

JISC DEVELOPMENT PROGRAMMES

Project Document Cover Sheet

PROJECT PLAN

Project

Project Acronym	EASiHE	Project ID	
Project Title	e-Assessment in Higher Education		
Start Date	1 October 2008	End Date	31 March 2011
Lead Institution	University Of Southampton		
Project Director			
Project Manager & contact details	Onjira Sitthisak, Learning Societies Lab, School of Electronics and Computer Science, University of Southampton, SOUTHAMPTON, SO17 1BJ		
Partner Institutions			
Project Web URL	www.southampton.ac.uk/easihe		
Programme Name (and number)	<i>JISC Capital Programme 2008 e-Assessment Projects</i>		
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Document

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JISC Project Plan

Overview of Project

1. Background

The educational landscape is changing as government initiatives and student requirements call for more openness and accountability. Institutions are concerned with “consistency and fairness of their assessment” (QAA press release, 23 June 2008). Students are the new digital natives², now paying for and therefore expecting and demanding a better quality of service. Staffs are commonly digital immigrants, feeling the tensions of teaching and assessing more students and larger classes in higher education and dealing with ever increasing complexity in the assessment process. Yet the time given for such activities is much the same as when class sizes were smaller and processes simpler.

In addition, we should recognise the requirements and expectations placed on the education process by accrediting bodies, in particular the desirability of formative assessment. For instance, engineering bodies view problem sheets as best practice.

Like many institutions, the University of Southampton (UoS) has for some time identified e-assessment as part of the solution to the changing landscape. For students, the hope is to have an assessment environment that they are more familiar with, which provides them with quicker feedback on their work, and which instils confidence that the system is robust. For staff, the hope is for an assessment system where the marking burden for large groups is greatly reduced, assessment is consistent, and analyses of the quality of the assessment are automatically produced.

In addition, an e-assessment should make easier the process of conducting summative assessment or of providing formative assessment. The higher initial set-up costs for e-assessment should be recognised, however, since a conventional assessment is usually quicker to construct. The gain and the advantage of e-assessment consists in much reduced re-use costs, enhanced by the use of templated questions, item pools, and interoperability standards.

For many years, UoS has provided virtual learning environments (VLEs) and proprietary tools for e-assessment. However, these have had modest take-up from staff, who still favour conventional written examinations. In part, this is because of a misapprehension that e-assessment cannot be used in the assessment of the higher order learning outcomes or competencies which characterise Higher Education. Another reason for low take-up is the resistance within any large institution to change; after all, written examination along with viva voce have been the main methods of assessment for several hundred years within HE, and the process is very well understood within a university.

UoS has recognised that there are both technical and cultural issues to be solved if e-assessment is to make a significant impact upon learning and teaching at the University. An excellent technical specification alone is unlikely to facilitate the cultural change necessary throughout the institution. It is imperative that a codesign and co-deployment process be used when specifying and implementing an assessment system to ensure community involvement and uptake.

Currently, Question Mark Perception (QMP) V4 is the established application for ‘high stakes’ summative assessment in the University, and Blackboard is the institutional VLE which may be used for formative assessment. These applications have a number of drawbacks when formative, Web 2.0, and mobile e-assessment is required or desired. In particular,

- QMP is biased towards summative assessments, and both have only modest support for the flexibility implied by formative assessments.
- Neither provide for easy integration with Web 2.0 applications.
- Neither provide for satisfactory delivery on mobile platforms.
- Neither provide for a satisfactory solution for mathematical test items at the University.
- Blackboard provides only a limited range of item types, more or less co-extensive with the QTI v1.2 standards.
- Neither provide interoperability to QTI v2.1 standards. Both use proprietary item formats, and can only import and export QTI v1.2 items.
- Neither application is open source, conforms to the eFramework, or exposes services to support integration or interoperability. Within the 'corporate' environment of an institution, these are not necessarily drawbacks, but become so when some integration is expected between e-assessment and the research-led teaching which is characteristic of Southampton.

There are a number of technical and policy issues identified within the university that are of concern, where any new e-assessment system must:

- support the existing QMP (QML & Qpack) and Blackboard systems.
- provide easy migration from (legacy) QMP and Blackboard systems.
- provide interoperability with the institutional administrative systems (student records, module records).
- scale (accommodate courses of up to 600 students).
- provide reliable and robust service to students and staff.

There are a number of issues around the service provided as part of the deployment and continuing use of any new e-assessment system:

- Quality assurance. A key issue in addressing quality assurance is the provision of item and test statistics and item analyses, to help identify and deal with poorer questions. The processes of evaluating questions and authoring replacements or editing poor questions need to be acceptable to staff, otherwise they will tend to re-cycle poor questions from a bank with little incentive to produce improved or new questions.
- Integration and interoperability with scheduling of assessments, including handling exceptions, different versions, and AER (additional educational requirements) candidates.
- Added value. Authors, users, and systems staff must find the system is easier to use, is less burdensome, and offers added value in comparison to the other systems currently in use.
- System development. Development requests of the system should be actioned promptly and effectively. An open source solution with a community of developers may well respond more effectively to such requests than commercially-oriented providers for whom the education market is perceived to be low-volume and high cost.

