Open University using a Second Life environment.

Our proposed team will provide the range of expertise needed for the project. The project requires: assessment expertise to understand the wider context; e-Assessment expertise to understand and know about technology-related developments in assessment; and technology and technological expertise to understand the technology basis of e-assessment.

Our team of Martin Ripley, Robert Harding, Professor Jim Ridgway, Jeremy Tafler and Hakan Redif, represents significant, world-leading expertise. We have also set aside resource to buy in technical experts' time to undertake the technical reviews required by JISC. The approach is to agree the areas of focus with JISC, and then bring in the relevant experts for those specific areas.

### 2. Project Focus – Advanced e-Assessment Techniques

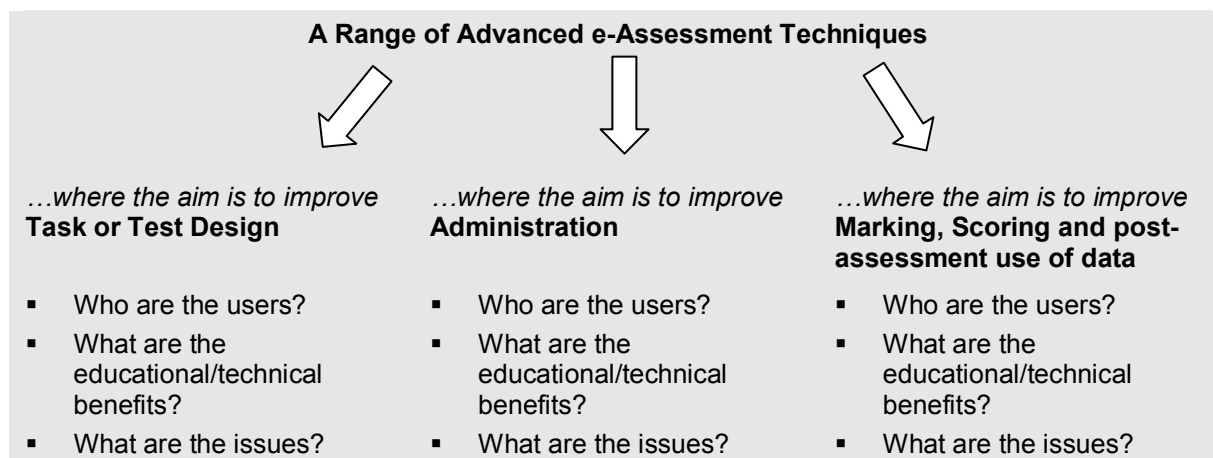
Too often, e-assessment is associated in the public eye with multiple-choice testing, which can be seen as providing a shallow assessment of students' learning and skills. Although a wider range of e-assessment techniques is available and in use, these are sometimes perceived with scepticism (for example, auto-scoring of text is seen as simplistic and lacking in human subtlety), or is sometimes developed in a single, isolated context, lacking any strategic drive to lead wider application of the technique.

This JISC study is designed to build a significant body of information about who is using different techniques, the associated issues, and the benefits that those users perceive. The project will include the following components:

- Identify the range of Advanced e-Assessment Techniques to cover in the study;
- Ensure those techniques selected cover broadly the three major areas of test and assessment systems: task/test design; administration; marking, scoring and making judgements;
- Obtain information about:
  - the range of users of the selected techniques, in order to build a catalogue with comprehensive information about users;

- the educational and technological benefits, to enable our team to analyse the educational and technological robustness of the techniques;
- the key issues, in order to provide JISC with analyses and advice on future developments.

The map of the project is represented in the diagram below.



