Portal: Project Initiation Document

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Version Control

Version	Date	Summary of Changes
0.1	17 Nov 2004	Draft (First Cut of complete PID).
0.2	24 Nov 2004	Draft. Changes in light of comments from MN and KH: clarification of relationship with "online enrolment"/"online administration" project, Critical Success Factors added, minor changes throughout.
0.3	26 Nov 2004	Draft. Added outcomes of meeting with BVC, SB, KH on Portal development priorities.
0.4	30 Nov 2004	Draft. Comments from BVC addressed.
0.5	30 Nov 2004	Draft, circulated to Portal Project Board for comment or approval.
0.6	23 Dec 2004	Draft. Document updated to reflect ongoing developments (Section 1.2 split). Timeline added (Section12.3). Amendments in light of Project Board discussions (including Section 1). Moved ISIS Phase 2 (formerly 2000) to post-pilot launch in Plan to accommodate outcomes of CSA/UWESU/HSC requirements research in early 2005 in course of pilot, rather than as a dependency of pilot timing.
1.0	25 Feb 2005	Approved by Project Board.

Contents

1. Project Background

The evidence of our experiences with UWEonline (Blackboard) suggests that our students' expectations will increasingly reflect the trend towards adoption of online systems to access resources and deliver services. Such systems can potentially improve the accessibility and timeliness of information, and add value by combining data from different sources.

Coincident with this, the University operates in an environment which places growing emphasis on accountability and transparency of information, including personal data (for example, as mandated under the Data Protection Act 1998 and Freedom of Information Act 2000) and generic information about the institution (for example, the Teaching Quality Information initiative).

To support the University in meeting such demands, a web portal will be developed and a pilot launched in 2005.

Portals are web-based umbrella systems which act as an interface between the user (perhaps a student or member of staff) and appropriate services. "Personalisation" and "roles" are a significant feature of portal products, in that the system emphasises for any given user those functions or resources which are personally appropriate. A portal with adequate security measures can thereby facilitate the delivery of confidential information to the appropriate individuals without compromise to privacy.

Portals also offer advantages in allowing the aggregation of data and services managed by different organizational units - for example, creating links between timetable entries and corresponding learning resources. This adds value to the information, yet with minimum disruption to proven business processes. If appropriately designed, portals also reduce confusion about where to address queries, and provide the online equivalent of a "one-stop-shop".

A portal and its associated resources may improve the quality of information (for example, allowing students to check marks for coursework) or devolve the management of personal information (for example, contact details). In turn, this may achieve efficiencies in administrative or management processes. However, such web-enabling of processes can be transformative of organizational culture, and portals have a potential to be significant agents of change. For example, once information becomes more readily available, it is open to closer scrutiny, and expectations of timely intervention are raised.

The size and complexity of the University of the West of England will be a significant factor in the development of the portal. Diversity of practice, and the scale of the intended user base, will influence the capacity of single project to meet the broad needs of the University community.

Such factors, rather than the technical development of a portal, are expected to prove the greater challenge.

1.1 Terminology

It is anticipated that the University portal will ultimately be a single point of access for staff and students (and potentially other interested parties and members of the

University community). However, for development purposes, we can identify three themes:

a) A student-facing portal, to pilot in the Faculty of Health and Social Care in 2005, and be bench-marked with the Bristol Business School
b) One or more elements of a staff-facing portal
c) A pilot to support the Online Enrolment project through a portal framework

For the purposes of this document, each is represented as a distinct **portal pilot**, although in practice they are likely to share a common point of entry and portal framework.

Portals are web applications which gather information from multiple sources and aggregate them on web pages. These can be accessed with standard web browsers, and potentially other devices. Access through a portal to another application (for example, UWEonline or ISIS) is considered a **channel** to that application: thus the portal may have one or more channels to ISIS.

