

Overview of Project

1. Background

This project will create the second iteration of an environment for professional learning – an open-source, open-standards transactional learning environment (TLE 2.0) – and will engage in large-scale evaluation of the implementation of this environment. In the process we shall use the innovative gaming technologies developed by our project partner, Futurelab, together with their experience in design and evaluation. Professional and vocational courses are taken by well over 50% of the full-time undergraduate population in HE: TLE 2.0 has the potential to enhance such courses, and deepen the professional experience of students through use of simulations. Our project will design the open-source, open-standards version of the TLE, implement it across a number of disciplines within the University of Strathclyde, will evaluate student learning within the environment and disseminate the results of the evaluations. The project will last for two years, with a start date of 5 January 2006 and ending 31 December 2007. Thereafter the TLE will be available to other professional and vocational schools in HE and FE. The project will contribute to the Innovation Strand of the JISC E-Learning Programme in many important ways:

- it will provide a highly innovative learning environment for professional learning across a wide range of disciplines that will use the design and application of gaming technologies
- the evaluation of application design and implementation will enhance our knowledge of aspects of successful wireless and mobile learning
- the cross-curricular implementation within an institution will be a springboard for further and wider implementations across curricula and institutions in HE and FE.

Rationale

It is generally acknowledged that professional learning can, under appropriate conditions, be considerably enhanced by the use of simulation. In aviation, business process, health sciences and science disciplines this has been proven in many individual use case studies. Our project will address two fundamental sets of issues in the use of simulation:

1. The design and implementation of an online professional learning environment that can be used in a wide variety of professions within HE and FE
2. The educational, organisational and management issues that arise from the large-scale implementation of this environment, in particular those of:
 - personalised learning in a mobile environment
 - social presence, collaborative learning and the emergence of learning
 - use of simulation spaces in a complex organisation, and the relation between simulation spaces and other learning spaces on a course, including paper-based and online resources, face-to-face classes, other teaching and course administration
 - authenticity in the design of simulation tasks, and effective assessment of professional learning

In our experience these are some of the key issues to be resolved if simulation learning is to become widely embedded as a form of social and professional learning. Our institution is well-placed to carry out the project. The Glasgow Graduate School of Law already has five years' experience of developing and using TLE 1.0. In the Strathclyde Laptop Initiative we have substantial experience of the provision of laptops to students across the institution and the embedding of mobile learning within appropriate educational contexts. We also have Faculty departments who are willing to take part in the use of simulation environments on their courses, and in the large-scale evaluations of the student, staff and administration experience of the use of simulations (more information on institutional readiness can be found in Appendix 2). We also feel that the time is now ripe for large-scale implementation. We have proven that such an environment can work within the GGSL, and we have been at the centre of a number of developments of simulation environments, both internationally and in the UK:

- As a result of our two-day masterclass to representatives of 14 universities in the Netherlands in 2002, the Dutch government-funded RechtenOnline Foundation funded the 18-month development of a TLE for Dutch law schools, called Sieberdam. We are liaising with Sieberdam on an international business project.

- BPP, one of the foremost professional legal education providers in England and Wales, has created a modest version of our virtual town, called Gladbury, after attending a UKCLE staff development seminar on simulation learning.
- Our concept of the virtual professional learning space is also being taken up by other disciplines – for example Institute of Health and Social Care, University College Worcester has an environment (Alesbury) they will be using in their courses, and which was designed after a staff development sessions on our use of Ardcalloch for simulation learning.

2. Aims and Objectives

Our aim is to prove that serious games simulations can effectively enhance professional learning across a range of professions. In order to maximise the potential for success, it is important that the resultant objectives are identified as SMART (Specific, Measurable, Achievable, Realistic and Timely). The project team have utilised this methodology in identifying the following objectives:

1. Through a series of detailed user consultations, project meetings, web and product scanning the project team will qualitatively investigate and analyse the functionality required of TLE 2.0 in order that user needs will be ultimately satisfied.
2. From the work above, create a concept and functionality specification that will describe the features of the software product, and contain required technical information and data needed for design, including purpose, input, process and output. This will also deal with security, maintainability, reliability, accessibility, mobility, interoperability and availability.
3. Following the above specification, and undertaking an on-going consultation process with users, the programming team will iteratively build the TLE 2.0 environment and enable the suite of tools to be available free at point of use to the FE and HE communities.
4. With respect to the above environment, create a set of technical and educational documentation for our collaborative partners within Strathclyde University and law schools.
5. Commission and monitor a series of large scale pilot projects utilising the environment across a range of professional learning interventions in Strathclyde University and in UKCLE law school partners.
6. Utilising Strathclyde and Futurelab expertise, an in-depth and rigorous evaluation of student performance within the environment and institutional use of the environment will be undertaken and all resultant work will be fed back to the appropriate bodies.
7. Following on from the above work, the same team will undertake specific investigation into the impact of TLE 2.0 on existing teaching and learning processes and any resultant organisational issues. Again, this work will be fed back to the appropriate bodies.