We note and accept the range of techniques listed in JISC's tender. Those techniques could be categorised as follows:

- Techniques which have (in technological terms) existed for a number of years but which have yet to find firm roots in assessment and testing, such as computer marking of prose;
- Technologies which are being used to represent their paper-based antecedents, such as marking complex mathematical or diagrammatic responses;
- Technologies being developed to extend the range of skills and knowledge covered by assessments such as the assessment of process, judging students' group work, peer assessment, voice and performance based skills. Our initial thinking is that this will include:
  - Use of e-assessment techniques to assess student knowledge;
  - Use of techniques to assess interactional skills e.g. working in a group or applying knowledge and skills in real-life decision-making contexts;
  - Use of techniques to assess students' manipulative and performance skills e.g. assessing the dexterity of a medical student's hand.
- Techniques which are being used to improve one or more aspects of the quality of marking.
- Through this study we will document the administrative implications and benefits of advanced e-assessment techniques. This is likely to include:
  - Developing new approaches to crediting student performance;
  - Developing and improving psychometric theory;
  - Improving the feedback loop between assessment and learning;
  - Improving accuracy;
  - Speeding-up the marking stages;
  - Availability of assessments on demand.
- Products and services which have been created and could support/improve existing assessment, such as plagiarism detection services;
- New technologies (gaming, Web 2.0) which offer the potential to create assessments in new, 21<sup>st</sup> century domains.

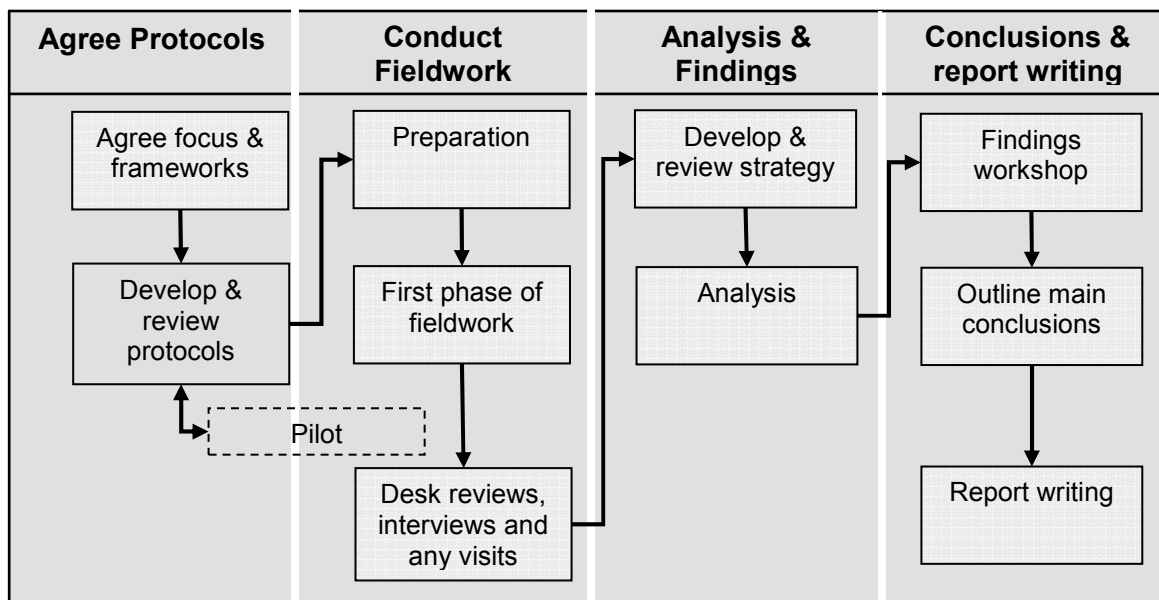
Our project will also identify and describe the key issues relating to the usage of each advanced technique. This will include, but not be limited to, the following:

- Information about the technical reliability of the approach;
- Information about the assessment reliability and assessment purposes of the technique;
- Scalability issues;
- Transferability issues;
- Cost;
- Support;
- The extent of expertise and know-how in designing and applying the technique;

- Users' perceptions regarding the technique;
- Human skills and related training issues.

### 3. Methodology

Our methodological approach to this project will be to adopt a case study design, applying this separately for the development of the catalogue, the case studies and the technical review. Our proposed approach, set out in the diagram below, is based on Yin's case study methods<sup>1</sup>.



We will use this case study methodology in each of the three strands of the project:

1. Production of a catalogue of techniques and their users;
2. Production of case study reports;
3. Production of a technical review of advanced e-assessment techniques.