1.2 This document

The portal might be considered an "initiative" rather than a "project", in that its development will be ongoing. To be successful, the portal will depend on changes beyond the purely technical, and will require the alignment of technical developments with a wide range of administrative processes and academic expectations. The evidence of successful portal adopters to date suggests the adoption of a reflexive and opportunistic ("do what you can") approach, with some similarities to "action research". This document therefore makes the following assumptions:

a. That the initiation document will limit its scope to the launch of pilots in 2005
b. That it would be inappropriate at this time to predict the details of project evolution beyond the launch of such pilots
c. That there will be an emphasis on scope management throughout development of the portal and that this will be reflected in the development approach

1.3 Project Status

At the time of writing, the identification of user priorities for development of the student-facing portal pilot is ongoing. Pending better resolution of these priorities, the first phase of development will emphasise the channels for UWEonline, e-mail and Syllabus Plus, and those aspects of the ISIS and portal-specific channels which have emerged from the preliminary research into user priorities (and which can be technically achieved in a relatively short timescale). A second phase of development, after the pilot launch, will accommodate those priorities emerging from user requirements research in Spring 2005 – this to ensure more detailed requirements-gathering does not delay the introduction of a basic pilot.

The initial understanding informing the first phase has been reached through a small workshop with staff from the pilot faculty (Health and Social Care), a bench-marking workshop with staff from Bristol Business School[1], and the outcomes of JISC research on student priorities.

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[1] The benchmarking exercise with Bristol Business School largely confirmed the priorities established with the Faculty of Health and Social Care. One notable exception was an emphasis on student access

To inform the second phase, a workshop is planned with student ambassadors. Advice is being sought from the Centre for Student Affairs, and a workshop with students from the UWE Students Union is expected - as are further meetings with staff and students from the Faculty of Health and Social Care. These activities will refine our understanding of user priorities.

One outstanding area of concern is role-based functionality ("groups"), which did not feature in the proof-of-concept. However, personalised information can be delivered without group membership information, while the portal framework does not intrinsically require group membership information: a pilot portal without "groups" can still be of value to students[2]. For this reason, it is proposed that a review take place in advance of the pilot launch (through the Portal Management Group), to establish whether adequate progress has been made with group information to accommodate role-based concepts in the pilot. If not, it is assumed the pilot can proceed without the role-based functionality outlined in section 1800 of the Development Plan (Section 12.2). The timing of this decision is included in the Project Timeline (Section 12.3).

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to view module choices, which is likely to be a higher priority in faculties other than the pilot faculty. This serves to confirm the need for bench-marking throughout the pilot.

[2] Other than faculty membership, which can be drawn from LDAP.

2. Business Rationale

A University portal should:

- Make the University more attractive to new students through the provision of improved and consolidated services
- Enhance the quality of learning and teaching by extending the "virtual learning environment" to become a "personal learning environment", where course-based resources are supplemented by wider learning support facilities
- Support our strategic commitment to improve the nature and quality of the student experience (and furthermore aid retention) by improving the availability, visibility and transparency of University support services
- Achieve efficiency gains through a single point of access to online services
- Improve the quality of information by distributing maintenance and monitoring more appropriately (e.g. student self-care services)
- Add value to existing applications through their integration and cross-linking via the portal framework
- Reduce the cost of delivery and "time-to-market" of new online services by providing an existing security and deployment framework for new online services (through the sharing of security and deployment framework)
- Deliver efficiency through improved communication across the University, and a single point of online access
- Position the University to offer distance learning management and other services
- Reduce risk by consolidating security and authentication issues
- Improve accessibility (through assistive technologies harnessing online services, and through remote access via the portal)
- Encourage greater compatibility between online resources (to the benefit of joint honours students).

The above represents a significant contribution to delivery of the University's Strategic Priority to "…explore the potential of e-commerce to address a range of operational issues, including the whole cycle of student administration from admission to graduation…" and support our strategic commitment to develop "…networked learning and the use of ICT in teaching, learning and research…".

The portal should also deliver benefits in staff time saved and improvements to communications, although in the short term these may be obscured by the need to adjust existing practice to best exploit the opportunities offered by the portal (or by the need to offer services in traditional forms in tandem with "online" forms).