3. Overall Approach

At present, there is no widely available open-source, open-standards web-based simulation engine for professional learning. Over the last five years our TLE, which is a virtual simulation environment for professional learning in law, addresses this issue, but has been constructed using proprietary software. At present, the TLE consists of the following:

1. Map and directory of a virtual town (Ardcalloch) which is used as the project context, and provides content for specific simulations. The virtual town provides the implicit simulation world of the transactions undertaken by students.
2. Virtual professional workspace
3. Monitoring and mentoring capabilities
4. Communications routes between simulated characters, students and staff
5. Teaching, learning and assessment templates, including curriculum guidelines

6. Development and integration of other e-learning approaches with that of the TLE.

Postgraduate students on a professional legal education programme, formed into virtual firms, use this sophisticated online environment to carry out entire legal transactions on behalf of virtual clients – for example purchase and sale of property, litigation in the Sheriff Court, and winding up the estate of a deceased client. The TLE has thus been in constant development and use in the last five years. During that time we have evaluated many aspects of it, and expanded its use to incorporate a number of virtual transactions, and we continue to do so (the environment and its projects are described in Appendix 4).

We hold that the TLE can be used by any professional discipline within HE and FE for education, training and assessment, and within any professional grouping in society generally. As it stands already, it represents the first iteration of our strategy to transform the nature and effectiveness of professional learning. It is so for a number of reasons. It enables problem definition to begin with construction of the problem space. It can support what we call open-field problems (where learners construct their own solutions or transactions), or bounded-field problems (where learners follow strongly pre-set procedures and transactions). Above all, it can be used to generate problems and problem-based scenarios that:

- are clear and clearly defined, or are deliberately defined as having fuzzy goals or unstated constraints
- possess multiple solutions, solution paths, or no solutions at all (no consensual agreement on the appropriate solution)
- possess more or less manipulable parameters
- are either typical problems for learners, or problems where there are no prototypic examples
- allow for uncertainty about which concepts, rules, and principles are necessary for solution
- contain relationships between concepts, rules, and principles that are wholly consistent, or inconsistent
- require learners to make judgments about the problem and defend them
- enhance substantial reflection and collaborative learning; or can be performed by singletons.

Our simulations site learners in a professional context, where there are aggregates of transactions, perhaps multiple solution paths, and where their work is, as it will be in the workplace, distributed between tools, colleagues, resources, anticipated and unanticipated problems and individual constructions of knowledge and experience. Such simulations are powerful learning tools, and we now want to generalise that success to other professions, other departments and schools. Our virtual town is both a generic background to transactions and can provide the realia that is an essential element of a professional transaction. In that sense it can be used by engineers, architects, social workers, health workers, surveyors, accountants – in short, any profession that deals with client or patient. We shall develop the tools that will enable the professional cohorts in Higher and Further Education to develop links and liaisons with each other, and to practise the collegiality, networking, values-building and community-building within and between professions that exists within actual workplaces. We shall then evaluate the use of this environment across four separate departments or Schools in different Faculties of the University and three separate law schools, analysing in particular the effect on the teaching, learning and assessment processes and the associated organisational issues that arise from this.

Accordingly, with joint JISC and UKCLE project funding, we shall develop a version of our environment, TLE 2.0. It will be specified according to the requirements of a representative grouping of professions, and the functional specification, to be drawn up in the first six months of the project, will be implemented as a fully-functional platform and tested in the following twelve months of the project with our project case study sites, where it will be used within professional programmes in the last six months of the two-year project. This platform will deliver the transactions. There will be a suite of tools which will allow the creation of transactional content by academics and professionals. Within the project we shall evaluate the educational value of these projects in a series of use case pilot studies. The studies will be carried out with staff from our institutional case study sites -- effectively professional groupings within the four Faculties of Science, Engineering, Education, and Law, Arts & Social Sciences in Strathclyde University. These are the Dept of Architecture (BSc Architectural Studies, in particular the Postgraduate Diploma in Architectural Design, and the Design Management and Practice courses – these courses already have a strong interest in online learning); BSc Computer and Information Science (level 3, Group Project, and final year Project); Glasgow School of Social Work (MA Hons in Social Work); and the Diploma in Legal Practice, Glasgow

Graduate School of Law. We shall also be carrying out identical studies within a single profession, namely law. In association with UKCLE we shall identify three law schools prepared and ready to host a case study, and work with them to embed TLE 2.0 in at least one module.

Our pedagogical approach is constructivist in nature, and situates learning tasks as far as possible within authentic professional environments. Given our approach, our educational challenge is this: how can simulations effectively enhance professional learning across a range of professions? The project aims to answer this question in substantial detail, and is designed around five phases and a three-year trajectory thereafter (phase 6). Critical success factors include the following:

- enhancement of student learning,
- user-friendly, interoperable, accessible and scaleable applications and tools for academic and administrative staff
- embedding of professional learning within academic learning

Phase 1

Project management, formation of detailed project plan, milestones, specific deadlines for all project deliverables; specific roles and responsibilities of the partners and team personnel. Creation of project web site and communications plan for entire project and beyond. Continuous project management.

