

Cover Sheet for Proposals (All sections must be completed)	JISC Capital Programme
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Name of Capital Programme:
JISC Circular 3/06: e-Learning

Name of Lead Institution:
University of Bolton

Name of Proposed Project:
ORAC: Online Recording of Achievement and Competence

Name of Project Partners:
University of Bolton, Sheffield Hallam University, University of Central Lancashire, Robert Gordon University, University of Derby, Chartered Institute of Architectural Technologists (CIAT)

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Length of Project:
2 years

Project Start and End Dates:
1st October 2006 to 30th September 2008

Total Funding Requested from JISC:
£188,952

Funding Broken Down over Project Years:
Year 1 - £101,017; Year 2 - £87,935

Total Institutional Contributions:
£119,060

Outline Project Description

This project will explore the pedagogy of portfolios in relation to user need and use this to develop a methodology for electronic portfolios and their underpinning technology. The project will be based within a specific subject community but the developed models will be generic to enable capacity building in the use of technology to support pedagogic aims and user requirements across other sectors in the Built Environment. It will evaluate the methodology and characteristics of existing portfolios and e-portfolios and map these against a needs analysis of stakeholders (users, practitioners, universities, employers and professional bodies). This will be mirrored by a complementary study on the underpinning technology, either in current usage or under development.

An eportfolio methodology and underpinning technical model will then be specified and necessary software adapted / developed before piloting with groups of stakeholders. The evaluated results of these pilots will be shared across other subject communities.

I have read the Circular and associated Terms and Conditions of Grant at Appendix B (Tick Box)	YES ✓	NO
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INTRODUCTION

This proposal is in response to the JISC Circular 3/06 under the JISC e-learning programme: Cross-constitutional use of e-learning to support lifelong learners, which aims to “*identify how e-learning can benefit learners, practitioners and educational institutions, and advise on its implementation*” (JISC, 2006). The proposed project is a national learner focussed collaboration which supports the JISC strategic aim of “*the use of new technology and innovation to support flexible delivery and personalised learning experiences*” in the area of e-Portfolios and Personal Development Planning (PDP).

Rationale

Construction is the UK's biggest employer and exporter, contributing more than 8% of the UK's GDP and employing 2.1 million people (or 1 in 14 of the total UK workforce)¹. Construction Skills (2006) have forecast that by 2010, industry needs to recruit over 36,400 new professionals to meet its growth forecast of 12.7%. Skills and training gaps have been identified (Construction Skills, 2004) which need to be addressed to improve the quality and mobility of the workforce in order to meet the changing needs and demands of the industry.

As Built Environment disciplines increasingly move towards the use of student and professional portfolios and the nature of the assembled evidence varies with new technology and software capability, there is an impetus for setting up and sharing electronic repositories. This would have an impact on portfolio assembly, composition, presentation, assessment and learning. It is acknowledged that learners generally are more receptive to adopting in work those applications/methods that they use in play. Seventy-six percent of professionals surveyed in 2001, admitted to using the internet to support professional learning (Macleod and Macleod, 2001). In addition, in order to deliver towards the needs of 21st century learning (Robert Gordon University, 2005) higher education, professional institutions and employers need to work more collaboratively.

In order to deliver such collaboration, there needs to be improved access to and recognition of a learner's achievement in an external environment, such as facilitating integration between academia and practice and supporting Continuing Professional Development (CPD). The resultant community of practice would help build capacity, knowledge and skills within the construction industry, aid mobility, widen participation and improve visibility between academic and professional life.

Professional institutions in general are increasingly looking towards the adoption of enabling technologies to support CPD. In a study of thirty-four professional bodies, thirty-three envisaged using internet technologies to support CPD (Macleod and Macleod, 2001). One way of doing this is through an electronic portfolio, or e-Portfolio, which is a personal collection of information describing and documenting a person's achievements and learning based on electronic media and services (Wikipedia, 2006a, 2006b, Ravet, 2006), which allows for accreditation for prior and/or extra-curricular experiences (Eradc, 2006) and supports CPD.

There are three main types of e-portfolio: developmental - a record of things that has been done over a period of time; reflective - includes personal reflection and what it means for personal development, and representational - shows achievement in relation to particular goals. They may be combined, facilitating different learning, personal or work-related outcomes (Wikipedia, 2006a). E-Portfolios can be seen as a digital identity, providing a place to reflect on personal experiences and store related information (Eradc, 2006).

There have been many developments in e-Portfolio technology and subsequent adoption by universities and professional institutions worldwide. JISC has funded eight e-Portfolio projects², whilst Wikipedia (2006a) lists over twenty e-Portfolio software products currently in use. There seems little information relating to the transposition of these products across institutional/vocational boundaries.

The partner organisations will be seeking to develop a sustainable open source e-Portfolio management system across national, institutional and employment boundaries supporting the Architectural Technology (AT) discipline and its community of learning. The project scope will be limited to (AT) rather than the wider Built Environment because:

1. The Built Environment is too wide as a scope for a two year research project;
2. Visual disciplines, such as AT, have needs above text-based disciplines including

¹ Construction Skills, <http://www.constructionskills.co.uk>.