To these we will add a fourth and final strand: - Report writing

At the outset we will compile a list of advanced e-assessment techniques and identify users of those techniques. We would trawl through the source references already provided by JISC, supplementing these with our own. We will review existing JISC publications and consult with JISC to ensure that we do not replicate existing information. We will also use our own networks to identify additional applications. These include:

- The e-Assessment Association, which now has over 250 members including from Higher Education;
- The European Union Joint Research Centre's e-Assessment Expert network, which includes members from countries across Europe and world-wide;
- The 21<sup>st</sup> Century Learning Alliance and its associated networks, including Cisco, Oracle, Microsoft, BT and Intel;
- Our own professional network, which includes e-assessment experts in the USA, the Middle East, China and Australia;
- Virtual conference archives, including CAA and the IAEA.

#### *Strand one: Production of a catalogue*

We will develop a pro-forma to record core information about each advanced application. This pro-forma will be refined through several iterations. We will try out the draft pro-forma with a small number of examples, consult with experts and discuss it with JISC. At this stage we anticipate that the pro-forma will be designed to capture, for example, the following categories of information:

<sup>1</sup> Yin, R.K. (2003) Applications of Case Study Research, Second Edition, Applied Social Research Methods Series, Vol. 34, Sage Publications. ISBN 0 7619 2551 1 <http://www.paperfree.co.uk/> Paperfree Systems Ltd – e-Portfolio system.

- Reference and contact details;
- Brief descriptive summary;
- Technical description;
- Educational benefits;
- Application(s) and uses;
- Evaluation evidence, if any;
- Issues.

We will spend the majority of this first strand of work identifying and documenting examples of advanced e-assessment techniques. We anticipate that work will include desk and web-based research, as well as telephone-based interviews. The chief deliverable to JISC will be the catalogue, containing collected descriptions of a range of advanced e-assessment applications.

#### *Strand two: Case study reports*

We will begin Strand 2 by discussing with JISC a number of case studies to investigate in more detail. We anticipate that this will result in 5-10 case studies in total, selected on the basis of usefulness to JISC. We anticipate that these case studies will be themed, and can confirm that we will follow JISC's case study template, of which we have experience.

Our approach will be to begin by researching each of the case studies in depth. Where practical, we will undertake visits to discuss the assessment tool with users, including students. We will also research the technical and educational enhancements claimed by the providers.

#### *Strand Three: Technical review*

Strand Three will focus on a technical analysis of advanced e-assessment techniques. We will initiate this aspect of the project as early as possible in the project. Our proposed approach will be to work with JISC to select up to five advanced e-assessment techniques from the following list:

Task design:

- Group and team-based performances using Web2.0 approaches;
- Complex problem-solving and scenario-based assessments;
- Provision of on-screen tools (e.g. algebraic manipulation);
- Assessment of professional competencies (e.g. assessing the touch of the surgeon).

Administration:

- Group tasks;
- Games, including Virtual World contexts.

Marking, scoring and expert judgement:

- Auto-scoring of text;
- Voice recognition;
- Auto-reviews of the assessment session – plagiarism, students' approach and other ephemeral evidence;
- Uses of auto-marking systems to support and/or quality assure human marking.

Once we have agreed with JISC the precise focus(es) of this work, we will commission individuals with appropriate technical expertise to undertake the reviews. For example, we would propose working with experts at CARET and TAGLearning as well as Mike Peppiatt. We will follow the case study approach outlined above.

#### *Strand 4: Report writing*

The fourth strand of our work will encompass all report writing activity. In relation to each of the three fieldwork strands, we would conduct a Findings Workshop at which we will present research findings to a small group of experts not involved in the fieldwork. The members of the workshops will discuss and challenge our findings, thereby helping us to refine our conclusions and report writing. Reports will be drafted by Jeremy Tafler and Martin Ripley.

#### *Quality Assurance*

We will commission Robert Harding to undertake a quality assurance role. This will involve Robert in reviewing draft research protocols, attending the Findings Workshop and reviewing draft reports.

