

**Cover Sheet for Proposals - JISC Capital Programme**

<b>Name of Capital Programme:</b> e-Learning programme		
<b>Name of Lead Institution:</b> University of Manchester		
<b>Name of Proposed Project:</b> Development of e-Portfolio services to support lifelong workplace learning		
<b>Name of Project Partners:</b> University of Manchester School of Medicine (Lead Partner); University of Manchester Distributed Learning Group; Lancashire Teaching Hospitals NHS Foundation Trust; Salford Royal Hospitals NHS Trust; South Manchester University Hospitals NHS Trust		
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<b>Length of Project:</b> 2 years		
<b>Project Start and End Dates:</b> 1/9/06 – 31/8/08		
<b>Total Funding Requested from JISC:</b> £200,000		
<b>Funding Broken Down over Project Years: (INCLUDES FUNDING REQUESTED FROM JISC ONLY)</b>		
	<b>PROJECT YEAR 1</b>	<b>PROJECT YEAR 2</b>
Staff	86,445	92,718
Equipment	4,500	0
Travel & Subsistence	2,736	2,736
Dissemination	1,400	1,400
Other	1,850	1,350
<b>TOTAL</b>	<b>£96,931</b>	<b>£ 98,204</b>
<b>Total Institutional Contributions: £312,510</b>		
	<b>PROJECT YEAR 1</b>	<b>PROJECT YEAR 2</b>
Staff	33,723	36,656
Estates costs	19,836	20,431
Indirect costs	99,440	102,424
<b>TOTAL</b>	<b>£152,999</b>	<b>£159,111</b>
<b>Outline Project Description</b> The aim is to extend the JISC-funded HORUS learning management services to a wider range of applications, institutions, and stages in the lifelong learning continuum and link them to the JISC-funded UK Collaboration for a Digital Repository (UKCDR) and MANSLE projects. <b>Objectives</b> <u>Reflective learning workpackage:</u> Extend HORUS's e-Portfolio services to support in-depth reflective learning. <u>Teacher development workpackage:</u> Extend HORUS to support teachers' learning from students' evaluations of their teaching. <u>Learning management in workplaces workpackage:</u> Extend HORUS to support the sophisticated administration processes needed for flexible cross-institutional provision of workplace learning. <u>Transfer workpackage:</u> Extend the implementation of HORUS services beyond medicine by scoping how the services could be applied to two other exemplars of workplace learning in Higher Education, Dentistry and Pharmacy, and to Further Education by deriving a requirements specification and scoping the extension of HORUS's new services to the JISC-funded MANSLE collaboration. <u>Assessment workpackage:</u> Establish pedagogic and technical means of linking e-Learning to formative assessment by bridging HORUS with UKCDR, which is itself linked to a collaboration between 12 UK universities (Universities Medical Assessment Partnership – UMAP). <u>Project management and capacity building workpackage:</u> Build capacity that is sustainable and can be extended to the wider e-Learning community. The <b>primary context</b> is medicine, an exemplar of workplace learning within a community of academic and clinical practice. The project will scope the extension of Horus services to other HE and FE <b>secondary contexts</b> . The <b>method</b> is to use pedagogic design to inform technical development, and the implementation of technology to inform further pedagogic design. <b>Evaluation</b> will be with a mixed qualitative and quantitative methodology, measuring organisational structures and processes as well as outcomes.		
<b>I have read the Circular and associated Terms and Conditions of Grant at Appendix B (Tick Box)</b>	<b>YES</b> √	<b>NO</b>

## INTRODUCTION

### *Rationale for work*

Whereas “e-Learning” is often synonymous with “e-Delivery of course content”, the applicants have promoted a very different concept by developing e-Tools for workplace, learner centred, lifelong education. The HORUS family of learning management technologies is novel in that it supports workplace learning, though it has many features in common with more conventional e-Learning tools. HORUS has been developed to: Enhance the learning experience; make learning more personal; help students become more effective learners; develop/extend learners’ practical knowledge; give value for money by helping learners make better use of learning resources. A basic suite of HORUS services has already been developed through JISC-funded technical development and applied to the early postgraduate education of doctors (HORUS-FP), undergraduate medical education (HORUS-UG), specialist medical postgraduate education (HORUS-ST), the in-service training of diabetes health care professionals (HORUS-Diabetes), and basic nurse education (ULYSSES). HORUS’s unique ability to recommend workplace learning opportunities and support statistical analysis of evaluation data is common to those applications. The applicants have disseminated evidence of the utility of HORUS.<sup>i ii iii</sup>

To date, HORUS projects have focused primarily on supporting learners’ attainment of the intended learning outcomes of objective-based curricula. They have not defined in any detail how HORUS could instill a capacity for reflective learning, which is essential for people to be lifelong learners. The potential for HORUS to use a common set of intended learning outcomes to link workplace learning to assessment has not been examined. Teachers must also be lifelong learners and the potential within HORUS to reuse student evaluation data to support teacher development has not been fully explored. The potential of HORUS to help course administrators and managers manage the complexities of flexible, workplace programmes involving large numbers of learners and teachers dispersed across large numbers of sites has not been fully explored. Finally HORUS has so far been restricted to medicine and nursing. This proposal addresses the following questions, whose answers will be widely transferable:

1. How can HORUS support students’ in-depth, reflective, workplace learning?
2. How can students’ evaluations of their learning be “reused” to populate an e-portfolio that supports the educational development of their teachers (as was prototyped in HORUS’s predecessor, iSUS)?
3. How can HORUS support formative assessment and handle performance data from summative assessments to support continued learning and teacher development?
4. How can HORUS support the cross-institutional delivery of workplace learning?
5. What adaptations or extensions to HORUS services would be needed to extend them to other courses of study within the HE/FE sector that include workplace learning?
6. How can we guide the Sector and JISC about e-Learning tools to support workplace learning?

Medicine provides a particularly suitable context in which to study lifelong learning because learning situations are mapped to a single metadata scheme which provides a framework for learning that is as relevant to professional revalidation as it is to undergraduate education.