Phase 2

Specification of an open source platform for the delivery of TLE projects. Liaison with case study staff on task design and implementation issues.

Phase 3

Development of open source, open standards platform to enable the creation, delivery and management of TLE projects

Phase 4

Use-case approach of task design and use, based upon case study sites within Strathclyde University. Use case study of SLI mobile collaborative learning within the university, where four virtual professional groupings, at least 16 students in total, would work with SLI laptops each within the TLE. Use case approach with implementation in three law schools in England and Wales.

Phase 5

Evaluation of student learning, of staff roles and experiences, of administration roles and integration, and organisational issues arising from large-scale implementation. Dissemination of evaluation results at conferences, road-shows, seminars and in papers to be published in peer-reviewed journals and as book chapters. Dissemination of TLE 2.0 as a fully-functioning environment, free, to interested parties in HE and FE.

Phase 6

Post-project. Dissemination of project applications; further development of TLE within LTDU; archiving of all project documentation on the website for a minimum of three years *post-January 2008*.

4. Project Outputs

1. TLE 2.0: a suite of tools within a simulation environment
2. Technical volumes, including manuals and designs
3. Educational guidelines and advice as to best practice in the design and use of simulations and serious games, and assessment of students using these tools

4. Completed case studies of the use of the TLE across all collaborative departments and schools
5. Community of practice within the participant departments as a nucleus for further development, clustered around a CoP website
6. Knowledge and experience shared in workshops, roadshows (particularly with HE Centres such as UKCLE and other HE Centres associated with the project, eg Architecture)
7. Conference papers; published articles; currently also investigating the possibility of an edited book arising from the project
8. Project web site
9. Project completion report

5. Project Outcomes

1. Enhancement of student learning across professional curricula in FE and HE
2. Simulation environment that can be used by both students in FE and HE, and by professional training organisations, thus bridging forms of learning between academic programmes and continual professional development
3. Tool suite that will enable staff to engage with students in simulations that site learning firmly within professional contexts
4. Contribution to research on the use of e-simulations and professional learning, and mobile learning; and large-scale implementation within an institution
5. Awareness-raising amongst staff of the usefulness of simulation learning techniques for undergraduate and postgraduate curriculum design and teaching
6. Collection of case studies across the professions

6. Stakeholder Analysis

Stakeholder	Interest / stake	Importance
External		
Students	Increased learning; more professionally relevant learning	High
FE & HE academic & administrative staff	Roles in teaching, facilitating learning, processing data	High
Professional training organisations	Production of a proven method for professional training and development	Low
E-simulation research community	Increased understanding of the processes that take place, and the conditions that affect, learning in simulations	Medium
Professional regulatory bodies, eg Law Societies, RIBA, SIESWE, etc.	Professional learning is a key function of all regulatory bodies	Medium
Professions	Interested in more effective teaching & learning for the professions	Medium
Other JISC projects in the programme	Contributes important case studies in the three areas relevant to the call	Medium
Higher Education Academy	Interdisciplinarity of TLE 2.0	Medium

Internal		
JISC	Successful completion of all outcomes	High
UKCLE	Implementation and dissemination within Law Schools community; collaboration with other HE centres	High
Futurelab	Contribution to research on serious games; case study of e-simulation learning	High
University of Strathclyde	Large-scale implementation of innovative technologies across a range of professional schools and departments	High
Technical staff	Development of TLE 1.0 > TLE 2.0	High

7. Risk Analysis

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
<i>Staffing</i>				
Loss of key technical / academic staff	1	4	4	Project manager separate from project co-ordinator; project manager's role shared between two people; good communications at project management level to ensure that staff can take up other roles; technical staff to shadow each other and use good project management techniques for project tracking, archiving, etc; potential back-up technical staff at Futurelab in case of loss of staff at GGSL.
Availability of technical staff	1	4	4	Use capable staff within GGSL or Futurelab. Availability of staff to work on the project to be agreed in advance with senior management in the Law School, University of Strathclyde, and Futurelab
Full participation of collaborative departments and schools	2	3	6	Good communications as to roles and responsibilities; regular updates and progress reports; communication of milestones; control of evaluation procedures
Reluctance of management to release staff time in collaborative depts & schools	2	2	4	Early agreement on schedule of work; use of student RAs to release staff to focus on higher level aims & design
Understanding of the new forms of teaching learning & assessment in simulation environments	2	2	4	Staff development for academic staff in use of simulation environments, resource-based learning, problem-based learning