2. Aims and Objectives

The EASiHE project intends to provide an open source solution for formative assessment by integrating services currently available within the JISC eFramework.

Technically, the project aims to provide an open source solution which integrates current services available within the JISC eFramework. The project will exploit the JISC-funded 'EdSpace' repository and the Web 2.0 'Faroer' project, incorporate the IMS Question and Test interoperability standard by integrating the 'AsDel' assessment delivery engine and the JISC-supported MathQTI standard (and being informed by the outputs from the 'Minibix', 'Aqurate', and 'R2Q2' projects), ensure the system is informed by the JISC-funded 'LexDis' project for accessibility, and include relevant lessons from the JISC-funded 'mPLAT' and 'Remora' projects for mobile learning and assessment.

The project seeks to provide an approach to assessment, and to formative assessment in particular, which develops the current principles of Web 2.0. The EdSpace repository will hold assessment items, questions, answers, tests, and feedback, including linked resources and other relevant materials such as student evaluations and opinions. The social elements will be contributed by the

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Faroës project working on top of the EdSpace repository (as well as peer review contributed by the Peer Pigeon project), and the device independent aspect will be addressed by supporting the use of mobile devices following the lessons learned from the JISC-funded mPlat and Remora projects.

While AsDel already supports MathML18, this project will seek to incorporate the MathQTI standard and will explore and evaluate its applicability.

Accessibility is an increasingly significant institutional issue, and this project will explore the incorporation of guidance and guidelines from the LexDis project to embed good practice in the development of the repository and associated tools, both social and technical.

Finally, the issue of assessment reliability and validity will be addressed by exploring processes whereby question usage can be tracked, reported, and evaluated, so the quality of the repository contents can be measured and improvements implemented.

3. Overall Approach

The project will: take the JISC-funded 'EdSpace' repository and elements of the 'Faroës' project to provide 'Web 2.0' content and services to users; incorporate the IMS Question and Test interoperability standard by integrating the 'AsDel' assessment delivery engine, integrating the 'MathQTI' standard, and providing QTI migration services sourced from the 'MCQFM' project; ensure the system is informed by the 'LexDis' project for accessibility; include relevant lessons from the 'mPLAT' and 'Remora' projects in providing for mobile learning and assessment; and incorporate a relatively underutilised and 'new' form of assessment, peer assessment, based upon the 'Peer Pigeon' project.

The methodology involves two strands, one technical and the other institutional.

The technical strand follows a relatively conventional 'analyse, design, prototype, evaluate' methodology across two iterations, involving the end user from the start as we have used and developed over a number of JISC projects (mPLAT, Peer Pigeon, Faroës), namely through co-design, agile development, and co-deployment.

The 'institutional' strand layers the technical strand with selected elements underpinning institutional transformation as identified in the JISC22 'Innovating e-Learning' online conference, in particular engagement with senior management, using champions, involving students²³, exploiting formative assessment as a change agent, and providing shared spaces.

AQuRate

We intend to reuse and share as many existing questions (items) as possible in our system. However, people may want to write their own or modify an existing question. Therefore they will need a QTI compliant authoring tool. We will probably recommend the JISC funded project Aqurate authoring tool developed by the University of Kingston.

Web 2.0

There are two aspects to web 2.0 the technology and the people. Web 2.0 is a way of explaining the phenomena that has seen end users becoming author in ways not possible with Web 1.0. Although it must be said that it was the original vision of Tim Berners-Lee that there would be not distinction between author and reader.

On the technology front, Web 2.0 tools are characterised as single function simple to use tools, in which people can rate and discuss the objects being shared. This is something we want to propagate through out our approach.

Also Web 2.0 removes the artificial barrier of expert and lay person allowing anyone to contribute. We intend to use this approach, especially in formative assessment to allow anyone to write question, not just the lecturer, this will also include students and postgraduates. We intend to try and tap this wealth of untapped resource that exists in our university. After all, who better to understand the problems/confusion/misunderstanding students are facing than other students or post-graduates who have just done the course.

Critical success factors

- *Staffs and students can add questions and set tests for formative assessment.*

University staff will evaluate the final stage of the project.

4. Project Outputs

The main deliverables include: the provision of an open source e-assessment repository: services for the contribution and migration of assessment questions, tests, and peer assessments; services for the delivery of tests and peer assessments; documentation supporting the pedagogical design of e-assessments at higher levels of Bloom's taxonomy; and dissemination material for the wider sector dealing with institutional change using the processes of co-design and co-deployment. As partners in the Support Project, the project will be actively involved in producing briefing materials and training activities for exemplary practice.