HORUS is based on a pedagogic model of “Experience based learning”, developed by the lead applicant,<sup>iv</sup> whose generalisability increases the likelihood that HORUS will transfer to other fields of study. The bidding consortium is a learner focused collaboration that includes: Within the Lead Organisation: The Schools of Medicine, Dentistry and Pharmacy; the Distributed Learning Department, which wishes to make HORUS available to disciplines other than health professions. Regional: Three NHS organisations that are HE/FE providers and the MANSLE HE/FE collaboration, which can resource, benefit from, and evaluate the technology. National: The Universities Medical Assessment partnership (UMAP), which represents 13 UK Medical Schools each with different workplace learning approaches, and the UK Collaboration for a Digital Repository (UKCDR), a JISC-funded collaboration with HE and FE partners. So, the project will build capacity within the subject community through institutional and collaborative cross

<sup>i</sup> Dornan T et al. A technology using feedback to manage experience based learning. *Med Teach* 2004; 26:736-8.

<sup>ii</sup> Dornan T et al. How can medical students learn in a self-directed way in the clinical environment? Design-based research. *Med Educ* 2005; 39:356-64.

<sup>iii</sup> Brown, M et al. Horus-FP website [Web Page]. Available at <http://www.csc.umist.ac.uk/horus/HorusFP.htm>.

<sup>iv</sup> Dornan TL. Experience based learning. *Learning clinical medicine in workplaces*. Universitaire Pers Maastricht, 2006. <sup>v</sup> General Medical Council. *Good Medical Practice*. 1998

sector working. Its outputs will be easily adopted by others, useful in “the real world”, and useful to a variety of different partners working collaboratively. The existing open source, web service model used successfully in previous JISC projects and proposed here will help ensure that the outputs are widely available and the benefits of the project are sustained.

## ***Nature of work***

The present project aims to harness the various learner centred collaborations represented in the consortium to explore several strands that are relevant to lifelong learning:

1. **Reflective learning:** Develop portfolio services within HORUS-UG to support the in-depth reflective learning of all 2000 undergraduates in the University of Manchester medical curriculum and map their learning to an exemplar metadata scheme, the General Medical Council (GMC) domains of learning.<sup>v</sup>
2. **Teacher development:** Develop services within HORUS-UG to reuse students' evaluations of their learning to help their teachers provide a more learner centred education
3. **Assessment:** Prototype a link between HORUS and UMAP/UKCDR data so that students can learn reflectively from assessment activities and teachers are engaged into assessment activity
4. **Learning management in workplaces:** Develop services within HORUS-UG to support administrators and managers in providing cross-institutional workplace learning according to learning need
5. **Transfer:** Develop a design specification for the transfer of HORUS services to workplace learning of two other health professions (Dentistry and Pharmacy) and identify the potential to meet HE/FE user requirements identified in the JISC-funded MANSLE project.
6. **Project management and capacity building:** Work within the stable, long-standing partnerships a) between the University of Manchester and three large NHS organisations, which educate its students and employ them as graduates, to build a collaboration that has learners and their learning experiences at its centre and b) between different health professions in the Faculty of Medical and Human Sciences. c) Increase the partnership between the HORUS and MANSLE collaborations.

The work will be conducted in the UK's largest medical school and its associated NHS education providers/employers, which provide HE and FE to students from other organisations as well as the Lead Organisation. The work will be conducted using a methodology whereby pedagogic design informs technical development, and the implementation of technology informs pedagogic design.

## ***Length of project; start and end dates***

2 years; 1/9/06 – 31/8/08

## ***Summary of how project will contribute to programme***

This summary links activities of the proposed project to 10 major objectives identified in JISC Circular 3/06, including its Appendix C:

1. Capital programme aim: Improve discovery of and access to resources
    - This project seeks to develop and transfer a tool whose raison d'être is to help learners discover and access workplace learning resources and quality assure those resources.
  2. Capital programme aim: Explore the use of e-Learning to support lifelong learning
    - The importance of reflective behaviour to lifelong learning has been referred to above. Although this project is restricted to the undergraduate phase of medical education, graduates who use HORUS will use the same services in their postgraduate education (HORUS-FP and HORUS-ST), so this project prototypes portfolio services that follow learners through the lifelong learning continuum. It also promotes lifelong learning by supporting teachers' reflective learning.
- e-Learning programme items C1-3 have the next four aims, all covered by the following bullet point
2. Identify how e-Learning can benefit learners, practitioners, and educational institutions
  3. Help institutions to meet the diverse needs of learners throughout their lives
  4. Investigate how to provide a personalised learning experience
  5. Meet the needs of individual learners in a range of settings through the use of e-Portfolios and assessment

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<sup>v</sup> General Medical Council. Good Medical Practice. 1998.

- The workplace learning management services, e-Portfolio, and assessment tools will help the consortium's partner institutions meet the diverse needs of learners in a way that prototypes more widespread application of the services across the Sector.
7. e-Learning programme aim C3: Work on how technology can facilitate the more sophisticated administration processes needed for flexible provision.
    - HORUS-UG's very aim is to make undergraduate learning more flexible. Use of iSUS to quality-manage flexible administration of Manchester's undergraduate medical curriculum for the last 5 years has provided clear proof of concept. A goal of this project will be to test how administrative support provided by HORUS-UG could be extended to a wider range of institutions.
  8. Capital programme aim: Digital repositories advice and services for institution; The development of high quality digitised resources.
    - The link within this project between HORUS, UMAP, and UKCDR will support this aim by inputting into preparations for the later stages of UKCDR (beyond specification) and developing a prototype showing how digital content held by UMAP and UKCDR could be linked to workplace learning supported by HORUS.
  9. Capital programme aim: Tools to support collaborative research
    - This project will increase the proven capacity of HORUS and UMAP to support research, build a whole consortium to conduct research, and show to the wider Sector how e-Learning can support education research.
  10. e-Learning programme aim C4: Build on JISC work carried out under previous programmes
    - This proposal draws together two projects funded by previous JISC programmes (HORUS and UKCDR) and relates to another (MANSLE).