#### 4. Outline Project Plan

The project will be managed and controlled through the MRL Project Office in accordance with PRINCE 2 project management principles and JISC project management guidelines.

The JISC Project Plan template will be used to complete a fully detailed project plan (as agreed and finalised with JISC). The following information is a brief outline of the initial plan.

- The reporting arrangements with JISC, frequency of meetings and processes for informal/formal updates. Our current thinking includes a fortnightly checkpoint report, following by a monthly highlight report to be tabled at a joint monthly management meeting with JISC, in addition to the normal day to day contact;
- A detailed timeline of activities and events highlighting the project phases, strands, milestones and deliverables. An initial brief/draft plan is included below;
- A template to record, monitor and actively manage the project risks and issues along with any project dependencies, resourcing and quality issues;
- Detailed processes to ensure that any 'change' to the project requirements/deliverables are documented and managed accordingly;
- Work packages detailing what is required and by whom to provide transparency to JISC;
- Agreed Product Descriptions for the key deliverables;
- A Quality Assurance Plan, whereby a Quality Manager who will monitor the activities of the team to ensure Product Descriptions are adhered to and the appropriate quality is met.

**Project reports** will include:

- **The case studies**, written to the required standard and detail as required by the JISC case study templates.
- **The interim report**, written following all the data gathering exercises, listing all the activities and findings to date. The main output of this report will be to help determine the future direction of the project and areas of further work and focus. This will need to be a collaborate activity with JISC.
- **The draft report**, a working version of the final report. The purpose of this product is to allow JISC and other relevant stakeholders to be able to see the main findings of the final report at an earlier stage of the project.
- **The final report**, derived through the findings and decisions made at the interim report stage and will be a clean finalised version of the draft report. A Product Description will be agreed with JISC. This will detail the outline structure of the report (i.e. the draft contents page of the report), quality requirements and JISC's expectations.
- **The executive summary**, a concise and clearly written document listing the key findings and recommendations. We would wish to discuss JISC's presentational preferences.

Through the agreed reporting structures and the approach of developing the reports we hope the benefits are that there are 'no surprises' in the final report and that our team responds effectively to new, emerging information. As detailed in our project approach, we will be obtaining a fair amount of data from the initial research stage of the project. Whilst all this information may not feature in the final report, it would nonetheless form a useful directory tool for JISC in having a ready-made list of e-Assessment techniques being used around the world with further searchable information contained within.

#### Timeline

Date	Key activities	Who
<b>STRAND 1 (Oct 08 – Nov 08)</b>		
End of Oct 2008	▪ Project Commences	MRL/JISC
By 21 Nov 08	▪ Project Plan Agreed	MRL/JISC
	▪ Briefing sessions attended	MRL/JISC
	▪ Initial research commences	MRL
	▪ Pro-forma created for project recording	MRL
By end of Nov 08	▪ 40+ examples recorded on pro-formas	MRL
<b>STRAND 2 (Dec 08)</b>		
By end of Dec 08	▪ Identification of 5-10 case studies	MRL/JISC

	<ul style="list-style-type: none"> <li>▪ Write up case studies</li> <li>▪ Interim report written</li> </ul>	MRL MRL
<b>STRAND 3 (Nov 08 – Feb 09)</b>		
By 26 Feb 09	<ul style="list-style-type: none"> <li>▪ Completion of technical analysis</li> <li>▪ Workshop to look at wider technologies</li> <li>▪ Draft report written</li> </ul>	MRL MRL/JISC MRL
<b>STRAND 4 (Mar 09)</b>		
By 31 Mar 09	<ul style="list-style-type: none"> <li>▪ Final report written</li> <li>▪ Executive summary written</li> </ul>	MRL MRL