There are two major deliverable sets of the EASiHE project:

- *The provision of an open source repository and services for the creation and migration of assessment questions, tests, and peer assessments; the delivery of tests; and documentation supporting the pedagogical design of e-assessments at higher levels of Bloom's taxonomy and defining appropriate management policies. As well as providing significant value to the University of Southampton, this set of deliverables will be an exemplar for such installations for other universities.*
- *Dissemination material for the wider sector in the form of reports which will identify, discuss, evaluate, and draw conclusions around the issues involved in the project, including the processes of co-design and co-deployment leading to the involvement of all stakeholders in order to ensure buy-in leading to institutional cultural change. As partners in the Support Project we will be actively involved in producing briefing materials and training activities of exemplary practice.*

Other planned deliverables include:

- *Project Web site giving free access to and downloads for the project deliverables and materials, as well as the project blog and wiki, in line with the JISC Project Management Guidelines.*
- *Final project report.*
- *Conference papers dealing with issues relevant to and arising out of the project. In particular, it is expected that the project will provide material relating to the re-use of e-Framework services, the incorporation of MathQTI in e-assessments, the student experience of a formative assessment repository, and the issues mentioned earlier around institutional change.*
- *Journal papers and other learned articles dealing with issues relevant to and arising out of the project. In particular, it is expected that papers will deal with the institutional experience of transformation, and of the tangible benefits deriving from technology support for Web 2.0 activities.*

5. Project Outcomes

The University of Southampton has invested very significantly in the JISC-funded EdSpace project, and extending this repository into e-assessment, particularly formative assessment, achieves a major component of the institutional strategy. In addition the institution will benefit from the provision of fully-featured mathematical expressions and other components in e-assessments, robust means of quality assurance of e-assessment questions and tests, and the demonstration that open source solutions can positively complement 'high stakes' proprietary e-assessment systems.

Professionally, the project investigators expect to be able to report compelling and authoritative outcomes at appropriate conferences and in relevant journals, leading to enhanced standing and esteem within their communities. In particular, successful implementation of effective and usable quality assurance metrics for e-assessments will represent a breakthrough in UK HE and FE.

Staff participants may expect to be able to provide better quality, more varied, more interesting, and more innovative e-assessments, and students may expect a better experience, both in terms of their

learning outcomes and in terms of their positive engagement with the social, Web 2.0, and mobile features of the EASiHE system.

6. Stakeholder Analysis

Stakeholder	Interest / stake	Importance
<i>Heads of academic Schools</i>	<i>Pedagogic improvements</i>	<i>High</i>
<i>Senior University managers</i>	<i>Productivity improvements</i>	<i>High</i>
<i>Individual Lecturers</i>	<i>Pedagogical effectiveness</i>	<i>High</i>
<i>Students</i>	<i>Learning</i>	<i>High</i>

7. Risk Analysis

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
<i>Underperformance of technical or 'institutional' team (either in terms of quality or schedule), or drop out of allocated investigators.</i>	2	5	10	<i>The partnership understands the current JISC agenda and direction. There are a number of reviews planned and where work is not completed satisfactorily other staff can be employed to pick the work up and resources redistributed.</i>
<i>Personnel lack adequate experience, competence, or show low morale.</i>	2	4	8	<i>By ensuring that project knowledge and rationale is shared and captured within the project (meetings, blogs, etc) the effect of a person leaving the project will not bring it to a complete stop. It may take time to replace that person but should not stop the project delivering on time.</i>
<i>Imperfect stakeholder or developer understanding, or disagreement between stakeholders and/or developers, during design and development.</i>	3	4	12	<i>Participatory- and Co-design are well understood concepts in the design of effective user system, aiming to breakdown the communication barriers between developers and users. Experts do not always agree, so the PI will make a final choice.</i>
<i>The implementations will be too specific to the particular Institution (or subject discipline) when in reality there is much variation in the way e-assessment can be undertaken.</i>	3	3	9	<i>The evaluation process will identify the extent of this and the engagement with the Support project will help identify the way other projects and institutions are approaching institutional innovation.</i>
<i>Community engagement programme activities receive poor ratings from attendees.</i>	2	4	8	<i>Review of ratings and attendee comments by Support project to address issues. Escalate to JISC if necessary.</i>

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
<i>Requirements volatility & excessive changes in project objectives.</i>	2	5	10	<i>Project management meetings throughout the project will ensure no inadvertent moves away from the plan agreed. However, there will be changes due to Phase outcomes but these will always be discussed at the review meetings.</i>
<i>Resulting EASiHE system, services, or tools have inappropriate tone for target audience, incorrect assumptions for prerequisite skills, or inadequate content.</i>	3	3	9	<i>Participatory design is a well understood concept in design of effective user system and will be used with School (staff and students) participants. This will ensure that what is presented to the users meets their specified and intended needs.</i>
<i>'Gold plating', inadvisable, unnecessary implementation features.</i>	2	4	8	<i>The purpose of participatory design and traditional design reviews are set up for this purpose; to detect and stop unnecessary work.</i>
<i>Estimates of budget and schedule, expectations, or constraints unrealistic.</i>	2	4	8	<i>The investigators and the institution enjoy considerable experience of successful bidding for JISC grants and running JISC projects. Every effort has been spent in using this expertise to check the budget for realistic costs.</i>

8. Standards

Name of standard or specification	Version	Notes
<i>REST</i>		<i>Representational State Transfer This is the style of software architecture for distributed hypermedia systems and outlines how resources are defined and addressed</i>
<i>OAI</i>		<i>The Open Archives Initiative This is the interoperability standard used to facilitate the efficient dissemination of content and is available at http://www.openarchives.org/</i>
<i>'Web 2.0'</i>		<i>This is the main technology used to enhance creativity, secure information sharing, collaboration and functionality of the web.</i>
<i>WAI</i>		<i>The Web Accessibility Initiative This is the main stand used to make the Web accessible to people with disabilities and is available at http://www.w3.org/WAI/gettingstarted/Overview.html</i>
<i>IMS Question and Test Interoperability (QTI)</i>	2.1	<i>This is the main standard that the project will be using and is available at http://www.imsglobal.org/question/</i>
<i>IMS Enterprise Services Specification</i>	1.0	<i>IMS Enterprise Services Specification http://www.imsproject.org/es/index.html</i>