## PROJECT DESCRIPTION

### *Project plan*

#### **Context**

The lead organisation for the project, the University of Manchester, is one of the UK's major HEIs. Its educational strategy includes a strong focus on e-Learning to support course delivery and, to that end, it has a strong internal e-Learning network. The Distributed Learning Unit, which is a consortium partner, is an innovation hub within the University to support the transfer of good e-Learning practice. The primary focus will be Manchester's innovative undergraduate medical curriculum, which has been optimally rated for the quality of its education in external subject review and commended by the General Medical Council for its learner centred educational methods. The curriculum uses problem based learning (PBL) to foster lifelong learning skills in its undergraduate students. Amongst the strategic goals of the Medical School is to provide e-Learning tools to support the curriculum. A limited HORUS application will be used by some 500 students entering Year 3 of the curriculum in September 2006. As the project progresses, reflective learning services and teacher development services will be introduced progressively to their learning environment. The project will then explore the potential to extend the toolset beyond the field of medicine. The Schools of Dentistry and Pharmacy are part of the same Faculty as the School of Medicine, and both use PBL, so the project will build a consortium that can sustain/further develop its outputs and transfer them.

#### **The consortium**

The University of Manchester Medical School has collaborated with Salford Royal Hospitals NHS Trust and South Manchester University Hospitals NHS Trust in delivering the undergraduate medical curriculum for over a quarter of a century and with the Lancashire Teaching Hospitals NHS Foundation Trust for some five years. Since their role is to provide workplace learning for medical students in the later year of the course, the project aligns with an educational mission shared between those three consortium partners and The Medical School. NHS organisations are, themselves, HE and FE providers. The consortium, therefore, complies with the definitions in Appendix C of the call on these grounds:

- Stable, mature partnership, which places the learner at its centre, with an HE organisation as lead partner, and clear governance, decision-making, and funding arrangements
- University-employer partnership that supports progression to workplace learning

The University Distributed Learning Unit has an established collaboration with the Medical School e-Learning group and is well placed to support dissemination of the technology beyond the field of medicine. The project is also supported by the University of Manchester Centre for Excellence in Enquiry-based Learning, with whose goals the project is closely aligned. There is a whole consortium, therefore, that can support collaborative development and implementation of e-Learning within a set of university-employer partnerships, and across disciplinary boundaries within a university that is strongly committed to e-Learning. Because the project involves a core part of the consortium members' business, it is high on their scale of priorities. One consortium partner is itself a hub for a JISC-funded, inter-university collaboration.

## The technology

Through successive JISC grants and technology transfer revenue, the HORUS team has developed a suite of services that can support the quality management of learner centred workplace education. The technology is most fully developed in the form of HORUS-FP, a package that supports the education of young doctors in the novel, national "Foundation Programme", and has been judged so effective that it has been adopted for use by all foundation trainees in the Northwest since JISC funding ceased. Horus-FP is a web application that runs on MS-IIS. It has been developed in C# and uses the MS SQL Server database. The system is built from five open-source systems described below:

**Horus: Portfolio Management Services.** Horus is an open source toolkit that provides services for:

- Gathering different types of evaluation data
- Managing the data in a portfolio
- Linking the portfolio data to hierarchical competencies
- Handling evaluation data as reusable objects that can support a variety of functions

In the Horus-FP system, Horus is used to gather, store, organise, disseminate and analyse assessment, appraisal, attendance, reflective, and teaching quality data. Relevant information is disseminated to trainees, supervisors, teachers, and managers in real-time. Assessment ratings and reflections are linked to competencies defined in the curriculum which enables trainees to demonstrate progression towards the requisite level of competence.

**Sweet.Net: Personnel and Group Management.** Sweet.Net is an open source person and group management toolkit that was sponsored by JISC and developed by Jon Rowett at Brockenhurst. It is written in C# .Net and it uses an MS SQL server database. The services are compliant with the IMS Enterprise standard. In the Horus-FP system, Sweet.Net is used to store data about personnel (trainees, assessors, supervisors, teachers) as well as grouping and role information such as tracks, workplaces, teaching institutions, deaneries etc. Appropriate user interface portlets have been developed to allow administrators to manage (add/edit) groups and group memberships.

**Osiris: Event Management.** Osiris is an open source toolkit written in C# .Net that provides services for creating and managing events such as teaching sessions, appraisal or assessment events. Osiris makes use of Sweet.Net's group management system by attaching Event and Timetable management functionality. Osiris supports 3 kinds of events:

- One off events
- Recurring events (creates a series of one off events)
- Template events (used to build recurring or one off events)

**Mondrian/JPIVOT: Quality Assurance.** Mondrian and JPIVOT are two open source projects that have been used to implement OLAP (On-Line Analytic Processing) servers and clients, respectively. They are used to support quality assurance (QA) for hospital and deanery level programme monitoring and analysis. Mondrian and JPIVOT are developed in Java, run on Tomcat, and can be downloaded from sourceforge.org. In the Horus-FP system, the portfolio data are stored in star schemata, which make it possible to link them to multi-dimensional analysis tools. A key part of the Horus-FP system has been to identify the key QA queries and these have been embedded in the hospital and deanery administration portlets.

## Project method

The aims will be accomplished by coupling project management with a design methodology that iteratively draws on theory, published evidence, and prior empirical evidence to design an intervention that can be predicted to produce the desired results, evaluates the intervention, and then moves to another

stage of design and experimentation. Evaluation will be qualitative and quantitative, measuring organisational structures and processes as well as outcomes.

## **Linking development and practice**

Members of the project team are also leaders of the medical curriculum. The project will be conducted in close liaison with the Medical School Curriculum Committee (which leads implementation of the undergraduate medical curriculum) to increase the likelihood of the technology being practically useful “in the real world” and transferable to other curricula and universities. Curriculum leaders in Dentistry and Pharmacy are among this project’s collaborators.

## **Conduct of the project**

Six workpackages will tackle different parts of the work, with development of HORUS and configuration to learning need as a common strand running through all workpackages.

## **Workpackage 1: Project management and capacity building**

**Leads:** *Iain Campbell and Andrew Garner*

**Aims:** Working in accordance with JISC project management guidelines, this workpackage will:

- Develop a management structure and processes to manage project activities and resources
- Ensure adherence to the project plan, including the timely and satisfactory production of reports and other deliverables
- Develop a consortium agreement and maintain good communication between the consortium partners
- Manage the project budget
- Manage intellectual property issues in accordance with JISC policy
- Build further research and development capacity through the collaborative work of the consortium
- Ensure the sustainability of the project and disseminate its outputs.