<i>Organisational</i>				
Fusion of technical standards and educational aims	3	3	9	Application functionality
Lack of cohesion between technical and educational staff	1	4	4	Regular project meetings and communications; clarity as to function of common learning objects; common understanding of each others' roles
Lack of communication between collaborative partners	2	4	8	Regular meetings; early identification & resolution of difficulties, slipped timetables, etc
Poor practice by staff in simulation design and/or performance	2	3	6	Use of document and file templates; workflow wizards; creation and use of sets of guidelines to good practice.
Poor performance by students in simulations	2	3	6	Familiarise students thoroughly with concepts and practice; communication about project aims and outputs; emphasise the links between project work and professional practice
Cost of training workshops exceeds budget	3	2	6	Budgetary control by project manager
<i>Technical</i>				
Development of stable TLE 2.0 to budget & on time	3	3	9	Close supervision by lead technical officer of code design and implementation. Close liaison between lead technical officer and project manager. Close communication between Strathclyde technical team and Futurelab
Technical back-up to support academic & administrative staff	2	1	2	Expertise of Project Manager as IT Services director
Failure to obtain meaningful evaluation data	2	4	6	Careful design of evaluative methodologies at project outset; strict control by project manager over data quality standards
<i>Legal</i>				
IP disagreements	1	3	3	Sound consortium agreement; use of JISC template; R & C Office in Strathclyde University to advise on documentation

8. Standards

1. Freely available relational database management system, such as MySQL, Postgres or any other SQL compliant system.
2. Use a widely available software development language.
3. Will be looking to exploit existing JISC standards on (but not limited to)
 - User authentication and authorisation
 - User profiling

4. We will use existing standards on meta-data (such as Dublin Core) for communication processes within the projects components.
5. Where the system interacts with Learning Management Systems we will follow established JISC guidelines.

9. Technical Development

Indicate how the project will follow best practice for technical development, and any specific technologies or development approaches the project will adopt and why.

The Law School's Learning Technology Development Unit will be undertaking the technical development of the project. This unit has considerable expertise in implementing software solutions including the predecessor to this project, TLE 1.0. This will ensure that the appropriate technical standards are achieved.

We will follow:

- JISC's Software Quality Assurance Guidelines.
- Software development will follow existing and well established standards including
- UML based systems analysis techniques and other appropriate software development methodologies, including unit testing.

We will use prototyping to allow our project partners to see and evaluate the current progress of the project, and allow them to provide additional feedback or request clarification.

10. Intellectual Property Rights

Issues of IP rights are dealt with in detail in the Consortium Agreement relevant to this project. In summary, all project partners agree that project deliverables will be made available to the UK FE and HE community in perpetuity and free at point of use. These will be disseminated widely and in partnership with JISC, HEA and UKCLE in particular.

It is further intended to develop amongst the partners a Sustainability Plan for the on-going commercialisation of the resultant product suite.

Project Resources

11. Project Partners

There are three project partners: University of Strathclyde, Futurelab, and UK Centre for Legal Education.

The University of Strathclyde is the lead institution. It is responsible for:

1. Project management, including budgetary control of all funds and liaison with JISC
2. Development and maintenance of TLE 2.0 during the lifetime of the project
3. Production and distribution of documentation to all six participating centres
4. Large-scale implementation within the University of Strathclyde according to the terms of the project
5. Evaluation of the TLE and communication and dissemination of these results across the institution, and FE and HE

6. Ongoing development and maintenance of the TLE, together with its associated community of practice.

Futurelab will be involved in the design and development of the TLE in the early phases of the project; and in the design of large-scale evaluation of student use, staff attitudes and work patterns, and administrative contexts. In more detail it will:

- 1 Provide a common evaluation and embedding framework for both the Strathclyde and Bath project in relation to the process of innovation and of embedding tools -Cultural Historical Activity theory (developed by Yrjv Engeström, amongst others) will be applied
- 2 Capture case studies and dissemination of experiences to different stakeholders. In this Futurelab will play a joint role in dissemination from the start of the project. Dissemination will be included in the start-up meeting in relation to both an individual and cross-project focus. We plan to consider examples of innovative dissemination practice and get people thinking about this from the beginning of the projects.
- 3 Provide methodologies for innovation in relation to capacity of institutions and environments
- 4 Supply expertise in assessment and gaming technologies innovation
- 5 Support both the design of software and the design process
- 6 Develop an architecture for learners to work with other learners and professionals and models to enhance learning

As well as a joint funder with JISC, UKCLE is a full partner in the project. A joint JISC and subject centre project fits well into the existing and developing partnership between the JISC and the Higher Education Academy and in particular adds strength to the evaluation and dissemination elements. The partnership will also enable a valuable sharing of resources and practices across disciplinary communities. Centre staff will:

1. set up a transparent process for the choice of three law schools to join the project
2. liaise with the successful law schools to develop e-simulation projects, including aspects of learning, teaching, assessment, administration.
3. evaluate the use of the TLE within the law schools
4. disseminate the application and results to the UKCLE community
5. disseminate the project results to other HE Academy professional groupings to engage such groupings in further use and evaluation of the TLE.
6. investigate the further use of TLE in other areas of legal education

A Consortium Agreement will be signed and sent to JISC, copied to project partners.