<i>Simple Object Access Protocol (SOAP)</i>	1.2	<i>This is the protocol used to communicate between Web services and is available from the W3C at http://www.w3.org/TR/soap/</i>
<i>Web Services Description Language (WSDL)</i>	1.1	<i>This is the protocol used to describe a Web services in a machine readable manner and is available from the W3C at http://www.w3.org/TR/wsdl</i>
<i>Lightweight Directory Access protocol (LDAP)</i>		<i>This is a possible standard we may use when integrating the services in phase two: http://en.wikipedia.org/wiki/Ldap</i>
<i>SRU/CQ L protocol</i>		<i>This is a possible standard we may use when integrating services http://www.loc.gov/standards/sru/</i>

9. Technical Development

The technology used in this project will be a function of the original language used to develop the open source tools we are using, got instance FLASH, JAVA, Ruby and PHP script based. The project will follow the development set out in this project plan and take an agile approach to developing software. The project will use a Service Oriented approach when designing the system and integrating the various tools. In house coding standards developed in the lab will be adopted to ensure readability, testability and installability. The in-house standards are:

1. *System Design documentation will be the definitive documents, will be expressed in UML, and will be available from the project website.*
2. *Coding practice*
 - *Test plans to be written before coding*
 - *Code should be modular and packaged according to the design.*
 - *The code should be well commented, with clear header description for each class; classes should be reasonably small and self descriptive.*
 - *Good code structure to ensure reusability, maintainability, readability, and extensibility.*
 - *Error handling mechanics.*
 - *Code will be unit tested using Junit (or equivalent)*
3. *Tools for software development cycle. A web based 'issues and bug tracker' will be used to both to monitor task progress against plan and ensure that quality standards are maintained*
 - *An IDE will be used to develop Web services.*
 - *Subversion – version/source control will be used for Java code. It is a repository to record the history of source files and documents, and it allows developers to easily roll back to earlier versions of source code.*
 - *Flyspray will be used to record all issues and design decisions.*
4. *Changes to code and software and documentation are controlled, authorised and auditable*
 - *Use of an issue log (e.g. Flyspray) which records relevant issues, requests for change and software faults / off-specification*
 - *Decision/actions are documented.*
5. *Full account will be taken of issues relating to accessibility of Web-based systems and software and the outputs of this project will conform to published standards and guidelines, For instance the W3c Web Accessibility Initiative (WAI). <http://www.w3.org/WAI/>*

10. Intellectual Property Rights

The code will be made available under an appropriate open source agreement and may be used within any educational establishment in line with JISC's requirements, as per the terms and conditions of JISC grants. The University will retain IPR on the content of assessment tests and questions, the software artefacts, and associated documentation.

Project Resources

11. Project Partners

The lead institution is Learning Societies Lab, School of Electronics and Computer Science, University of Southampton.

The projects consultants are:

Veronica Gale is a Learning Consultant specialising in e-learning and e-assessment. She has worked with a wide range of organisations on the design and implementation of formative and evaluative e-assessments and related management policies.

Steve Bennett has been closely involved with QTI for many years, and will provide expertise in both the QTI standard and in the implementation of assessment systems.

As the project only has consultants there is no partnership agreement.

12. Project Management

The project will be managed at the strategic level through four major formal project review meetings involving all staff allocated to and employed by the project, at the major stage boundaries: Initiation; pilot; large scale deployment; and final report, as illustrated in Figure 2 by the triangle and diamond shapes (,). These major review meetings will consider the highest-level project issues, in particular relating to decisions about the project phases and the activities involved. They will be chaired by the PI and involve the institutional senior staff, comprising the LATEU Director (Dr Ian Giles), ECS Exams officer (Dr Richard Crowder), iSolutions Core Mission Engagement Manager (Dr Pete Hancock), and UoS Director of eLearning (Dr Hugh Davis).

At the operational level, the project will be managed through bimonthly meetings of relevant staff allocated to and employed by the project (Kikelomo M Apampa is a tool users, Bart Nagel is a web developer, Pei Zhang is a mobile developer, Sue Walters is a academic liaison, and Ed Fay is a academic liaison). As necessary, additional meetings may be arranged by the PI (Dr Gary Wills) and the Project Manager (Onjira Sitthisak) if there are particular issues which require such attention and which are not resolvable at the routine weekly management meetings described below.

Tactical project management will be undertaken on a weekly basis. The project team (Dr Bill Warburton, Lester Gilbert and Dr Gary Wills) will meet every week, chaired by the PI or the Project Manager.

The project will use the JISC guidelines on quality assurance, project management, and open source software development. Quality and project management will include the development of project standards for documents (e.g. requirements specifications, project glossaries; non-functional requirements); version, configuration, and change management; requirements tracking; quality reviews of software, models, and documentation (including design reviews and code walkthroughs); and maintenance of an issues log and tracker.