² <http://www.heacademy.ac.uk/3735.htm>

- Output from particular software (e.g. AutoCAD, 3D Studio etc);
 - Animations such as walk-through, simulations and interactive 3D models
 - Users, as designers, may want to customise look and feel.
3. Repositories exist for AT within individual institutions but are not synergised. There are currently no standards for archives and learners store their work in various places such as home, work, university networks and personal online space;
 4. Current technologies where used are not always interoperable.

Portfolio building is a key strength for Architectural Technologists, allowing demonstration of creativity, and is the principal unit of currency for recording learning and development, whether it be acquired through undergraduate experience, or professional practice. Currently, an undergraduate student's "physical" portfolio is used as a single vehicle to map attainment of learning outcomes across the learning experience. In demonstrating competence/fitness for practice/technical excellence/continuing personal development, portfolios offer common currency between Higher Education (HE) and professional practice.

The e-portfolio develops both a methodology for formalising how the attainment of learning through deep investigation can bridge between HE and practice and the opportunity to test applications of current/new technologies (teaching + learning futures) for wider dissemination and access. The principal beneficiaries would be learners, employers, the construction industry and the wider community.

Aims and Objectives

The aim of this project is to evaluate, develop and pilot technologies and systems to support learning, development and reflective practice, to meet the needs of learners, universities, professional institutions and potential employers. Working with a subject community, the project will deliver enhanced capacity, knowledge and skills with respect to technology supporting flexible, personalised, life-long and life-wide learning, which will be shared with the wider academic community and industry.

The objectives are to:

1. Identify the needs of learners, universities, professional institutions and potential employers with respect to planning and recording learning, reflective practice and other activities. These might include:
 - Learner mobility
 - Changing industry practice/trends
 - Professional development/Life-long Learning
 - Student work repositories for professional accreditation and sharing
2. Identify and evaluate existing portfolio and e-portfolio methodology and characteristics in terms of pedagogy, process, product and supporting technologies. The emphasis will be on knowledge gained through a deep investigation.
3. Map existing portfolios and tools against these needs and identify overlaps and gaps
4. Develop an e-portfolio methodology and underpinning technology to provide accessible, affordable, user friendly software to support needs
5. Collaborate with stakeholders (including other universities, employers and other experts) to pilot software and share evaluated outcomes across other subject communities

Partner Institutions

The consortium is national, made up of the following learner focussed Higher Education and Professional Institutions:

1. University of Bolton – Lead Partner
2. University of Central Lancashire
3. Robert Gordon University
4. Chartered Institute of Architectural Technologists (CIAT)
5. Sheffield Hallam University
6. University of Derby

The universities, all accredited centres of CIAT, are active participants in the subject community, seeking ways to improve delivery and support of training for Architectural Technologists both in academia and employment. The project partners are interested in:

- Document Management - Creating a mechanism for developing a library of student work (knowledge storage and management) and enable sharing of student work

- Social Networking - Enhancement of student mobility through recording and integrating access to work-based and exchange activities and enabling mobility between professions (professional bodies)
- Reflective Practice - Developing student ownership of planning, recording & presentation of personal professional development
- Adoption and Extension of Existing Service-Based Technologies - Extending existing IT specification / protocols on interoperability through identification of appropriate SOA based systems using existing information models and standards e.g. IMS global, e-portfolio and implementing identified system

Similar work has been undertaken in other sectors such as healthcare (MANSLE project with regional pilots, and the Royal College of Nursing with national but standalone eportfolio for members). This consortium is seeking to develop and implement a sustainable open source e-Portfolio management system across institutional (HE and Professional) boundaries on a national basis, starting with the core partners, but eventually to be rolled out across other universities. The project partners are not seeking a technology based solution to a paper problem, but rather a review of learning and what is required to support future learning including life-long, life-wide, personal, flexible and web-based learning, and CPD in a bid to widen participation. It is intended to introduce sustained interoperability within and across institutional, employment and national boundaries.

The proposed project is expected to last two years and be undertaken between 1st October 2006 and 30th September 2008. Funding will be sought for a further two years (2008-2010) for the implementation across other disciplines within the built environment.

Summary of contribution to JISC programme

JISC have identified a number of desired outcomes from the e-learning programme. This project will contribute to the JISC programme in the following ways:

- Equip practitioners with the ability to build capacity and skills in managing and facilitating e-learning in different contexts (academic and work-based) and with different pedagogic approaches enabled by the use of an open source system shared between accredited Universities and the Accreditation body (CIAT)
- Specify a technical infrastructure through an ePortfolio management system supporting flexibility, diversity and extendibility of life long learning to Architectural Technologists through a personalised learning experience
- Enable easy access to high quality, flexible learning materials linked to a learner's need at milestones (e.g.) PDP and CPD, with enhanced support from the professional institution
- Develop effective and responsive systems and structures at local (universities) and national (CIAT) levels which provide an avenue for storage and presentation of achievements, reflection, assessment and administration of lifelong learning.

Furthermore, knowledge gained through this research will inform JISC's e-learning programme through dissemination and benefit the Built Environment community and other visual-based disciplines such as Engineering and Product Design.