12. Project Management

Project team

Name	Role	Responsibilities
Professor Paul Maharg 0141 548 4946 paul.maharg@strath.ac.uk	Project director	Overall direction and management of the project; staff training on design of professional e-simulations; writing of internal working papers on educational design; research design and production
Martin Owen 0117 915 8210 martin.owen@futurelab.org	Futurelab, Director of Learning	Liaison with Strathclyde University; appointment of Futurelab staff to work on analysis, evaluation and other issues, including coding
Tracey Varnava	UKCLE, Depute Director	Oversight of design, implementation and evaluation of TLE within three law

024 7652 3071 t.varnava@warwick.ac.uk		schools external to Strathclyde University
Brian Henderson 0141 548 3326 brian.henderson@strath.ac.uk	Project manager	Duties as set out in the JISC guidelines, s.12.1, reporting to project director and management board; management of the mobile learning mini-project within Strathclyde University. 1 day per week for duration of project
Diane McDonald 0141 548 3530 d.mcdonald@strath.ac.uk	Liaison officer	Liaison officer with other JISC communities and other learning projects locally at Strathclyde; advice and guidance on implementation internal to Strathclyde University; research interest in the formation and maintenance of learning communities and complexity theory. Reports to director.
Patricia McKellar 024 7652 3117 patricia.mckellar@warwick.ac.uk	E-learning Advisor, UKCLE	Design of e-simulations, implementation and evaluation of TLE within the three law schools; dissemination of TLE methods, documentation and processes within UKCLE and the wider HE Centre community. Reports to Tracey Varnava and Project manager on progress within UKCLE and law schools
Scott Walker 0141 548 3190 scott.walker@strath.ac.uk	Lead Technical Officer	Responsible for technical progress; achievement of milestones; technical standards; timing of application development; any alteration to technical aspects of project plan; technical analysis and functionality documentation; QA on technical production. Reports to Project Manager on technical progress
Michael Hughes michael.hughes@law.strath.ac.uk	Applications Developer	Analysis and functionality specification; coding, compilation and archiving of code; revision of code; staff training in TLE use. Reports to Lead Technical Officer
[Post to be filled]	Applications Developer	Analysis and functionality specification; coding, compilation and archiving of code; revision of code. Reports to Lead Technical Officer
Paul Yaneske 0141 548 3097 p.p.yaneske@strath.ac.uk	Senior Lecturer, Architecture & Building Science Dept	Liaison with project team over TLE analysis and functionality, implementation issues and academic administration; teaching, learning and assessment strategies; evaluation procedures and data collection; further dissemination of TLE methods and processes; optional co-authorship of research articles. Reports to Project Manager
Andrew Agapiou andrew.agapiou@strath.ac.uk	Lecturer, Architecture & Building Science Dept	Liaison with project team over TLE analysis and functionality, implementation issues and academic

		administration; teaching, learning and assessment strategies; evaluation procedures and data collection; further dissemination of TLE methods and processes; optional co-authorship of research articles. Reports to Project Manager
Mel Cadman 0141 950 3610 m.cadman@strath.ac.uk	Social Work Recruitment and Selection Co-ordinator	Liaison with project team over TLE analysis and functionality, implementation issues and academic administration; teaching, learning and assessment strategies; evaluation procedures and data collection; further dissemination of TLE methods and processes; optional co-authorship of research articles. Reports to Project Manager
Kate Cameron 0141 950 3384 k.cameron@strath.ac.uk	Social Work Qualifying Course Director	Liaison with project team over TLE analysis and functionality, implementation issues and academic administration; teaching, learning and assessment strategies; evaluation procedures and data collection; further dissemination of TLE methods and processes; optional co-authorship of research articles. Reports to Project Manager
Andrew McGettrick 0141 548 3589 andrew@cs.strath.ac.uk		Liaison with project team over TLE analysis and functionality, implementation issues and academic administration; teaching, learning and assessment strategies; evaluation procedures and data collection; further dissemination of TLE methods and processes; optional co-authorship of research articles. Reports to Project Manager
Three law school staff, England & Wales	To be appointed between now and the formal project start date.	Liaison with project team over TLE analysis and functionality, implementation issues and academic administration; teaching, learning and assessment strategies; evaluation procedures and data collection; further dissemination of TLE methods and processes; optional co-authorship of research articles. Reports to UKCLE E-Learning Advisor

Project management committee

The project management committee will consist of the following personnel:

- Paul Maharg (Chair)
- Martin Owen, Futurelab (or representative)
- Tracey Varnava, UKCLE (or representative)
- Brian Henderson, Project Manager
- Scott Walker, Lead Technical Officer
- External adviser (to be appointed)
- Participating departmental staff, where appropriate

A standing agenda will be drawn up, and each person will be responsible for obligations set out above. Meetings will be held each quarter to coincide with quarterly reports, and will meet with a quorum of 4, in the GGSL or where convenient. Each of the three partners has one vote on all issues to be voted upon; a majority decision is sufficient for a decision.