**Method:** One of the workpackage leads will use Prince 2 or an alternative project management methodology. There will be monthly meetings of all workpackage leads, with regular email contact, face-to-face contact as needed at other times, and close communication between consortium partners.

## **Workpackage 2: Reflective learning**

**Leads:** *Simon Wallis and Isobel Braidman*

**Aims:** Two leaders of reflective/portfolio learning in the undergraduate medical curriculum will:

- Harmonise the work of the project with the work of key curriculum implementation committees
- Evaluate a prototype HORUS e-Portfolio that is currently under development and specify its extension to all medical students in all curriculum years
- Ensure that the HORUS-UG learning portfolio is fully compatible with the HORUS-FP portfolio so that students’ reflective learning extends naturally from undergraduate to postgraduate education, using the GMC metadata scheme
- Implement the modified e-Portfolio and evaluate its implementation

**Method:** As members of those committees, the workpackage leads will conduct the work of the project in accordance with the requirements of the Medical School Curriculum Committee and Portfolio Group and use the results of the project to inform and guide them. All 500 Y3 medical students will use prototype HORUS learning management services with effect from September 2006. The project will refine their design and specify an extension of e-Portfolio services to students in Years 1-2 and Years 4-5 with effect from September 2007. They will lead the implementation and evaluation of the services as used by up to 2000 medical students spread over all curriculum years in the second year of the study.

## **Workpackage 3: Teacher development**

**Leads:** *Tim Dornan and Simon Wallis*

**Aims:** This workpackage will build on their experience of using the iSUS “Consultant Homepage” to quality manage the undergraduate medical curriculum to:

- Specify a set of services within HORUS that use student evaluation data to populate an e-Portfolio that allows teachers to evaluate their teaching
- Specify a way of using those data to support emerging education leaders in:
  - Obtaining recognition for their educational expertise
  - Defining further learning need
  - Training to certificate, diploma, or masters level in medical education
  - Developing their careers as leaders
- Supervise the development and implementation of those services and evaluate their implementation

**Method:** This workpackage will build on work already in progress to develop a curriculum quality management system in the Salford Health Economy. The project workers will consult with key stakeholders to develop a design specification. They will work with developers to turn the design specification into a teaching portfolio, implement it in their own NHS organisations, and evaluate its impact on teachers and their teaching. The services will extend to as many as 500 teachers.

## **Workpackage 4: Learning management in the workplace**

**Leads:** *Iain Campbell and Andrew Garner*

**Aims:** This workpackage will explore how HORUS services can support a complex mixture of taught and experiential learning dispersed over multiple geographical sites and over the five years of a medical curriculum. Specific aims are to explore how HORUS services can help:

- Students access workplace experiences that match their learning need
- Teachers make workplace experiences available to students
- Administrators make a “bank” of learning opportunities available to cohorts of students with diverse learning needs
- Managers evaluate and quality manage the use of workplace learning opportunities

**Method:** iSUS, which has been used by all 300 medical students in the Salford Health Economy for some 5 years, has provided “proof of concept” for the use of an IT system to match workplace opportunity to learning need. The iSUS design specification is currently being migrated to HORUS and services will be available to all 500 Year 3 Manchester medical students from September 2006. This workpackage will evaluate the extension of those services to a wider range of NHS Trusts, an increased number of students, and a wider range of workplace opportunities.

## **Workpackage 5: Assessment**

**Leads:** *Ged Byrne, Andrea Owen, and Ioan Davies*

**Aims:** Mobilise assessment materials and data using curriculum objectives to link them to data held in HORUS. Specific aims are to:

- Isolate successive student cohort data using student library card numbers as identifiers
- Stratify assessment outcome data using educational objectives as metadata
- Establish means of transferring data into HORUS
- Present assessment data in HORUS in a way that helps individual students plan appropriate learning activities
- Present assessment data in teachers’ e-Portfolios in a way that informs and supports their continuing development

**Method:** Using the existing UMAP data bank, supported by the requirements gathering activities of UKCDR, this workpackage will create a functional link between learning and assessment data. UKCDR leads will work closely with the HORUS development team to develop a usable and effective resource to support lifelong learning.

## **Workpackage 6: Transfer**

**Leads:** *Jim Petch and Tim Dornan*

**Aims:** This workpackage will establish how HORUS services can be transferred within the consortium and generalised beyond it to enhance e-Learning in the wider sector. Specific activities will be to:

- Extend the HORUS services developed in workpackages 2-5 to the many organisations and teaching sites that support Manchester Medical School’s students’ workplace learning

- Scope the transfer of the services to the Manchester Pharmacy and Dental curricula
- Identify products of the MANSLE project that could support HORUS and scope the reciprocal transfer of the deliverables of workpackages 2-5 to MANSLE
- Manage the relationship between HORUS, UMAP, and UKCDR so as to achieve the aims of workpackage 5.

**Method:** Supported by the Project Management And Capacity Building Workpackage, project workers will establish and maintain excellent communication with leads of the various organisations and projects named in the previous paragraph. The first aim will be achieved through the implementation of HORUS-UG; the second and third by identifying commonalities and differences between curricula, identifying how HORUS and MANSLE services could be transferred, and developing a specification to do so. The fourth aim will be achieved by developing a prototype set of assessment services.

### ***Timetable showing target months for completion of tasks***

Month	WP1	WP2	WP3	WP4	WP5	WP6
1	Project webpage on JISC website					
3	Project website Project plan Consortium agreement					
6	IPR agreement Progress report	Case studies Evaluation Design spec	Usage narratives & use cases Design specification			Use cases
12	Progress report	Implement student portfolio	Usage narratives & use cases		Pilots Demonstrators	
18	Progress report					
24	Final, completion, and evaluation reports	Evaluation Generic specification of e-Portfolio	Evaluation	Pilots Evaluation Model	Evaluation	Evaluation

## ***Deliverables***

### **Workpackage 1**

- 1.1 Project plan covering evaluation, QA, dissemination, exit/sustainability, software configuration and development
- 1.2 Consortium agreement
- 1.3 Project webpage on JISC website and project website on institution's server
- 1.4 IPR agreement
- 1.5 Minutes of management meeting, biennial progress reports, and budget reports as required
- 1.6 Evaluation report highlighting implications and challenges of transferring the technology
- 1.7 Completion and final reports; other reports as required by JISC

### **Workpackage 2**

- 2.1 Case studies analysing user needs and user interactions with the system
- 2.2 Evaluation of students' experiences using the Medlea-HORUS prototype e-Portfolio
- 2.3 Design specification for revised e-Portfolio, and for its extension to all curriculum years
- 2.4 Evaluation report analysing ways in which the e-Portfolio has been more or less successful in supporting cross-institutional learning and reporting the influence of the technology on learning
- 2.5 Generic specification of an e-Portfolio for reflective workplace learning.