The benefits to be derived by the Built Environment community, partner institutions and learners will come from knowledge acquired through the ethnographic investigation of e-Portfolio requirements and supporting technologies which will be disseminated through conference and academic papers, reports, presentations and seminars. For CIAT, the key is facilitating progression including employability. Expected benefits of the outlined system and methodology include:

1. Linking recognised courses and relevant work experience, allowing candidates to plan and monitor their route to qualification as an Architectural Technician or Chartered Architectural Technologist (initial professional development) regardless of their academic path
2. Allowing members to use work place evidence to support their academic progression, including initial course admission
3. Allowing members to plan, evaluate and record their CPD
4. Allowing attached evidence to be assessed by CIAT assessors, including associated monitoring, moderation and quality assurance (QA) processes
5. Allowing data exchange between different operating systems and platforms such as those used in university, employer, office and personal environments
6. Having minimal hardware/software and technical input to install and operate with low-cost maintenance and update requirements

From the university perspective, the main benefit to be derived relates to document management. Archives will be pulled together as formal repositories for learners' work applying common standards and supported by interoperable technologies. This will enhance QA standards in this discipline, facilitate student mobility, knowledge and work sharing and preparing for professional accreditation visits.

From the learner's perspective, the benefits to be derived include: allowing production of up to date curriculum vitae (CV); provide a storage facility and retrieval capability for all lifelong learning activities; link FE/HE output to practice output; and enable mobility of student portfolio across institutional, employment and professional boundaries.

These benefits however will be generic enough to transpose to other built environment professions and as well as outside of the sector.

PROJECT DESCRIPTION

This project aims to connect two separate paradigms of learning: academic/structured and professional/lifelong. A review of the existing systems (Pullman, 2002) reveals that previous developments focused on the creation of digital repositories rather than on the usability and extensibility in different learning contexts. Approaches based on social networking, although useful in a learning context lacked the structure needed by the professional bodies. Initial discussions in this project identified the major objective of e-Portfolio system as having the ability to connect to each other to aggregate learning objects with/without user intervention.

This study will investigate the viability of developing a methodology for establishing a sustainable open source service-oriented approach for the development of eportfolios in a format which might be acceptable to universities, employers and professional bodies within the Built Environment. In terms of benefit within a lifelong learning context, this would offer a single online resource for archiving, accessing and presenting information to support transitions, work-based learning (WBL), and to inform decisions on progression. Knowledge acquired through this project will contribute to the development of the JISC e-Framework.

The open source approach supports most applications used by students and practitioners allowing a choice of applications and tools and enhanced ownership. It will also support interoperability and data transfer, vital to encourage uptake between practice and HE.

The system will be capable of supporting the highly visual content of the AT work (such as from uploading images, and movies to viewing CAD drawings via plug-ins) allowing interaction and correspondence between learners and mentors.

In a vocational field such as AT, portfolio building may be a key facet of the undergraduate experience, employability and postgraduate development either through further study at Masters level, CPD, or both within the overarching concept of lifelong learning, and needs further exploration. The work will be undertaken in close collaboration with the professional institutions involved in accreditation for Built Environment courses.

Key Areas of Investigation

This will include the identification of stakeholders' requirements from the methodology through an ethnographic study. A number of methods/specifications/tools have been identified which may support intended outcomes. These include e-Portfolio management systems e.g. MANSLE³, specifications e.g. IMS ePortfolio v1.0 (IMS 2005); and personal learning toolkits e.g. PLEX⁴ (Johnson *et al*, 2006). There are also ways of recording reflection and other portfolio related work outside the 'portfolio' domain (e.g. wikis, blogs etc). We will therefore be taking a fundamental approach to building identified systems out of components using Service Oriented Architecture (SOA)⁵ rather than a closed monolithic approach. Many of the existing portfolio systems are monolithic, whilst some are not really 'service driven' and this has highlighted a need to investigate 'portfolio services'.

³ MANSLE was one of a number of JISC funded 'regional pilots' of e-portfolio technology
<http://www.bolton.ac.uk/elab/mansle/index.htm>

⁴ PLEX is a personal learning toolkit (PLT) developed as part of the CETIS PLE project
<http://www.cetis.ac.uk/>

⁵ SOA enables intra-system (which could be located either as part of a Learning Environment: PLE/VLE/MLE or as a standalone system in participating organisations) communication and messaging, the Web Services standards, e.g., SOAP (Simple Object Access Protocol) and architecture style, e.g., REST (Representational State Transfer).

For an e-Portfolio management system to cater for the requirements of the academic institutions and professional bodies, the defining metadata needs to capture academic processes as well as professional body requirements. Existing specifications will be examined based on a rigorous analysis of use cases and system requirements.

After a review of existing technologies that support e-Portfolio, a chosen system will be assessed for further study into usability, ethnography and support for professional body requirements. 'Use Cases' and 'System Requirements' will be analysed with Unified Modelling Language (UML) 2.0 allowing participants to coherently interpret underlying principles.

Outline Project Plan

The project will:

- Select learners and other agents to engage with an ethnographic investigation to determine user (learner, universities, professional institution, employers) requirements from ePortfolios. This will address questions raised by the MANSLE project on the purposes of e-Portfolios and e-PDPs and whether they are a solution to a problem that does not exist (Ringan, 2005). It will also address the issue of continued use of e-Portfolios after graduation highlighted in a study by Tosh and Werdmuller (2004) in which they identified that 44% of students at Penn State University said they will not use their e-Portfolio once they have finished their courses, with the rest only 'likely' to do so.
- Identify existing systems for further examination
- Implement chosen system across participating Universities
- Implement support structures and learning programmes to ensure participants are equipped with the appropriate technical knowledge to operate the chosen system
- Monitor and analyse the structure of participant experience in the light of:
 - The predictions of the chosen model
 - The complexities of individual participant contexts
 - The effectiveness of individual technological coordination
 - The effectiveness of engagement with learning activities

The result will serve to modify/reinforce the most appropriate model for implementation in AT and other visual-based disciplines.