Learning / Training Requirements

The project training requirements will be met largely from within the project itself. In this respect we want the project to become a learning community, where all participants learn from each other. Sessions to be either individual or group workshops, ranging from two hours to a whole day

Learning session title	Participants involved	Facilitators involved	Purpose
Design & implementation of e-simulations, workshop 1	All academic staff & technical staff, possibly dept administrative liaison staff where appropriate. Full day seminar at least	Paul Maharg; Martin Owen; Patricia McKellar	<ol style="list-style-type: none"> 1. Provide a general understanding of the nature, purpose and implementation of e-simulations within FE & HE based on situated learning within professional environments, and to include aspects of learning theory, teaching/facilitation practices, assessment practices, technical approaches, and examples from a range of disciplines and professions. 2. Enable participants to first-draft their e-simulation project 3. Inform project participants of the evaluation methodologies to be used in the project 4. Provide the project technical team with the information required to produce a functional specification of the complete inter-professional tool suite for the project 5. Share information on diverse forms of professional assessment
Digital professional work environments, meetings	All academic and technical staff	Academic staff from individual professional groupings within the project: Architecture, Social Work, STAMS, Law	<ol style="list-style-type: none"> 1. Obtain feedback for project technical team on first draft of functional specification and discuss use in detail 2. Define final specification for functionality of the e-simulation workspace to be used by students and staff
Design & implementation, meetings	All academic staff & technical staff	Maharg, Owen, McKellar	<ol style="list-style-type: none"> 1. Produce a second and final draft of e-simulation project resources, including map of transactional outcomes, communications routes, characters, tasks, sub-tasks, transactional evaluation & assessment 2. Share resources and methods across the project disciplines

			and between institutions
Evaluation meetings	All academic staff	Maharg, Owen, McKellar	<ol style="list-style-type: none"> 1. Discuss forms of evaluation appropriate to e-simulations and specific disciplines – both evaluation of student learning, and evaluation of the project itself 2. Define a range of evaluative methods and processes to be used in the project for evaluation of data on learning processes, and substantive & procedural learning by students 3. Work through the template of a use case study
User training for TLE 2.0	All academic and specific admin staff	Walker, Hughes, Maharg	<ol style="list-style-type: none"> 1. Train staff in the use of the e-simulation environment for: <ul style="list-style-type: none"> • Scenario-building • Resource-embedding • Task design • Assessment design • Facilitation and communication • Assessment tool-building • Assessment tool-use

13. Programme Support

We may take advantage of the JISC Middleware Assisted Take-Up Service. Where appropriate we shall liaise with our JISC Programme Manager.

14. Budget

See JISC template budget plan in Appendix A

Detailed Project Planning

15. Workpackages

See Appendix B (Excel spreadsheets), which includes an overview of the project timelines, based on workpackages, and the detail of the completed workpackages themselves.

16. Evaluation Plan

Timing	Factor to Evaluate	Questions to Address	Method(s)	Measure of Success
December 2006	Creation of acceptable, workable functionality specification	Does the stated functionality address requirements of all project users to a reasonable degree?	Workshop; feedback; agreed document	TLE 2.0 is founded on a functionality specification that can be extended into T.E 3.0
June 2007	Development of stable TLE 2.0	Is the stated functionality acceptable according to software standards and requirements of project participants? Is the software stable and usable?	Workshop feedback; formative user feedback on software; user observation	Project participants encounter no serious problems in using the software; data is secure; environment is acceptably usable
Aug-Sept 2007	Use of TLE 2.0 by staff	Can staff use the environment confidently and effectively?	Questionnaire; user observation	Staff want to use the environment for a continuation of the module that uses TLE 2.0; department considers further use of the environment
Sept 2007-May 2008	TLE 2.0 as an effective tool for learning	Can students use the environment to enhance their learning?	Questionnaires; reflective logs; user logs; interviews; group interviews; substantive results	Students find little difficulty in using TLE 2.0; can perform tasks hitherto difficult or impossible using the environment
May-July 2008	Evaluation of TLE.2.0	Did the environment perform as expected? Did it facilitate learning?	Questionnaires; user logs; interviews; group interviews	Students enjoy using the environment; TLE 2.0 enables confidence and practice in the performance of professional tasks
Jan-July 2008	Dissemination of TLE 2.0	What are the drivers & blockers to large-scale implementation & dissemination?	Results of internal project data; feedback from roadshows, etc	Staff in project disciplines take up further use of the environment; staff from other disciplines use the environment.