### **Workpackage 3**

- 3.1 Usage narratives and use cases analysing teachers' needs and interactions with the system
- 3.2 Design specification for teacher e-Portfolio
- 3.3 Usage narratives and use cases describing how to use the e-Portfolio to support teacher development
- 3.4 Evaluation of the impact of the e-Portfolio on teachers' development as educators.

### **Workpackage 4**

- 4.1 Pilots demonstrating how HORUS can support cross-institutional delivery of workplace clinical learning
- 4.2 Evaluation report analysing challenges encountered and success of the project
- 4.3 Transferable model of the use of HORUS to support cross-institutional delivery of reflective learning

#### **Workpackage 5**

- 5.1 Pilots examining data transfer options
- 5.2 Demonstrator versions of portfolio interfaces presenting assessment data to students and teachers
- 5.3 Pilots with students and teachers
- 5.4 Evaluation of students' and teachers' reactions to presentations of assessment data.

#### **Workpackage 6**

- 6.1 Use cases and case studies analysing the needs of users in the Dental and Pharmacy curricula
- 6.2 Use cases and case studies analysing the transfer of services between HORUS and MANSLE
- 6.3 Evaluation report of successes and difficulties encountered in interfacing HORUS with UKCDR/UMAP.

### **Risks**

Description	Level	Mitigation	Owner
Inability to recruit suitable RA	M	Failure to appoint would have high impact but risk could be mitigated by starting the project pending an appointment and searching across the breadth of sites and disciplines represented in the project group for a suitable appointee	IC
Poor student uptake/evaluation	L	The risk will best be mitigated by linking this project to the Medical School's current strenuous efforts to promote and support reflective learning, and to students' job applications	SW, IB
Poor teacher uptake/evaluation	M	The risk is medium because most teachers' primary responsibility is not to medical students but it could be mitigated by making HORUS services support their personal development	TD, SW
Difficulty linking HORUS with UMAP/UKCDR	M	This risk will be mitigated by using the pedagogic strength of UMAP to identify/solve pedagogic issues, and the technical strength of HORUS to support UKCDR in identifying/solving technical issues	IC, ID, GB, AO
Difficulty applying learning management services across institutions	H	Because of the novelty of the pedagogic model embodied in HORUS and the relative autonomy of the implementation sites, the risk is high. However, mitigation of the risk is a central business issue for consortium partners and the means of mitigating risk is a central issue for the whole HE/FE sector	IC, AG
Poor fit of HORUS to pharmacy, dentistry, MANSLE	M	A naïve application of HORUS to other curricula would carry high risk, with significant impact to the transfer aims of the project. The cohesion of the Faculty within which the HE transfer work will be done and the pedagogic strength of the HORUS and MANSLE consortia will mitigate against failure through naivety	JM, TD

Level: L, low; M, medium; H, high

### **Value of outcomes to JISC community**

HORUS will be of value to the JISC community because of its widespread applicability both within and beyond the field of medicine. The technology provides a solution to the high rate of student expansion in further and higher education, which is outpacing the availability of learning opportunities. Three other medical schools have asked for iSUS, HORUS-UG's predecessor, but the applicants have not been able to meet their need because the services are inflexible and not open source. There has been even keener interest in HORUS-FP, which will be implemented in one Deanery and is being considered for adoption in at least two others. The transfer workpackage will scope the extension of Horus services to other exemplars of workplace learning, with the intention of identifying common issues that affect its transfer. Value to the JISC community is further considered under sustainability/dissemination.

### **Statement regarding IPR**

The IPR of the current system resides with the applicants and they are keen to see the core components made available to the wider UK HE/FE community. In addition, they fully support the concept of making the generic software toolkit available as open source software under the GPL for free use within UK academia.

### **Sustainability and dissemination issues**

Sustainability of HORUS-UG is guaranteed by embedding the project in a thriving medical curriculum involving 2000 Manchester medical students. Moreover, extension of HORUS services to medical

curricula outside the UK as part of a franchising arrangement currently under negotiation will secure an income stream to embed and further develop the services. The ultimate value of the project to the JISC community, however, lies in its extension beyond medicine, and beyond Manchester. Sustainability of a useful contribution to the JISC community lies in the various proposed transfers: Transfer to e-Assessment and Digital Repositories: The UMAP/UKCDR link. Transfer within medicine: Making open source services available to the other medical curricula that have already expressed interest, and the links with UMAP/UKCDR. Extension beyond Medicine: The proposed links with Pharmacy and Dental education and e-Learning in the wider University of Manchester. Extension beyond Higher Education: Collaboration with MANSLE. The various sustainability links will help disseminate the project, as will the academic strength and strong publication record of the lead applicant. However, two other links are vital to the project's dissemination. One is the support of the University of Manchester Centre for Excellence in Enquiry-based Learning, which will be important to dissemination outside the health professions. Another is the support of Subject Centre 1 of the Higher Education Academy, which will assist dissemination in the fields of medicine, dentistry, and veterinary medicine.