Methodology

Several research methodologies will be employed including literature, document and archival review which will be undertaken as part of the needs and gaps analysis.

An ethnographic investigation of participant activities unmediated by technology will allow participants' context to be understood (predominantly learners of Architectural Technology, but also tutors, and members of related professional bodies) in their daily practice and identify the nature of mechanisms whereby they manage commitments to their different communities of practice. We would also examine the role of existing technologies and services and how they interact with learner functions. The needs analysis will identify domain specific requirements and as well as learning technology issues to be addressed.

In parallel with the needs analysis, a technical evaluation of a range of open source tools⁶ including several developed as part of the JISC IE (Information Environment)⁷, and JISC MLE (Managed Learning Environment)⁸ programmes will be undertaken and correlated with the needs analysis to identify the most suitable elements for implementation in ORAC. The elements will be aggregated into a cohesive SOA resource using Web Services technologies.

A study on several interoperability standards, in particular e-Portfolio specifications e.g. IMS ePortfolio v1.0 (IMS 2005) will be conducted to identify how well the defining metadata supports different learning contexts. Extension of the existing schema, if required, will be based on the findings from needs analysis and technical evaluation.

In order to understand the true nature of user experience in a learning context using the adopted system, we propose a second ethnographic study as participants engage in activities surrounding the learning process. There will be thirty six trials with an average of six people. We seek to establish mechanisms for the support and monitoring of this investigation to facilitate effective use of the technology and effective feedback from participants and so

⁶ A brief evaluation of existing ePortfolio systems can be found is: (Kimball, 2005)

⁷ JISC IE programme: http://www.jisc.ac.uk/index.cfm?name=ie_home

⁸ JISC LE programme: http://www.jisc.ac.uk/index.cfm?name=mle_home

propose to allocate a proportion of the project's budget as compensation to participants for the demands of participating in such a detailed study. The second ethnographic study would involve an investigation of coordination of participant activities mediated by adopted e-Portfolio technology. We shall:

- Ensure that users are familiar with the new technological situations
- Consider the nature of participant's coordination of technology in the light of the complexities of their coordination established in study 1.
- Evaluate the differences in experience and coordination, the relative success with learning engagement, in light of predictions of the adopted technology
- Get learners to talk about 'breakdowns' in their experience, or where they feel they are 'falling' (Heidegger), or where they are struggling to manage the technology.

Proposed Timescales

Confirmation of acceptance by JISC: July 2006
 Advertise posts: July - August 2006
 Appoint by: September 2006
 Project Start: 1st October 2006
 Programme:

YEAR 1

ACTIVITY	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
Literature, document & archival review	█	█	█	█	█	█						
Website development	█	█	█									
Ethnographic study 1	█	█	█	█	█	█						
Needs and gap analysis	█	█	█	█	█	█						
ORACLE meetings	█			█		█		█				
Specification production				█	█	█						
Technical evaluation	█	█	█	█	█	█						
Panel of Experts Meetings							█					
Evaluation				█	█	█	█	█	█			
Mapping					█	█	█	█				
Interim Report					█	█	█					
Develop software & technology platform							█	█	█	█	█	█
Plan, pilot and develop evaluation methodology								█				
Start pilot testing									█			
Technical set up Universities									█	█		
Dissemination								█	█	█	█	█

YEAR 2

ACTIVITY	MONTH											
	13	14	15	16	17	18	19	20	21	22	23	24
ORACLE Meetings		█						█		█		█
Panel of Experts Meetings					█							█
Pilot Testing Universities	█	█	█	█								
Pilot Testing CIAT				█	█	█	█					
Ethnographic study 2		█	█	█	█	█	█	█	█			
Project Review										█	█	█
Guidance Notes										█	█	█
Final Report										█	█	█
Project End												█
Dissemination	█	█	█	█	█	█	█	█	█	█	█	█

The Year one programme will be to: 1) Confirm profession's requirements, including progression (covering university/college and workplace); 2) Evaluate existing portfolio products at two levels with the second level being a more detailed evaluation; 3) Revisit list of requirements; 4) Define parameters for software to deliver e-portfolio; 5) Explore options of modification of existing product versus new development; and 6) Modify/develop software. Though website development will take place in Year one, population and updating will be undertaken throughout the term. Year two would involve final evaluation (standard JISC methodology) and implementation.

Dissemination

Dissemination is envisaged to begin in month 6 and continue throughout the project and beyond. There are several avenues/mediums available to the team including but not limited to: 1) CIAT journal: 6 full pages over the two years, including 2 pages for dissemination; 2) Academic Journals; 3) Other professional journals; 4) ORAC Project Website; 5) CIAT website: Space to promote project as well as recruit pilot attendees, Regular project progress reports; 6) JORUM repository, 7) University and Departmental websites; 8) Higher Education Academy Conferences; 9) Participating Universities Teaching and Learning Conferences; 10) Other professional body conferences in Built Environment discipline.