Futurelab will draw up a detailed evaluation plan which will be developed during March, and will be shared and discussed at the first project seminar. It will include the use of questionnaires, logs, individual and group interviews (using phenomenographic and interpretive phenomenological analysis techniques), observation, peer review, self-assessment, and analysis of student assessed work.

17. Quality Plan

There are four key deliverables in this project, set out below.

Output	TLE 2.0 Technical Design & Development				
Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities	Quality tools (if applicable)
WP2, WP3,	Fitness for purpose, version control,	Peer review, JISC	audit trail	Project director	CVS

WP6	usability,accessibility	standards,			
WP4	Fitness for purpose	University framework agreement	Audit trail		
WP5	Fitness for purpose, version control, usability, accessibility, adherence to standards	Best practice for processes Peer review, JISC standards	Audit trail		CVS W3C Validation
WP7	Fitness for purpose, usability, Version control	Internal Bug fixing workflow, Best practice	Audit trail		Bug tracking system. CVS
WP8	Fitness for purpose, Version control, usability, accessibility, adherence to standards	Peer review, adherence to WP2 documentation & JISC standards	Audit trail		CVS, W3C Validation, tools in WP5

Output	Educational documentation				
Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities	Quality tools (if applicable)
July 2006 – July 2007	Clarity Usability Research guides Practice guides	Feedback from users; Feedback from readers	Feedback data, and redrafting of guidelines	Project director	

Output	Evaluation data				
Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities	Quality tools (if applicable)
WP9	Fitness for purpose, Version control, usability, accessibility, adherence to standards	Peer review, best practice, JISC guidelines, user feedback	Documentation sets produced and distributed. Peer feedback reports.		Document version control
WP10	Fitness for purpose, Pilot project management, usability, accessibility, adherence to standards	Site visits, staff / student surveys, user feedback. Usage monitoring.	Pilot reports, project task completion reports.		Formal project management, bug tracking system. Documentation.
WP11	Formal evaluation methodology. Collaborative evaluation plan.	User surveys, workshops, pilot / user observation.	Multiple evaluation reports.	Futurelab	Formal evaluation plan. Project evaluation toolkit.
WP12	Accessible, informative, stimulating	Check profile of the project in the	Articles, book chapters, roadshows,	Lead Technical Officer; Project Manager;	Formal dissemination schedule / plan.

	information is published; meet needs of the audience; increase audience of the project	constituent UK disciplinary communities; Check profile of project internationally among key groups Feedback from website users	visits, conference papers, web site production. High profile in constituent participant disciplinary HE communities; general awareness of project existence and results in Strathclyde University Website community; web log; website evaluation	Director; participant dept staff; Futurelab staff	
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(To be completed by Futurelab in collaboration with UKCLE and Strathclyde University)

Output	Dissemination of resources (including website)				
	Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities
July 2006- July 2008 and beyond the lifetime of the project	Accessible, informative, stimulating. are published; meet needs of the audience; increase audience of the project	Check profile of the project in the constituent UK disciplinary communities; Check profile of project internationally among key groups Feedback from website users	High profile in constituent participant disciplinary HE communities; general awareness of project existence and results in Strathclyde University Website community; web log; website evaluation	Lead Technical Officer; Project Manager; Director; participant dept staff; Futurelab staff	

18. Dissemination Plan

Dissemination is a crucial element of the project, and all participants will be expected to play a role in this activity. We would regard the following activities as

Timing	Dissemination Activity	Audience	Purpose	Key Message
	Websites			
2006	Key project information posted on project website	All professional academic departments; HR depts in	Alert general audience to project content and results in the	General information about the project's existence and

		professional firms	form of case studies; interim and final reports	function
2006-2008	Quarterly progress reports posted on website	All professional academic departments; HR depts in professional firms	Alert general audience to project content and results	Progress of project
2007-2008	Formation of a community of practice around website and blog	All professional academic departments; HR depts in professional firms	Draw general audience closer to project participation	Project is open, maintained, viable and useful for both staff and students.
2006-2008	Project information to be hosted on UKCLE website	Legal academic community	Information re project; persuade others to join the project community	New form of teaching, learning, assessment; viable for all members of this community
	Research			
2008	Article to <i>Journal of Computer Assisted Learning</i>	E-learning community in FE & HE	Report on project: educational & technical approach, outline, data, evaluation	Alert JCAL audience to project content, methodology & results
2008	Article to <i>Journal of Information, Law Technology</i>	E-learning community in Law	Specific legal educational aspects and interdisciplinarity of transactional e-learning	Inform legal educational community of project content, methodology and results specific to Law, and interdisciplinary implications
2008	Possible edited book collection	E-learning community in FE & HE; professional market	Report on data, new approach to learning, facilitation & assessment	E-simulations can be viable, effective tools for professional development across a range of professions and transactions
	Conference papers, presentations			
2007	BILETA conference paper	International audience: Law academics	Report on project: educational & technical approach, outline, data, evaluation	Alert HE legal education community to the further development of TLE 1.0 > TLE 2.0
2007, 2008	Presentations at HE Centre roadshows, discipline-specific workshops	UK HE Centre staff; discipline-specific staff	Aspects of the project relevant to specific roadshows	Alert FE & HE staff to existence of project
2007	Learning Enhancement Network presentation	University of Strathclyde academic and	Dissemination internally to staff at Strathclyde	Benefits to university of adopting this