Throughout the project, team members, investigators, and participants (staff and students) will be required and encouraged (respectively) to contribute to the project Web site, by way of constructing project pages or blog or wiki entries particularly focussed on their experiences as the JISC eFramework projects and services are integrated and used, and as other projects and the Support Project in this programme provide insights and suggestions.

Project reviews and evaluations will also include feedback to the Support Project on the effectiveness, and further refinement and development, of the e-Framework.

List of members of the project team.

Gary Wills	<i>Principal Investigator</i>	<i>Learning Societies Lab. School of Electronics and Computer Science University of Southampton Southampton SO17 1BJ Tel: +44 (0)23 8059 2831 Fax: +44 (0)23 8059 2865 Email: gbw@ecs.soton.ac.uk</i>
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Lester Gilbert	<i>Co-Investigator</i>	<i>Learning Societies Lab. School of Electronics and Computer Science University of Southampton Highfield Southampton SO17 1BJ Tel: +44 (0)23 8059 7510 Fax: +44 (0)23 8059 3218 Email: lg3@ecs.soton.ac.uk</i>
Bill Warburton	<i>Co-Investigator</i>	<i>Information Systems Services University of Southampton Southampton SO17 1BJ Tel: +44 (0)23 8059 2326 Email: W.I.WARBURTON@soton.ac.uk</i>

13. Programme Support

The main support beyond the usual programme support may be in facility meetings to arrange the use of software developed in other projects under JISC programmes. Also facilitate meetings between projects with similar interests

14. Budget

To increase budgetary provision for dissemination (increased from £2,000 to £3,500) and evaluation (increased from £2,000 to £5,000), the budget for meetings has been increased by £688. Matching budgetary decreases have been made in staffing by reducing by one spine point the expected appointment scale of the development staff (reduced from £176,746 to £171,529). The final agreed budgetary figure of £299,994 remains unchanged by increasing the contribution fractionally, see appendix A.

Detailed Project Planning

15. Workpackages

Overview. The project aims to overcome the both the technical and institutional barriers to using open source, JISC e-Framework- and web services-based, formative e-assessment systems by deploying the EdSpace repository and integrating a variety of JISC-funded project tools and standards.

Staff. The project plan provides for a Project Manager and three staff as directly employed, all to be recruited. The Project Manager works 1 day per week (20% utilisation), and two staff are initially employed fulltime (100% utilisation), one in UoS Information Systems Services (ISS) and one in the School of Electronics and Computer Science (ECS). Following the review of the initial prototype (at six months), a third technical member of staff is employed and allocated to work within ECS for the next 10 months.

Directly allocated staff are Dr Gary Wills, the PI, supported by named staff within iSolutions and ECS (Dr Bill Warburton, ISS; Lester Gilbert, ECS; Dr Richard Crowder, ECS Exams officer) and by institutionally appropriate named senior managers (Dr Hugh Davis, UoS Director of eLearning; Dr Pete Hancock, iSolutions Core Mission Engagement Manager; Dr Ian Giles, LATEU Director), with utilisations of 11% or 5.5% and days of involvement as summarised in Table 1.

Recruitment. Recruitment of appropriate, qualified staff is not considered a particular risk factor at UoS. The School of ECS graduates a large number of students at various times during the academic year with a range of skills from highly technical to managerially and organisationally informed, and coupled with the significant number of projects which are at any time closing down (albeit in competition with projects starting up!), we expect no difficulty in resourcing the project.

Project methodology. The methodology involves two strands, one technical and the other institutional. The technical strand follows a relatively conventional 'analyse, design, prototype, evaluate' methodology across two iterations, involving the end user from the start as we have used and developed over a number of JISC projects (mPLAT, Peer Pigeon, Faroes), namely through co-design, agile development, and co-deployment.

The 'institutional' strand layers the technical strand with selected elements underpinning institutional transformation as identified in the JISC22 'Innovating e-Learning' online conference, in particular engagement with senior management, using champions, involving students²³, exploiting formative assessment as a change agent²⁴, and providing shared spaces²⁵.

Project plan. The project plan is laid out in the Gantt chart of Figure 2.

- *Initiation. The project starts with a meeting of all participants to agree on the plan, 1 October 2008 (start of month 1). (Please see Appendix C: Project dates for possible initiation in September 2008.)*
- *Co-design (initial). The project undertakes a co-design stage which explores and identifies both technical and cultural & institutional requirements for change, identifies the processes and information needed to achieve these requirements, and identifies the Schools of the University which will participate in pilot and deployment. The target Schools for pilot are already involved in e-assessment, and include the Medicine, Law, and Mathematics. The target Schools for later deployment include Electronics and Computer Science, Engineering, Geography, and Psychology. The project will target the key decision makers in Schools and identify and engage School champions (months 1-2).*

16. Evaluation Plan

The evaluation plan will be carried out by Patricia J Maier, Learning and Teaching Co-ordinator in the School of Civil Engineering and the Environment. Pat has a track record of assisting University staff and projects with their evaluation, as illustrated in appendix C.