Risks

A risk analysis has been undertaken to identify and plan against associated risks to this project. The main risks are:

1. Staff not in place for October 2006 (because of notice period or lack of suitable applicants) or change of staff during project term. This risk would be mitigated for by investigators contributing more time to ensure completion to deadline. At worst an application for extension to the project not exceeding March 2009 would be sought.
2. Commercial confidentiality and data protection issues when integrating technology with CIAT database and website service providers as well as employers. This risk would be minimised by seeking co-operation at the start of the project.
3. Funding not available for roll-out of adopted methodology amongst non-participating accredited universities. This will be mitigated for by inclusion of the adoption during re-accreditation process.

Detailed Project Outcomes / Deliverables and value to JISC community

The following are the expected outcomes from this project:

1. Thorough evaluation of portfolio methodology and underpinning technology available and in development to support implementation and access
2. Ethnographic study and needs analysis for learners, practitioners, institutions and the subject community and how they manage commitments to the different communities of practice they participate in, with respect to widening participation, reflective practice and preparation for lifelong learning and professional development
3. Development of an e-portfolio methodology and underpinning technical model which is accessible, flexible, affordable and sustainable
4. Structured and evaluated trial of software and underpinning technology to ensure it meets the identified needs and adds value to the learning experience as preparation for (or consolidation of) lifelong learning and professional development
5. Ethnographic study of coordination of participant activities mediated by adopted e-Portfolio technology
6. Production and sharing of guidance in order to extend the methodology beyond the initial subject community.

Deliverables include: Project website to disseminate and share knowledge; Interim and Final reports; Guidance Notes and academic papers. These will add value to the future coordination of learning technology developments not just in theory but in practical experience in the JISC community and beyond.

IPR and Sustainability

Outputs from this project would be made available free at the point of use to the UK HE and Further Education (FE) communities under the JISC terms and conditions. As such all outputs will: use open standards, be released in a form with no Digital Rights Management (DRM)

restrictions and compliant with applicable accessibility standards; and have clear copyright statements indicating ownership of the copyright output and the distribution licence.

In terms of sustainability, engagement with industry and accredited Universities/Colleges should ensure uptake and continued usage. Interoperability will be the key to successful implementation.

Project Team

Two full time staff will be appointed for this project with technical expertise for underpinning technology and/or experience in pedagogic evaluation and ethnography.

The ORACLE (steering group) shall be composed of the research investigators, partners and technology champions who will steer the direction and outcomes of the project, and will meet eight times during the project duration (see proposed timescale). There shall also be a panel of experts who will be practicing members of professional institutions in the Built Environment and leading academics in AT. They shall meet three times during the project duration (see proposed timescale) to provide expert input and evaluation to the project. The table below shows the proposed membership of ORACLE and Panel of Experts.

ORACLE (ORAC Leaders)	Proposed Panel of Experts
Dr. Boris Ceranic (University of Derby)	CABE
Dr. Elizabeth Brookfield (CIAT)	CEBE
Graham Paterson (Robert Gordon University)	CIAT
Andrew Penman (CELT - Robert Gordon University)	CIC
Monjur Mourshed (University of Central Lancashire)	CIOB
Maria Murray-Carmichael (University of Central Lancashire)	Landscape Institute (LI)
Norman Wienand (Sheffield Hallam University)	London South Bank University
Colin Orr (University of Bolton)	Napier University
Mark Johnson (University of Bolton – JISC-CETIS)	RIBA
Dr Margaret Nelson (University of Bolton) – Project Manager	RICS
	The Engineering Council

PROPOSED BUDGET

The proposed budget for this project is £192,451 over the term of the project (2 years). Direct costs are summarised below.

A. Direct Costs – JISC Funded

ITEMS	YEAR 1	YEAR 2	TOTAL JISC
Staff			
Staff Cost	£25,774	£26,735	£52,509
Full Time Research Students	£38,893	£39,450	£78,343
Equipment			
Laptops	£2,000	£0	£2,000
Server	£2,800	£0	£2,800
Computer Software	£3,500	£0	£3,500
Dissemination	£1,500	£2,500	£4,000
Website	£7,500	£0	£7,500
Expenses			
Travel and Subsistence	£12,000	£12,200	£24,200
Consumables	£1,650	£1,650	£3,300
Leaver Incentives	£5,400	£5,400	£10,800
Total	£101,017	£87,935	£188,952

B. Partner Costs – Indirect Contributions

Partner institutions shall contribute all other institutional overheads and estates charges, staff costs for steering group members (non-investigators), personnel, financial services and other costs not included in the proposed budget incurred in the course of the project.

KEY PERSONNEL

Dr. Margaret-Mary Nelson – Project Manager

PhD, Postgraduate Certificate, BSc (Hons), ILTM, ABIFM

Dr Nelson is Reader and research team leader in the Department of the Built Environment, University of Bolton (March 2005 to date). She has experience leading and/or managing research projects for bodies including DTI, NHS Estates and EPSRC. She has previously been a Research Fellow with the School of Construction and Property Management, University of Salford (1999 – 2004) and Senior Researcher/Lecturer at the Facilities Management Graduate Centre (FMGC), Sheffield Hallam University (2004 – 2005).

Margaret is a member of the Board of Studies for Research Degrees, the Learner Experience Committee, steering committee for the Knowledge and Innovation Research Conference, and other University of Bolton sub-committees and standing panels. She is currently an Erasmus Exchange Lecturer with the Turku University of Applied Sciences and Helsinki University of Technology; and external adviser on the board for the Postgraduate degree in Facilities Management at the Turku University of Applied Sciences.