		administrative staff	University	approach to learning and assessment
2008	Substantive Technology in Law	International audience: Law and other academics	Report on project: educational & technical approach, outline, data, evaluation	International applicability of TLE 2.0 and similar e-simulation approaches
2007	UKCLE Learning in Law Initiative Conference workshop	UK Law academics	Demonstrate the flexibility of our approach in legal education, and the methods we use, and the possibility of using this for others interested in so doing	Usefulness of TLE 2.0 for undergraduate e-simulations
2008	Legal IT Forum Conference	International audience: Law firm IT Directors and lawyers	Presentation on cutting edge training methods	Usefulness of TLE 2.0 for professional training
2008	ALT-C	UK academic e-learning community	Focus on aspects of activity theory and situated learning in simulations	Success of the project, from learners' perspectives
2008	UKCLE Vocational Teachers' Forum Conference workshop	Professional law teachers	Focus in detail on methods, results; help others to form proto-projects	Success of the project; viability for teachers
2008 or 2009	HE Conference or Scholarship of Teaching & Learning Conference	FE / HE community	Focusing on educational theory and evaluation results	Project methodology and approach
2008 or 2009	Conference, Architecture Education	To be confirmed	To be confirmed	To be confirmed
2008 or 2009	Conference, Social Work Education	To be confirmed	To be confirmed	To be confirmed
2008 or 2009	Conference, Computing Education	To be confirmed	To be confirmed	To be confirmed
	Other forms of dissemination			
2006; 2008	Articles in University of Strathclyde's Newsletter, <i>Prism</i> , and university web site	Academics at Strathclyde	Alert staff to project existence; alert staff to project results	The project represents a viable form of teaching, learning & assessment
2008	Articles in professional journals, eg <i>Journal of the Law Society of Scotland</i>	Professional groupings	Inform and remind audience of simulation learning methods	Viability of the techniques for facilitation, learning & assessment
2008	Article in <i>Directions</i> , newsletter of UKCLE	Legal academic community	Inform and persuade others to join the project	New form of teaching, learning,

			community	assessment; viable for all members of this community
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19. Exit and Sustainability Plans

Project outputs are largely software and experience that accretes around the development and use of the software. We envisage that the community of practice that will gather around the project during the two years of development will be crucial in maintaining the development of the open-source tool-set and persuading other funders to finance further development of the concept and its implementations.

Project Outputs	Action for Take-up & Embedding	Action for Exit
TLE 2.0 tool suite	Development in community of practice in UKCLE and University of Strathclyde	Community to be hosted jointly by UKCLE and GGSL. Open access to tool suite as per agreement with JISC. Tool suite to be downloadable from the website
TLE 2.0 technical and educational documentation	Development in community of practice in UKCLE and University of Strathclyde	All documentation to be posted publicly on the web site, and updates to be maintained by the community, including GGSL. Documentation to be downloadable from the website
Website	To be updated regularly and enriched as a research resource as well as a centre for community of practice	GGSL is committed to maintaining the website for at least three years beyond the life of the project; UKCLE will want to host project archive and best practice documentation
Know-how developed in the lifetime of the project	Captured during the project as use case studies	The use case studies, together with evaluation data, will be posted on the project website. Studies to be downloadable from the website.

Project Outputs	Why Sustainable	Scenarios for Taking Forward	Issues to Address
TLE 2.0 tool suite	Tool set that the e-simulation concept relies upon; currently no other similar tool set exists in the e-sim market; it will be customised to FE & HE learning	<ol style="list-style-type: none"> UKCLE, and possibly other HE subject centres, may be interested in maintaining the community and its use case studies beyond the three-year period Strathclyde University is interested in so doing 	<ol style="list-style-type: none"> Funding for further development of the tool set Dissemination funding, post-project Dissemination to professional groupings Linkages to other

		3. GGSL will further develop the e-simulation tool suite.	e-learning initiatives, eg e-portfolios
TLE 2.0 technical and educational documentation	Necessity if users are to use TLE 2.0	As above	As above
Website	Historical development of a unique teaching, learning, assessment project; focus site for an interdisciplinary community of practice; documentation archive; ongoing development site.	Both UKCLE and GGSL to organise the archiving and development of the site	Roles in archiving and development
Know-how developed in the lifetime of the project	Developed as part of the narrative of project process and product	As above	As above

Appendices

Appendix A. Project Budget

Appendix B. Workpackages