Timing	Factor to Evaluate	Questions to Address	Method(s)	Measure of Success
<i>Nov 08 – Jan 09</i>	<i>Co-Design</i>	<i>Are the user requirements for e-assessment? Have we incorporated the lessons learned from previous projects?</i>	<i>Interviews with end users, Focus Group: Local management and technical team</i>	<i>Design documentation (Personas, Scenarios, UML) that is understood by the whole team.</i>
<i>Jan 09 – May 09</i>	<i>Service Operation (Enhancements prototyping)</i>	<i>Can we get the services/tools to operate as expected through an established API (preferably a REST interface)?</i>	<i>System testing (Black Box) against design and requirements</i>	<i>Successfully passing all tests</i>
<i>May 09 – Oct 09</i>	<i>System Integration</i>	<i>Does the system work in the way it was intended?</i>	<i>Testing against specification and test plans.</i>	<i>Successfully passing all tests. Able to delivery the test.</i>
<i>Jan 09 – March 10</i>	<i>Documentation: Installation, user guide</i>	<i>Can the end users use the system?</i>	<i>Interviews and Focus groups. Get other projects in the lab to install and others to integrate it into their portal frameworks.</i>	<i>Qualitatively determine if users found the system easy to install and could understand the documentation without the need to refer to the team for advice.</i>
<i>Feb 10 – March 10</i>	<i>Project as a whole</i>	<i>Has the project achieved it aims?</i>	<i>External (to the project team) evaluation</i>	<i>Aims have been met</i>

17. Quality Plan

Output Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities	Quality tools (if applicable)
Jan 09	System design (Adherence to standards)	Design Review	Minutes kept and design signed off	Project Manger	UML
Jan 09	Fitness for purpose (Adherence to standards)	Internal quality Review	Minutes of Meetings	LSL Senior developer	Flyspray for issue tracking
Jan 09 – Oct 09	Coding/installing EASiHE services	best practice for processes	Logbook update, code deposited	LSL Senior developer	Subversion/SOAPscope
Feb 09	Test Plan (Adherence to specifications)	Unit test	Sign off testplan (with a record of the results)	LSL Senior developer	Junit/ Flyspray
Jun 09	Test Plan (Adherence to specifications)	System test	Sign off testplan (with a record of the results)	LSL Senior developer	Subversion/ Flyspray
Oct 09	JISC Open Source Policy	Licence Check	Creative Commons Licence and source code published in SourceForge	Project manger	Subversion
Jun 09	Test Plan (Adherence to specifications)	Accessibility test	Sign off testplan (with a record of the results)	LSL Senior developer	Subversion/ Flyspray
Jan 10 – Mar 10	Pedagogic improvements	Survey by questionnaire	Favourable feedback from tutors & students	iSolutions	
Jan 10 – Mar 10	Productivity improvements	Survey by questionnaire	Favourable feedback from managers & tutors	iSolutions	
Feb 10	JISC Report Guideline	Proof Reading	Sign off	Project manager	Template
Mar 10	Terms of reference	Peer review	Feedback from steering group	Project Manager	

18. Dissemination Plan

<i>Timing</i>	<i>Dissemination Activity</i>	<i>Audience</i>	<i>Purpose</i>	<i>Key Message</i>
<i>1st month and continuing there after</i>	<i>Project Web site with a blog and RSS feed</i>	<i>General and technical audience</i>	<i>Awareness, Inform, Engage, and Promote</i>	<i>About EASiHE and it developments</i>
<i>1st month and other mandatory meetings.</i>	<i>JISC Kick off meetings and subsequent project meetings</i>	<i>Technical Audience</i>	<i>Inform and Engage</i>	<i>EASiHE developments and feedback</i>
<i>Each mile stone</i>	<i>Deliverable reports an software</i>	<i>Technical audience, and wider informed research and educational research community.</i>	<i>Inform</i>	<i>EASiHE developments</i>
<i>Throughout the project</i>	<i>Conference papers (AERA (ALT-C, Ascilite, BERA, CAA Conference), workshops and/or posters. Also the JISC-CETIS Assessment SIG</i>	<i>Technical audiences, and wider informed research and educational community.</i>	<i>Engage and Promote</i>	<i>EASiHE development</i>
<i>Throughout the project</i>	<i>Demonstration to institutions and organisations.</i>	<i>technical</i>	<i>Awareness, Inform, Engage, and Promote</i>	<i>About EASiHE and it developments</i>

19. Exit and Sustainability Plans

Project Outputs	Action for Take-up & Embedding	Action for Exit
<i>All Reports</i>	<i>Will be posted on the project website and in the institutional achieve. Minimum period of 3 years and archived in the institutional repository (E-Prints)</i>	<i>Access– The School of Electronics and Computer Science will host the server. Preservation– All reports will be archived in the appropriate JISC repository Maintenance – The server will come under the maintenance policy of the School Intellectual property. All report will be copyrighted.</i>
<i>Software: Integration of Services</i>	<i>The program code will be freely available for any Higher or Further education institution. Minimum period of 3 years and archived in the institutional repository It will also be available on source forge</i>	<i>Access– The School of Electronics and Computer Science will host the program code for downloading. Preservation– The program source code will be archived in the appropriate JISC data centre. Maintenance– The system will be free to use by HE and FE establishments. All supporting documentation (specification, user manuals, and technical manuals) will be freely available via the project website. No free on going maintenance will be available for the project after the closing date. Intellectual property– To install their own version of the demonstrator institutions will need to buy their own licences for 3rd party components.</i>
<i>Cultural: Collaborative approaches to assessment</i>	<i>This project will foster collaborative links among and between three constituencies: students authoring questions, tutors in charge of item banks and support staff assisting with the development of item banks.</i>	<i>Collaborative assessment practices developed during the project will be embedded institutionally. This will be achieved formally via procedural documentation and informally in organisational and cultural adjustments.</i>