Dr Elizabeth Brookfield

Dr Brookfield is the Education & Research Officer at CIAT, where she:

- Offers advice and guidance on strategic development and policy matters
- Leads development in CIAT relating to education and qualification matters
- Liaises with external organisations to develop and maintain links and collaborative activities
- Has knowledge of relationship between professional bodies and educational institutions and their mutual requirements
- Has experience in the design and delivery of qualifications and development packages
- Has experience in the definition and assessment of competence, its role within a professional body and the significance of maintaining and demonstrating it within the membership

Elizabeth has research experience, including a PhD in Chemistry (Coventry, 1997). She also has a Masters in Education (Lifelong Learning) achieved through the Open University (2005)

Monjur Mourshed

BArch, University Certificate in Higher Education, MBCS

Mr. Mourshed is a Senior Lecturer in Architectural Design and Technology and course leader (designate) for MSc Sustainable Architecture, Department of the Built Environment, University of Central Lancashire. He has teaching responsibilities and research interests in: Information Modelling, Energy Simulation and Sustainability. He is the Managing Editor of a refereed international journal: Global Built Environment Review and their 2006 Conference Co-Chair.

As a Unit Researcher (2001-2003) at the Informatics Research Unit for Sustainable Engineering, National University of Ireland, Cork he worked on Information Modelling, Interoperability and Energy Simulation developing software tools (ArDOT) and methodologies for optimisation of environmental design of buildings. He is a professional member of the British Computer Society with experiences in theoretical Computer Science as well as Software Development and Distributed Computing.

Colin Orr

BSc (Hons), PdDip, MArch, PgCert, ARB, RIBA, MCIAT, ILTM

Mr Orr is a Chartered Architect and Chartered Architectural Technologist. A Senior Lecturer and course leader (Architectural Technology) at the Department of the Built Environment, University of Bolton (1998 to date). He has previously worked in the public sector and in private practice.

Colin is an active member of the Chartered Institute of Architectural Technologists (CIAT) and is Vice-President Education & Membership and North West Region Education Officer. He is a RIBA (Bolton Architects Society) Committee Member, and an external examiner at the Huddersfield University (2000 – 2006), University of Ulster (2005 - to date), and Waterford Institute of Technology (WIT) (2006 - to date). He is also an ERASMUS exchange lecturer at the Technical University, Brno, Czech Republic..

Graham Paterson

DipArch RIBA HonMCIAT

Mr Paterson is a Lecturer at the School of Architecture and Built Environment at the Robert Gordon University and course leader for MSc Design Management and BSc(Hons) Architectural Technology programmes. Current research interests focus on the use of digital media to develop detail design phase within architectural technology.

Graham is a member of the Royal Incorporation of Architects in Scotland (RIAS) Education Board and point of contact for built environment N/SVQs and lifelong learning; Scottish Environmental Education Council (SEEC) Policy and Development Committee; working and validation group for built environment N/SVQ Levels 3-5 awards with UK Construction Industry Standing Conference (CISC); British Board of Agreement National Technical Committee 14 and UK steering group developing DTI/TRADA/BRE sponsored research projects on applications of new technologies to the built environment.; and Consultant to RIAS and Royal Institute of British Architects (RIBA) on Scottish Credit and Qualifications Framework (SCQF).

He is currently developing commissioned research for the Chartered Institute of Architectural Technologists, and is a Visiting tutor several European universities.

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APPENDIX

APPENDIX 1

LETTERS OF SUPPORT

1. University of Bolton
2. Chartered Institute of Architectural Technologists
3. University of Derby
4. Robert Gordon University
5. Sheffield Hallam University
6. University of Central Lancashire

Our ref: PM/letter/lu1-21-6-06

21 June 2006

JISC Executive
Northavon House
Coldharbour Lane
Bristol
BS16 1QD

University
of Bolton


To Whom It May Concern

Circular 3/06 e-Learning: Proposed Project
ORAC: Online Recording of Achievement and Competence

Please find enclosed a proposal responding to the JISC e-learning programme's priority of developing e-learning to support lifelong learning. The project is led and managed by the University of Bolton based upon its expertise in e-learning and its position as a centre of excellence for part-time and full-time higher education for the construction industry. The project is able to build upon recent JISC funded work led by the University on e-portfolios for lifelong learning (the MANSLE project) and targets a major UK employment sector where part-time continuing professional development is of significant benefit for employers and the workforce. A strong team of major university construction education providers has been assembled to support the project together with professional body and employer involvement.

I hope that the project can be considered for JISC support and look forward to hearing from you.

Yours sincerely



Dr Peter Marsh
Pro Vice Chancellor

Enc.

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Dr Margaret Nelson
School of the Built Environment
University of Bolton
BOLTON

Dear Margaret,
Re: JISC Project: ORAC

This letter confirms CIAT's intent to be an active partner within consortium to deliver the above project. CIAT is always supportive of developments in learning & teaching, whether they are generic or subject based. Architectural Technology students, as with those of other architecture and construction disciplines generate an enormous amount of visual work as part of their academic assessment and work based learning as they move towards professional qualification. There is a definite need for a mechanism to bring this work together in a format which enables the learner to take ownership of their development both at university/college and within the workplace.