## Budget

	JISC Contribution Requested		Institution Contribution		Total
	YR1 £	YR2 £	YR1 £	YR2 £	£
<b>Staff</b> (salary figures include on-costs, i.e. employer's superannuation & NI)					
Professor Tim Dornan (Lead Partner) 0.05 FTE (Professorial Grade £78,875pa to £94,706pa)	0	0	5,877	6,425	12,302
Professor Andrew Garner 0.05 FTE (Professorial Grade £86,441pa spot salary)	0	0	6,069	6,634	12,703
Dr James Petch 0.05 FTE (Grade 8, basic salary range £39,935 to £52,107 pa)	0	0	3,160	3,391	6,551
Dr Simon Wallis 0.05 FTE (Physician & Hospital Dean -Consultant Grade £78,875pa to £94,702pa)	0	0	5,877	6,425	12,302
Mr Ged Byrne 0.05 FTE (Surgeon & Hospital Dean) (Professorial Grade £78,875pa to £94,702pa)	0	0	5,452	5,961	11,413
Dr Isobel Braidman 0.05 FTE (Grade 8, basic salary range £39,935 to £52,107 pa)	0	0	2,799	3,004	5,803
Dr Ioan Davies 0.05 FTE (Grade 8, basic salary range £39,935 to £52,107 pa)	0	0	2,715	2,914	5,629
Andrea Owen 0.05 FTE (Grade 6, basic salary range £24,886 to £33,445 pa)	0	0	1,774	1,902	3,676
Dr Iain Campbell – Project Manager, 0.4 FTE (Grade 7, basic salary £31,525 to £42,367 pa)	18,084	19,417	0	0	37,501
Dan Powley, Computer Developer 1.0 FTE (Grade 6, basic salary £24,886 to £33,445 pa, starting on Spine Point 6 £28,850 pa)	36,737	39,391	0	0	76,128
Research Associate 1.0 FTE – postdoctoral, to be appointed (Grade 6, basic salary £24,886 to £33,445 pa, starting on Spine Point 1 £24,886 pa)	31,624	33,910	0	0	65,534
<b>Travel &amp; Subsistence</b> (include attendance at relevant programme meetings)					
<b>Travel between project sites</b> (ResAssoc - 2 journeys per wk; Computer Developer 1 journey per wk; project partners one journey per month – average distance 20 miles, mileage 40p per mile)	2,016	2,016	0	0	4,032
Subsistence for meetings (once a month @ £10)	120	120	0	0	240

<b>Travel to programme meetings</b> – 2 meetings per annum @ £300 per meeting	600	600	0	0	1200
<b>Equipment</b> (specify individual items over £10k) 3 x Workstations (PCs, printer and software)	4,500	0	0	0	4,500
<b>Dissemination</b> activities Posters – 4 pa @ £50 each	200	200	0	0	400
Other dissemination – attending 4 dissemination meetings per annum @ £300 per meeting	1200	1200	0	0	2400
<b>Other</b> (please specify) Training for Research Associate (specify & justify)	500	0	0	0	500
Computing Consumables (cartridges, CDs)	900	900	0	0	1,800
Office consumables (paper, files)	450	450	0	0	900
<b>fEC Estates Costs</b>	0	0	19,836	20,431	40,267
<b>fEC Indirect Costs</b>	0	0	99,440	102,424	201,864
<b>TOTAL PROJECT COSTS</b>	<b>96,931</b>	<b>98,204</b>	<b>152,999</b>	<b>159,511</b>	<b>507,645</b>
<b>TOTAL REQUESTED FROM JISC</b>	<b>96,931</b>	<b>98,204</b>	<b>0</b>	<b>0</b>	<b>195,135</b>

## Benefit to organisations and partners

The University of Manchester and its linked NHS Trusts have, together, to deliver a complex curriculum to 2000 medical students using workplace resources that are barely sufficient. This project will directly support them, as consortium partners, in doing so. More importantly, it will bring new educational approaches and new capacity to their collaboration. Other University of Manchester programmes will benefit from the capacity building activities, particularly Pharmacy and Dentistry, which stand to benefit directly. UMAP and UKCDR will benefit from the collaboration in that it will start to address pedagogic and technical issues posed by their programmes of work and help them prepare for future bids, further to develop capacity, and further to contribute to the Sector.

## Key personnel

Isobel Braidman, a biomedical scientist, leads reflective learning in Y1-2 of the undergraduate medical curriculum (UMC) and will co-lead the work on reflective learning.

Ged Byrne, a surgeon, is Hospital Dean at Wythenshawe Hospital. As lead of UMAP and UKCDR, he will lead their contribution to assessment in this project and lead their and South Manchester University Hospitals' contribution to the consortium.

Iain Campbell, a dentist and information scientist, is Head of Information Systems in the Medical School (MS). He will manage the project and lead on cross-institutional learning management.

Ioan Davies, a biomedical scientist, is Director of Studies in Phase 1 of the UMC.

Tim Dornan, Professor of Clinical Education, and Director of Medical Education (DME) to Salford Hospitals, is e-Learning Lead to the MS. He will lead teacher portfolio and teacher development and lead Salford Royal Hospitals' contribution to the consortium.

Andrew Garner, a biomedical scientist, is Past Head of the MS and now its Director of NHS liaison. He will lead project management and capacity building and lead the MS's contribution to the project.

Andrea Owen, as Manager of the UMAP and UKCDR projects, will co-lead assessment.

Jim Petch, a geographer, is Head of Distributed Learning in the University of Manchester. He will lead transfer of the work outside the field of medicine and Distributed Learning's contribution to the consortium.

Dan Powley (developer to be funded by the project) has worked for 5 years on developing iSUS and HORUS-UG and will do the development work for this project.

Simon Wallis, a physician, is Hospital Dean and DME to the Lancashire Teaching Hospitals. As lead of reflective learning for Phases 2-3, he will lead the work on reflective learning and Lancashire Teaching Hospitals' contribution to the consortium.

A research associate, yet to be recruited, will perform field work.