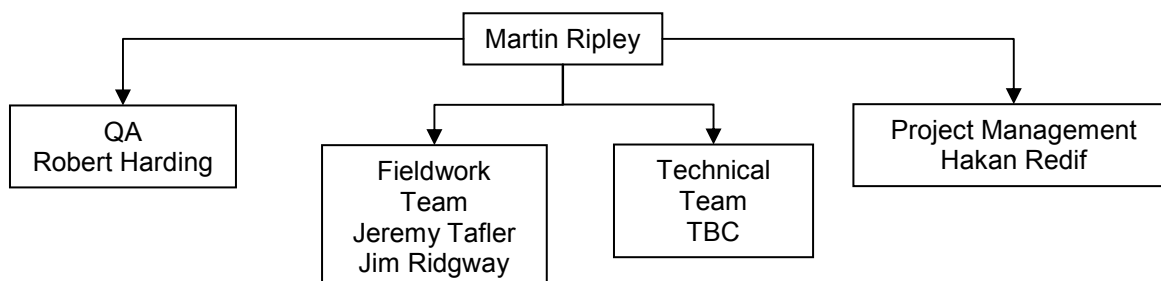
### Project issues and risks

Detailed in the table below are a number of issues and risks.

Issue/Risk	Counter measure/mitigation
Unable to find 40 applications/uses of advanced e-assessment techniques	Use full range of contacts base and if necessary 'spread the net wider' through development of further contacts.
Unable to secure the technical expertise	Develop a bank of resources to call upon (already created).
Interim and final reports do not meet JISC expectations	Work closely with JISC at all times using the reporting structures to communicate clearly at all times. Jointly agree Product Descriptions.
The catalogue is not fit for purpose	Agree with JISC at project planning stage the merits of producing the catalogue, its purpose, function and format.

### 5. The team

Our project team will be led by Martin Ripley. Hakan Redif will provide day-to-day management of the team. The case study fieldwork will be carried out by Jeremy Tafler and Jim Ridgway. Technical experts will be appointed, with expertise in the specific technologies to be agreed with JISC. Robert Harding will undertake an independent QA role. This team structure is set out below.



### 6. Price

The proposals set out in this document will be charged at £40,000. As a private, limited company we are liable for VAT. If awarded the contract by JISC, we will absorb the VAT liability ourselves. In order to keep our proposal competitive and within JISC's declared funding resource, we have excluded from our price: Martin Ripley's time of around 20 days in total; office and any overhead costs; travel. We can confirm that we have read JISC's Terms and Conditions. There is no information contained within this proposal that MRL requires to remain confidential for FOI purposes.

## Appendix A: Team member profiles


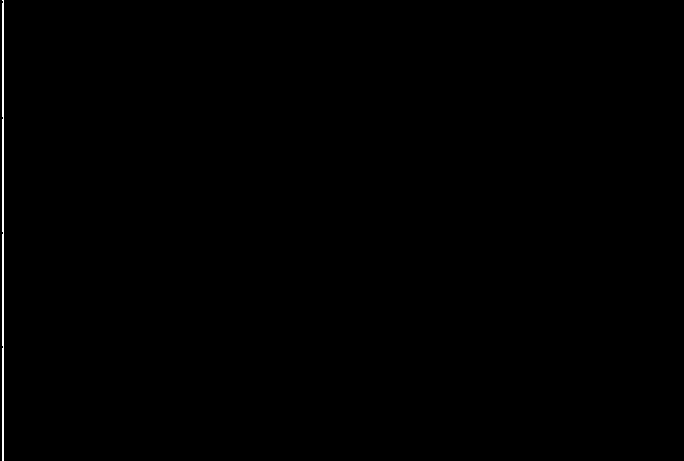
Our team will be led by **Martin Ripley**, who will provide around 20 days' expertise to this study. His time has not been charged to JISC. Martin's role will be to provide leadership and direction for the team, as well as to meet and discuss the project with JISC. Martin is a leading expert in e-assessment. He is a Director of the e-Assessment Association and a member of the EU's e-Assessment Expert's Forum. He has published a number of papers, articles and presentations in many areas of e-assessment. He has recently been commissioned by Becta to undertake a strategic role in leading the use of handheld technologies in schools. He has previously worked with JISC, including through the production of the joint JISC-QCA e-Glossary, and the production of *JISC's Effective Practice with e-Assessment: An overview of technologies, policies and practice in further and higher education*. In 2007 Martin wrote the e-Assessment Literature Review update for Futurelab. Martin's professional networks cover school assessment, the e-Assessment community, HE, commercial companies in the business of IT systems and service provision. Those networks, which span the UK and internationally, will be used extensively for this project.