As you are aware, learning within the construction sector does not stop at graduation. Graduates typically enter a phase of initial professional development (IPD), where they compile evidence from their work place, using live projects, in support of their professional qualification. Subsequently, all construction professionals have an obligation to undertake continuing professional development (CPD) in order to maintain their technical and professional competence. There is also increasing incidences of multi-skilling of professionals and mobility between professions. We strongly believe that this project will address these issues initially within architectural technology and ultimately across all built environment professionals.

CIAT sees itself as pivotal to the architectural technology community of practice, where academics and industry engage to encourage participation within the discipline and consequently push forward technical and professional boundaries. We feel that the project objectives will support this for both the academic and industrial perspective and hence aid integration. We would be particularly supportive of the use of national occupational standards within the final software, as this would allow learners, employers and academics to ensure they are fully up to date with current industry requirements and practice. It would also tie in with current institute practice with respect to course accreditation and assessment of eligibility for membership. We can provide further advice and guidance on this as the project progresses.

In terms of support, CIAT can offer the project its full backing. Our Education & Research officer, Dr Elizabeth Brookfield will be the principal representative and should be costed at £300 per day, including overheads. CIAT will be happy to offer its London offices for meetings & seminars on weekdays within office hours, subject to diary availability, as well as accommodating visiting staff during the final year of the project for short periods by mutual agreement. The meeting space will be provided at zero charge however CIAT reserves the right to charge for refreshments and other incurred costs. We would also be happy to help identify and contact potential panel of expert members and pilot attendees as well as promote the project and disseminate its outcomes through our magazine (*Architectural Technology*) and our website (www.ciat.org.uk). We have placed a value on this contribution of £5k.

If the project output is to be linked to any of CIAT's existing services, such as the website, there may be a need to consult with our service providers, which is likely to incur a fee. In such a case, we would have to reclaim any additional costs rather than pass it directly to our members.

I trust that this letter provides all of the necessary information and confirms CIAT support for the project.

Francesca Berriman
Chief Executive

Faculty of Arts, Design and Technology
School of Technology



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Dr. Margaret-Mary Nelson
Reader in the Built Environment
University of Bolton
Department of the Built Environment
Deane Road
Bolton
BL3 5AB

Date as Postmark

Dear Margaret

Re: JISC Funding Opportunity

In response to minutes of JISC Funding Opportunity Meeting on 26th May 2006 I confirm that the University is willing to support the above project. Dr Boris Ceranic will act as a representative of our Institution.

I would be grateful if I could be copied into any information about this project.

Yours sincerely

A handwritten signature in black ink, appearing to read "Angela Dean".

Angela Dean
Assistant Dean
Faculty of Arts, Design and Technology

Vice-Chancellor
Professor John Coyne

Incorporated in England as a charitable
limited company
Registration no. 2077282



Dr Margaret Nelson
Reader
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16 June 2005

Dear Dr Nelson

Current JISC e-learning programme to support lifelong learning

I understand that you are co-ordinating a bid for JISC funding to develop a methodology for establishing e-portfolios within the built environment. The consortium which has been active in preparing the bid includes the Chartered Institute of Architectural Technologists, The Robert Gordon University, University of Bolton, University of Central Lancashire, Sheffield Hallam University and the University of Derby.

This is to confirm that we are delighted to support the development of this important work and wish you every success with the bid.

Please do not hesitate to contact me should require further information.

Yours sincerely

David McClean
Head of School



Acting Head of School
David McClean
MBA, BBA, RIBA



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Executive Dean of Faculty
Professor Kevin Bonnett

Our ref: SJ/NW

21 June 2006

Dr Margaret Nelson
Reader
Department of Built Environment
University of Bolton
Deane Road
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BL3 5AB

Dear Dr Nelson

Online Recording of Achievement and Competence

I understand that you are co-ordinating the bid for JISC funding to develop a methodology for establishing e-portfolios within the built environment. The consortium involved in preparation of the bid includes the University of Bolton, the University of Central Lancashire, the University of Derby, Robert Gordon University and the Chartered Institute of Architectural Technologists.

I would like to confirm that we are pleased to support the development of this important work with an academic contribution to the project steering group. Norman Wienand MCIAT is pleased to form the focus of this contribution and the staff time costs associated with the proposed eight meetings will be met by Sheffield Hallam University.

Please don't hesitate to contact me should you require further information.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Sylvia Johnson'.

Professor Sylvia Johnson
Acting Executive Dean
Faculty of Development and Society



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Date: 14 June 2006

Dear Sir/Madam

JISC Proposal: ePortfolio for Architectural Technology

I write to confirm that we are pleased to cooperate with the University of Bolton, Robert Gordon University, Sheffield Hallam University, University of Derby and Chartered Institute of Architectural Technologists for the proposed project: **ePortfolio for Architectural Technology**, presented in the full proposal attached.

I can also confirm that the University of Central Lancashire will provide full access to the required research facilities existing within the University. Mr. Monjur Mourshed and colleagues in the department of Built Environment will give their full support to this important and exciting collaborating project.