Project Acronym: EASiHE
 Version: 0a
 Contact: os05r@ecs.soton.ac.uk
 Date: 20 November 2008

<i>Project Outputs</i>	<i>Why Sustainable</i>	<i>Scenarios for Taking Forward</i>	<i>Issues to Address</i>
<i>The EASiHE System</i>	<i>The outcome of this project will be the first open source QTIv2 end-to-end system for delivering formative assessment. The system will be designed to work within a campus network and could be integrated into a Virtual learning environment (or other Web based course delivery systems)</i>	<i>EASiHE will enable early adaptors and those researching in to assessment for e-learning an opportunity to experiment with alternative ways of presenting formative assessment.</i>	<i>EASiHE will be freely available to those working in the FE and HE sector in the UK. Ensuring HE/FE staff have access to the code and documentation for the system.</i>
<i>EASiHE services (code and demonstrator)</i>	<i>Can be used by other JISC projects, developers and researchers</i>	<i>The services can be used by others, allowing them to concentrate on their projects and not on the test delivery.</i>	<i>Ensuring HE/FE staff have access to the code and documentation for the system.</i>

Appendixes

Appendix A. Project Budget

Table 1. Outline budget

	Ytd Mar 09 Yr1	Apr09-Mar10 Yr2	Apr10-Mar11 Yr3	Total £
Directly incurred				
Personnel				
Developers				
Consultants				
Sub-total pers				
Non-personnel				
Travel & expenses				
Equipment				
Dissemination				
Evaluation				
Other				
Sub-total non-pers				
Total incurred				
Directly allocated costs				
DA personnel				
Estates				
Total allocated				
Indirect costs				
General services				
Total costs				
Total				
Total JISC contrib				
Total instit. contrib	£69,666	£169,875	£47,969	£287,510

Appendix B. Workpackages

Project start date: 01-10-2008

Project completion date: 31-03-2011

Duration: 30 months (JISC funded for 18 months, institution funded for 12 months)

The project comprises five work packages (W1-W5) and nine deliverables (D1-D9). The deliverables are described in the work package that creates them. Phase 1 is represented by WP1-3 and Phase 2 WP4-5. The work plan is reflected in the Gantt chart (see Appendix B).