## Supporting letters – included as Annex 1

## **Annex 1: Letters of support**

### ***Lead Organisation – University of Manchester***

Teaching and Learning  
Faculty of Medical and Human Sciences  
Dental education  
Pharmacy education  
Centre for Excellence in Enquiry-based Learning

Prof Bob Munn  
Prof David Gordon  
Prof Iain Mackie  
Prof Larry Gifford  
Dr Bill Hutchings

### ***NHS Partner Organisations***

Lancashire Teaching Hospitals NHS Foundation Trust  
Salford Royal Hospitals NHS Trust  
South Manchester University Hospitals NHS Trust

Mr Tony Curtis  
Mr Raj Jain  
Mr Ged Byrne

### ***JISC-funded Consortium Partners***

MANSLE project  
UMAP and UKCDR projects

Dr Mark Johnson  
SEE MR BYRNE'S LETTER, ABOVE

### ***Higher Education Academy***

Subject Centre 01 of the Higher Education Academy

Dr Megan Quentin-Baxter

**University of Manchester teaching and learning – Prof Bob Munn**

Professor Bob Munn  
Vice-President (Teaching and Learning)  
The University of Manchester  
Oxford Road  
Manchester M13 9PL

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email bob.munn@manchester.ac.uk  
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Professor Tim Dornan  
School of Medicine  
Faculty of Medical and Human Sciences

19 June 2006

Dear Tim

I am writing to confirm my strong support for your proposal to the JISC e-Learning Capital Programme. Embedding and extending e-learning is a strategic objective for this University, and workplace learning is essential to all Schools in the Faculty of Medical and Human Sciences. However, because it lies between conventional on-campus blended learning and pure-learning at a distance, with additional complexities associated with the relationship with placement providers and their resources, workplace learning needs special consideration. Hence the outcomes of this project are of considerable importance to the University through the Faculty, as well as to the various partners in the project. I also expect the University to learn from the project in ways that will benefit our programmes more generally.

Yours sincerely



Professor Bob Munn  
Vice-President (Teaching and Learning)

**University of Manchester Faculty of Medical and Human Sciences –  
Prof David Gordon**

Professor David Gordon,  
Vice-President and Dean of the  
Faculty of Medical and Human  
Sciences  
The University of Manchester  
Oxford Road  
Manchester M13 9PT

+44(0)161 306 0111  
d.gordon@manchester.ac.uk  
[www.manchester.ac.uk](http://www.manchester.ac.uk)

DG/RCD

20 June, 2006

To Whom it May Concern

I write in support of the application led by Professor Tim Dornan, to JISC, for funds to promote the integration of IT into the medical undergraduate curriculum.

I would like to highlight four particular issues.

First, the key individuals (as set out on page 10 of the application) have wide and multi-disciplinary experience relevant to the further appropriate application of information technology in teaching and learning.

Second, although this application is primarily devoted to e-Learning in medicine, an important element of the application, and of our work, is to develop e-Learning across the five Schools of the Faculty (including Dentistry, Nursing, Pharmacy and Psychology), as an aid to genuine multi-disciplinary learning.

Third, we believe that developments in e-Learning in the Medical School, and in the Faculty, will have benefits to the development of e-Learning in the wider University.

Finally, medical education – whether undergraduate, postgraduate, or life-long learning – is one of the subjects where increase in the strength and depth of the curriculum, and of the techniques used in developing that curriculum, is of the greatest importance.

Manchester has been pleased to be in the forefront of the development of the theory and practice of medical education, and this application will be a significant further element of support for this process.

Yours sincerely,



Professor David Gordon,  
Dean of the Faculty.

University of Manchester dental education – Prof Iain Mackie

Dear Tim.

Re JISC Capital Programme. Development of e-Portfolio to support lifelong workplace learning.

The School of Dentistry of the University of Manchester is delighted to be associated with this bid and give it our full support.

This bid comes at a very opportune time for the School.

In September 2006 we launch The Manchester Dental Programme. This is a new, fully integrated undergraduate dental programme. The programme is based on enquiry based learning and will use PBL, case based studies and scenarios. Full use will be made of e-Learning and e-Assessment.

In addition student dentists will receive much of their experience in outreach dental clinics spread around Greater Manchester. The School of Dentistry is recognised as a leader in the UK for outreach teaching in dentistry. This is seen as an ideal stepping stone to give students a feel for the real world before they graduate and go into their mandatory vocational training year

Last year we introduced a student log book/portfolio. This is a paper version and it has proved to be very successful. However we want to transfer to an e-Portfolio. When we met with our Vocational Trainers in November 2005 they were very interested in the log book/portfolio and thought it had great potential in vocational training.

We want the students to take this e-Portfolio through their years in the School of Dentistry, through Vocational Training and into their Continuing Professional Development.

Thus this bid is extremely timely and opportune for the School of Dentistry.

As Director of Undergraduate Dental Education I fully support this bid and hope we are successful.

Professor Iain C. Mackie. BDS, FDSRCPS, PhD, MSc, DDPHRCs Professor of Dental Education.  
School of Dentistry,  
University of Manchester.

***University of Manchester Pharmacy Education – Prof Larry Gifford***

At the time of submission, no further communication received since the message below:

Dear Tim,

This seems like a useful suggestion and I am happy to provide a letter of support.

Best wishes

Larry

University of Manchester Centre for Excellence in Enquiry-based learning – Dr Bill Hutchings



Centre for Excellence in Enquiry-Based Learning  
The University of Manchester  
C24 Sackville Street Building  
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Manchester  
M60 1QD  
tel +44(0)161 326 6440  
www.manchester.ac.uk

Professor Tim Doman  
Hope Hospital  
Stott Lane  
Salford  
Manchester M6 8HD.

19 June 2006

Dear Professor Doman

I write to give the full support of the Centre for Excellence in Enquiry-Based Learning at the University of Manchester to your grant application to JISC.

Your aim of continuing to develop your e-Tools in the direction of providing support for work-based and life-long learning is entirely congruent with the CEEBL's commitment to foster experiential learning and create reflective learners. The aims of your project are thus closely aligned with our principles.

As you know, the CEEBL is a generic centre, with the aims of extending Enquiry-Based Learning across all Faculties in the University of Manchester and in the Higher Education sector nationally and internationally. We would see your project as having significant transferability potential for other programmes involving workplace and other forms of distance learning, and we would therefore be happy to support, and assist with, widespread dissemination of the outcomes of your project.

The CEEBL has not, itself, the aim of developing e-Learning, but we do fully support forms of e-Learning that genuinely have the principles of Enquiry-Based Learning at their heart. We are confident that this is the case with your project. In this way, your project creatively complements the work of the CEEBL, and, indeed, we see significant potential for the outcomes of your project to inform our work more generally.

We fully support your grant application, and look forward to being able to work with you.