Yours faithfully

Mark Lamey
Acting Dean
Faculty of Design and Technology

PRESTON ■ PENRITH ■ CARLISLE

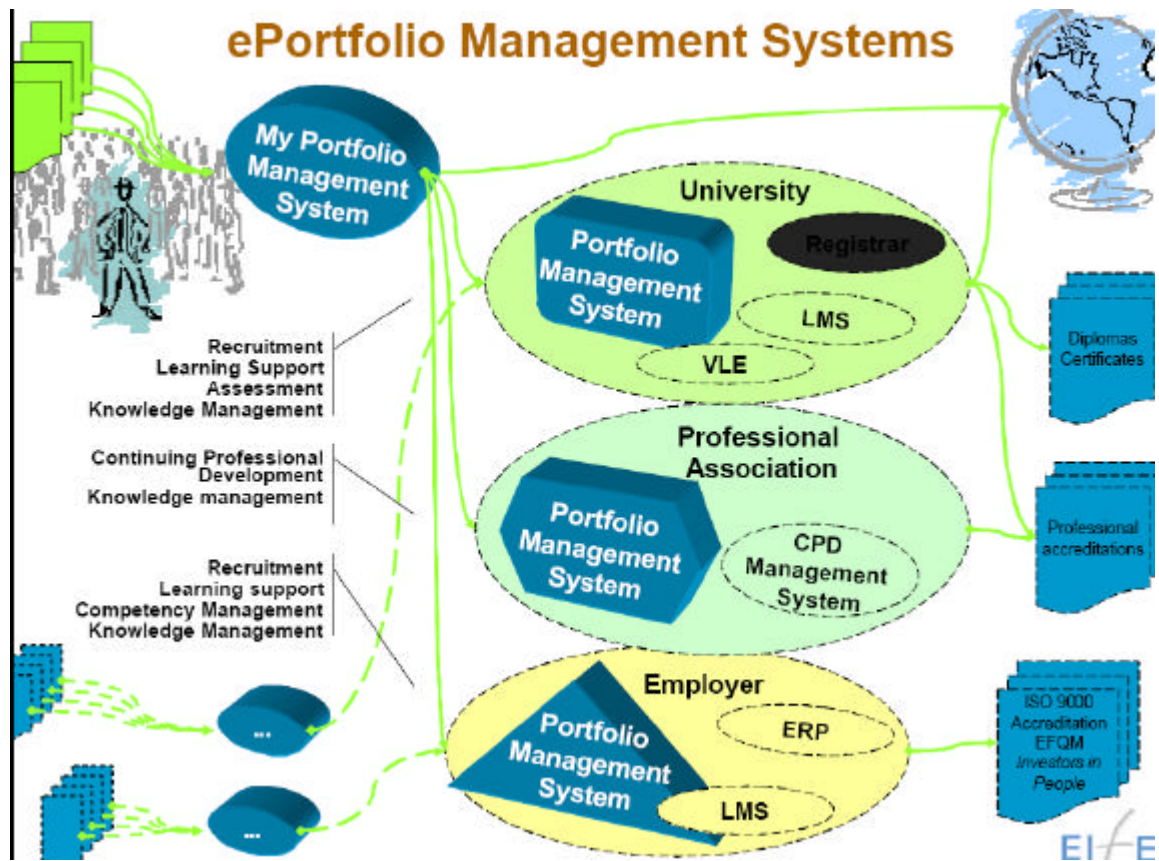


Figure 1 e-Portfolio Management Systems Ravet (2006)

APPENDIX 3

THE CONSORTIUM

The project team and partner universities in this proposed project have a wealth of experience and expertise between them in this area of study. The partner universities have already undertaken related work into the added value of e-learning for the 'University of the Future' and bring together a wealth of experience. The Principal's working group, Robert Gordon University (2005) for example identified that the university environment of the future would view the learning environment as a whole, and encompass *'not only the campus of the university itself but the linked environments of home and work based placements where learning and even assessment is and will be continued'*. They viewed the introduction and development of e-portfolios as a feature of the increased demand for CPD provision amongst professional groups.

The University of Central Lancashire (UCLAN) are at the planning stage of developing a 3-tier Information System for student which will be made available to both external and internal visitors to the website. It will contain learners' portfolio with links to project briefs and the details will be shown as a gallery.

Sheffield Hallam University developed the 'Communities of Learning' project which integrates e-Portfolio and Personal Development Planning (PDP) into the learning experience (Learning and Teaching Institute, 2006).

The E-learning development system at the University of Derby has developed a computer-based assessment for medical students. The "hot spotting" of images in the project has been identified as a useful tool for Built Environment students, especially with Architectural Technology (AT) students recognising characteristic features of particular architectural periods and styles in buildings all the way to doing similar in recognition of elements of construction details.

The E-Learning Lab at the University of Bolton have recently completed the JISC funded Manchester Self-directed Learning and ePortfolios (MANSLE) project which developed a technical e-portfolio for personal development planning and mentoring tools within a range of healthcare foundation degrees across the Greater Manchester Region. They have also through CETIS developed a Personal Learning Environment toolkit (PLEX).

CIAT defines its professional qualifications in terms of competence and assesses against these definitions. In order to become members therefore, candidates must produce a portfolio of evidence to demonstrate their competence against the standards of competence for membership. CIAT developed these standards from the industry's National Occupational Standards and undertakes continual review to monitor these for relevance, validity and sufficiency with respect to changing industry needs and practice. These standards are embedded in the accreditation criteria, ensuring that graduates from accredited centres have the necessary underpinning knowledge to gain competence through structured work based learning and development.