The team will be managed by a project manager, **Hakan Redif**, who is a qualified and re-accredited PRINCE 2 practitioner with successful experience of managing and delivering large scale e-Assessment government funded projects most notably the onscreen Key Stage 3 ICT test development project for the QCA. Other related e-Assessment work undertaken includes developing a configuration system for World Class Arena and project managing the initial concepts of creating an e-Assessment national delivery infrastructure system. Hakan's role will be to coordinate the activities of the team, monitor and report progress, collate information and act as first point of contact for both the team and JISC.

**Jeremy Tafler** has extensive experience of e-assessment development and research activity. He worked at QCA 2000-07 to develop World Class Tests and other assessment initiatives. Since 2007 he has provided expert advice to QCA on identifying innovations in assessment in schools, developing teacher assessment for NFER, and is a moderator for Becta/BESA/BETT awards for e-assessment. He is currently working on the regulatory landscape for UK Professional Bodies for Entity and Assessment Tomorrow. He has written and presented on e-assessment nationally and internationally including University of Auckland; Johns Hopkins University; ETS, Princeton; NCS, Iowa; GERRIC, Sydney; Singapore; Hong Kong and Herriot-Watt

**Dr Robert Harding** has played major roles in many innovative educational projects in HE, starting with the pioneering CATAM Project at DAMTP in 1971 and including TLTP projects and two that have won international awards. From 1997-2005 he worked for UCLES (now known as Cambridge Assessment) where he became a Director, setting up and leading the "Innovation in Assessment and Learning Unit" (formerly ITAL Unit). He built extensive links with leading e-Assessment projects, especially in HE. Robert is now retired but works part-time as a consultant.

**Appendix B: MRL Budget**

<b>Directly Incurred Staff</b>	<b>October 08 – December 08</b>	<b>January 09 – March 09</b>	<b>TOTAL £</b>
Martin Ripley			
Hakan Redif			
Technical experts			
Jeremy Tafler			
Robert Harding			
Jim Ridgway			
<b>Total Directly Incurred Staff (A)</b>	<b>£33,570</b>	<b>£22,380</b>	<b>£55,950</b>
<b>Non-Staff</b>	<b>October 08 – December 08</b>	<b>January 09 – March 09</b>	<b>TOTAL £</b>
Travel and expenses			
Telecommunications			
Printing and Reproduction			
Office Core Costs			
<b>Total Directly Incurred Non-</b>	<b>£3,435</b>	<b>£3,535</b>	<b>£6,970</b>

<b>Staff (B)</b>			
<b>Directly Incurred Total (A+B=C) (C)</b>	<b>£37,005</b>	<b>£25,915</b>	<b>£62,920</b>
<b>Directly Allocated</b>	<b>October 08 – December 08</b>	<b>January 09 – March 09</b>	<b>TOTAL £</b>
Staff	£	£	£
Estates	£	£	£
Other	£	£	£
<b>Directly Allocated Total (D)</b>	<b>£0</b>	<b>£0</b>	<b>£0</b>
<b>Indirect Costs (E)</b>	<b>£0</b>	<b>£0</b>	<b>£0</b>
<b>Total Project Cost (C+D+E)</b>	<b>£37,005</b>	<b>£25,915</b>	<b>£62,920</b>
<b>Amount Requested from JISC</b>	<b>£24,000</b>	<b>£16,000</b>	<b>£40,000</b>
<b>Institutional Contributions</b>	<b>£13,005</b>	<b>£9,915</b>	<b>£22,920</b>
<b>Percentage Contributions over the life of the project</b>	<b>JISC 63.60%</b>	<b>Partners 36.40%</b>	<b>Total 100%</b>