Dr W B Hutchings  
Director, Centre for Excellence in Enquiry-Based Learning  
National Teaching Fellow

**Lancashire Teaching Hospitals NHS Foundation Trust – Mr Tony Curtis**

**Lancashire Teaching Hospitals** 

NHS Foundation Trust

Tel: 01772 522692  
Fax: 01772 522194  
Email: [tony.curtis@lthtr.nhs.uk](mailto:tony.curtis@lthtr.nhs.uk)

**Chief Executive's Office**  
Royal Preston Hospital  
Sharoe Green Lane  
Fulwood  
PRESTON  
PR2 9HT

Ref: AJC/HA

Professor Tim Dornan  
Professor of Medicine and Clinical Education  
The University of Manchester  
Director of Medical Education  
Salford Royal Hospitals NHS Trust  
Hope Hospital  
Stott Lane  
SALFORD M6 8DH

19 June 2006


Dear Professor Dornan

**RE: JISC GRANT**

I confirm that Dr Simon Wallis has my full support in his involvement in the project which is aimed at the development of a web based learning support system for medical students.

Lancashire Teaching Hospitals NHS Foundation Trust is a partner in the development of Undergraduate Medical Education with The University of Manchester and recognises the value of this development of a sophisticated web based learning management system, which will optimise the utilisation of NHS clinical learning opportunities.

Yours sincerely



**TONY CURTIS**  
**CHIEF EXECUTIVE**



[www.lancsteachinghospitals.nhs.uk](http://www.lancsteachinghospitals.nhs.uk)



PD323 M5008

**Salford Royal Hospitals NHS Trust – Mr Raj Jain**

**Salford Royal Hospitals**   
NHS Trust

Professor Tim Dornan  
School of Medicine  
Faculty of Medical and Human Sciences

Dear Tim

Your plan to develop e-portfolio services to support life long work place learning is entirely congruent with the strategy of this Trust. We are very conscious that today's medical students are tomorrow's postgraduate trainees and they, in turn, are our future consultant workforce. Therefore, developing reflective learning skills with the use of an e-portfolio is an entirely logical development, and one that I am very happy to support.

It is worth noting that iSUS, the fore-runner of HORUS was originally conceived of and developed within Salford Royal Hospitals, and has been extremely successfully implemented here over the last five years to enhance the quality of our medical students' learning experience. It is worth noting, also, that you are now using those IT services to enhance the quality of education provision within the organisation.

It seems entirely logical that such services should be developed in the context of our longstanding partnership with the University of Manchester, and equally logical that successful development of those services should be transferred to other fields of learning beyond medicine.

I wish you success with your bid and assure you of the support of Salford Royal Hospitals in this endeavour.

Kind regards,



Raj Jain  
**Director of Workforce and Corporate Affairs**

## **South Manchester University Hospitals NHS Trust – Mr Ged Byrne**

MANCHESTER  
1824

The University  
of Manchester

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Professor Tim Dornan Medical Education Unit University of Manchester Salford Royal Hospitals Trust  
Stott Lane Salford M6 8HD June 20th 2006

Dear Tim

### **JISC Bid:**

#### **“Development of e-Portfolio services to support lifelong workplace learning”**

On behalf of the 12 UMAP partners and South Manchester Hospitals Trust I would like to offer our full support to this JISC proposal which represents a significant opportunity to enhance the link between learning and assessment.

The project offers South Manchester a chance to participate in further development of HORUS. Plans to embed the existing HORUS tools are already underway.

The UMAP and UKCDR project teams are very much looking forward to working directly with HORUS. We hope that UMAP's experience in the development and handling of assessment items together with UKCDR's knowledge of assessment systems and requirements will be of great value to the proposed project.

Many congratulations on a bid which stands to provide a much needed resource for students and teachers in medicine and far beyond.

Kind regards,

Yours sincerely



Ged Byrne  
UMAP Project Coordinator Consultant Oncoplastic Surgeon Hospital Dean for Clinical  
Studies, South Manchester University Hospitals

## **MANSLE project – Dr Mark Johnson**

Dr Tim Dornan  
The University of Manchester  
Oxford Road  
Manchester  
M13 9PL



21 June 2006

Dear Tim,

Re. further development of HORUS

I am writing to express my support for the proposed further development of HORUS. The original version of HORUS was integrated into the MANSLE portfolio regional pilot project, from where we considered its significance as a distinct service for e-portfolios beyond the 'basics' of data persistence.

We feel that HORUS has potential in providing distinct repurposable portfolio-related services – particularly those which relate to the statistical analysis of competency profiles in support of student learning.

Whilst the scale of MANSLE engagement in the proposed bid is small (not necessitating explicit budgetary arrangements), we maintain a keen interest in the outcome of the developments as they tie-in with the further development plans of both MANSLE and Personal Learning Environments.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Mark Johnson".

Mark Johnson  
Senior Lecturer  
Department of Computing and Electronic Technology  
University of Bolton

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Vice Chancellor: Dr G.E. Holmes



## **Subject Centre 01 of the Higher Education Academy - Dr Megan Quentin-Baxter**



16th June 2006

Professor Tim Dornan  
Consultant Physician and Senior Lecturer in Medical Education  
Hope Hospital  
Stott Lane  
Salford  
Manchester  
M6 8HD

**Re: Support for a proposal to the *JISC Circular 03/06 Capital Programme Call for Proposals Annex C Cross-institutional Use of e-learning to support lifelong learners.***

Dear Professor Dornan,

I am delighted to hear that you are considering approaching the JISC with a view to making more widely available the outcomes of your Tools for eLearning material. As you are aware, ensuring adequate clinical teaching for large numbers of multi-disciplinary health care students is extremely challenging, and a simple, effective tool to make clinical teaching more accessible would be extremely welcome to the sector.

I am impressed that you have managed to make such excellent use of clinical teaching availability / rotation data, and any facility to enable students to work more closely with patients and to gain experience is particularly important. This is not available elsewhere (or commercially) and would be of considerable interest to medicine, dentistry, nursing and midwifery, and allied health professions. The additional chance for students to provide immediate feedback on their learning experience exploits a new opportunity to enhance the quality of the educational experience for all students as they pursue a course of study.

With kind regards,

Dr Megan Quentin-Baxter  
Acting Director

Director: Professor R K Jordan

Higher Education Academy Subject Centre for Medicine, Dentistry and Veterinary Medicine  
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