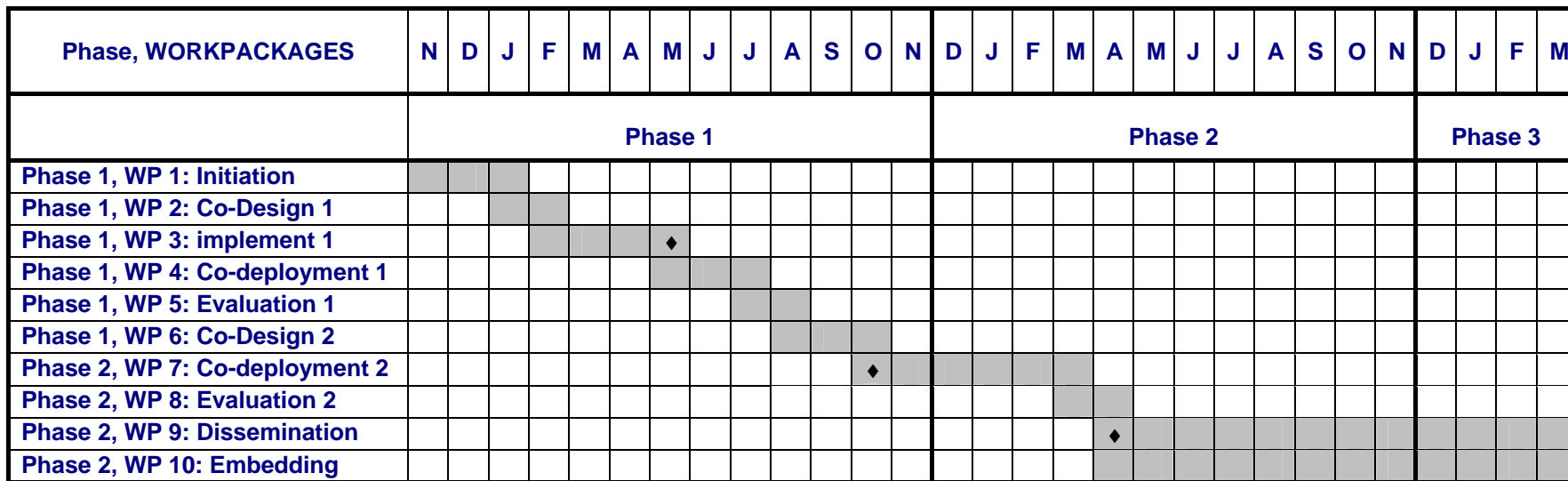


Figure 1 Gantt Chart for the EASiHE project

Workpackage and activity	Earliest start date	Latest completion date	Outputs	Milestone	Responsibility
YEAR 1					
<p>WORKPACKAGE 1: Project Initiation, Infrastructure Requirements specification</p> <p><i>Project Initiation, literature review of the area,: Review relevant projects and standards identify reusable technologies and Lessons Learnt from similar projects.</i></p> <p><i>Specification of procedures for ethics and governance for all sites.</i></p> <p><i>Systems analysis and requirements specification for the back office infrastructure and framework technologies to support the proposed system</i></p>	November 2008	January 2009	<p><i>Ethical guidance procedures specified</i></p> <p><i>Literature review in note form</i></p> <p><i>Infrastructures investigated and specified</i></p> <p><i>Case Studies</i></p> <p><i>Scenarios, and identification of wider issues made available on the system</i></p>		LSL iSolution
<p>WORKPACKAGE 2: Co-Design (technology, cultural and institutional requirements)</p> <p><i>Explores and identifies both technical and cultural & institutional requirements for change</i></p> <p><i>Identifies the processes and information needed to achieve these requirements</i></p> <p><i>Identifies the Schools of the University which will participate in pilot and deployment</i></p>	January 2009	February 2009	<p><i>Scoping document made available on project website.</i></p>		LSL iSolution

<p>WORKPACKAGE 3: Implement 1</p> <p><i>Design - Build - the EASiHE repository and the integration of the services, tools, and standards identified earlier</i></p>	<p><i>February 2009</i></p>	<p><i>May 2009</i></p>	<p><i>EASiHE prototype and description of the prototype</i></p>	<p>1</p>	<p>LSL iSolution</p>
<p>WORKPACKAGE 4: Co-deployment 1 (Pilot and enhance).</p> <p><i>Selected users (staff and students) from the Schools are supported and educated in their use of the repository and services, in particular in their creation of formative assessments using (as appropriate) maths mark-up</i></p> <p><i>Migrate from previous stores, improvement of items using item and test statistics</i></p> <p><i>Construct assessments and peer assessments which reach the higher levels of Bloom's taxonomy</i></p>	<p><i>May 2009</i></p>	<p><i>July 2009</i></p>	<p><i>Installation package</i></p>		<p>LSL iSolution</p> <p>Veronica Gale (consultant)</p>
<p>WORKPACKAGE 5: Evaluate 1.</p>	<p><i>July 2009</i></p>	<p><i>August 2009</i></p>	<p>Infrastructure and first system Evaluation</p>		<p>LSL iSolution</p>
<p>WORKPACKAGE 6: Co-Design 2.</p> <p><i>Adjust and enhance technical and institutional requirements in terms of supporting culture and practice changes</i></p> <p><i>Prepare the larger scale deployment</i></p>	<p><i>August 2009</i></p>	<p><i>October 2009</i></p>	<p><i>Adjusted scoping and requirement document</i></p>		<p>LSL iSolution</p>

YEAR 2					
WORKPACKAGE 7: Co-deployment 2. (larger scale) Educate users (staff and students) Prepare the larger scale deployment	October 2009	March 2010	Installation package Quick Installation guide Demonstrator Client with online User guide for the User Interface Demonstrator	2	LSL iSolution
WORKPACKAGE 8: Evaluate 2.	March 2010	April 2010	Infrastructure and final system Evaluation		
WORKPACKAGE 9: Dissemination Web site, workshops, conference posters & papers, journal articles	April 2010	March 2011	Web site, project wiki, project blog Conference papers, final report Journal articles	3	Project manager & Team
YEAR 3					
WORKPACKAGE 10: Embedding	April 2010	March 2011			LSL iSolution

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Contact: os05r@ecs.soton.ac.uk
Date: 24 November 2008

Appendix C. CV

Patricia J Maier

Email: *P.J.Maier@soton.ac.uk*

Admin Duties *Learning and Teaching Coordinator, Socrates Coordinator*

Research Grants

2008 *Enhanced world-class teaching in Earth Sciences: Developing the virtual environment (co-investigator)*

2006 *An Indicative Costing Tool for University Taught Engineering Modules (Principal Investigator)*

Publications

Shephard, K. , Warburton, W. , Maier P. J., Warren, A. , (2006). "Development and evaluation of computer-assisted assessment in higher education in relation to BS7988." Assessment & Evaluation in Higher Education, 31/5, 383-595

Maier P. J., Armstrong R., Hall, W. , Hong Ng, M. , (2005). "JointZone: users' views of an adaptive online learning resource for rheumatology." Learning Media and Technology, 30/3, 281-297

Ng, M. , Maier P. J., Armstrong R., (2002). "Making Web-based Learning Adaptive." ED-MEDIA 2002, World Conference on Educational Multimedia, Hypermedia & Telecommunication, Denver, Colorado, USA June 24-29, 2002

Maier P. J., Warren, A. , (2000). "Integrating Technology in Learning & Teaching: A practical guide for educators." Kogan Page, London