Other options considered

Two alternatives to a "portal" have been identified[3]:

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[3] A range of alternatives to the uPortal framework were considered. These included Microsoft Sharepoint Portal Services, Oracle Portal, Blackboard portal, SunOne, mySAP, PeopleSoft, IBM WebSphere Portal Services, Jetspeed and phpPortal. Based on a "Portal Preliminary Evaluation" published Friday 9th May 2003, and subsequent discussions, the MLE Technical Specification Group recommended the adoption of the open source uPortal framework, primarily for its perceived better potential for integration with HE -specific applications such as Blackboard and Syllabus Plus. It was noted that although the uPortal framework incurred no licensing costs, the recommendation was not based on cost. It was recognised that open

- Discrete, password-protected web sites for each online service
- Pursue "offline" means to improve current services and practice

The former treats each new service or initiative as a discrete project, de-contextualised and dependent on its own security, authentication and administrative arrangements. It will be less likely to leverage related work to add value, and creates a higher project cost for each initiative (including development and training costs). Such web sites would offer less scope for "personalisation" (or a "one-stop shop" other than a page of web links).

By contrast, "offline" services will not meet rising expectations of online provision, offer the same potential improvements to accessibility or exploit the growth in student and staff access to the internet.

source software can incur high costs in staff time invested in research to support development and maintenance.

3. Project Aims and Objectives

3.1 Principal Aims

a. The launch of a pilot portal service in the Faculty of Health and Social Care
b. The delivery through the pilot portal of the online enrolment project piloted in another faculty
c. The development of a staff facing portal scoped initially to allow access to lists of students and their photographs piloted in a faculty which timetables at the student level in Syllabus Plus

3.2 Secondary Aims

a. To evaluate the suitability of the uPortal framework as an appropriate vehicle for the delivery of a University-wide portal
b. To identify the appropriate technical architecture to support a University-wide portal service
c. To identify which services are appropriate to delivery through a University-wide portal
d. To establish means of supporting secure single-sign-on to a range of University resources through the web

3.3 Objectives

a. Understand the information requirements of students
b. Understand and support the processes and requirements of faculty administration and academic staff
c. Consider external research of student requirements (e.g. the JISC PORTAL project survey)
d. Discuss requirements (and results of workshops/meetings) with staff from other faculties and understand their working practices
e. Develop the web application in line with agreed requirements and design
f. Focus on teamwork (involving individuals from ITS, HSC and BBS), to ensure joint ownership of outcomes
g. Ensure that the appropriate individuals are involved during the requirements analysis stage
h. Ensure that requirements are documented and agreed
i. Achieve flexibility throughout the design and development stages, to provide users of the portal with preferences/options.
j. Utilise 'prototyping' throughout the design and development stages to facilitate user involvement and ensure fitness for purpose

3.4 Critical success factors

These critical success factors apply to the production portal, but should be kept in mind throughout the development cycle.

Critical Success Factor	How will this be achieved? (project objectives)
The portal must enhance the student experience	Address students' needs, including academic and learning support needs
Students must use the portal The portal must be accessible	Ongoing attention to accessibility and usability issues throughout the development process Attention to continuity and maximum availability
The portal must be appropriate to students and staff in all faculties	Engage multiple faculties in developing the portal Consider flexibility throughout design/development, providing users with preferences/options.
The portal must deliver tangible benefits to staff/administration	Identify portal processes which can more appropriately channel student queries, remove the need for staff intervention, or facilitate improved communication

4. Assumptions

   a. The portal must improve not diminish the student experience
   b. There will be respect for student and staff accessibility and privacy
   c. The portal must not undermine the security or integrity of other University systems

5. Approach

   a. The portal pilot will be built on the uPortal framework
   b. The VLE will be Blackboard for the duration of the pilot
   c. The timetabling system will be Syllabus Plus for the duration of the pilot
   d. The student record system will be ISIS for the duration of the pilot
   e. The LDAP service will authenticate users
   f. The pilot will target workstation delivery (rather than PDA/SMS)
   g. There will be an emphasis on "fitness-to-purpose" above "rush-to-market"
   h. Change management will be a feature of the project: environmental changes must be accommodated
   i. Upgrades or changes to systems upon which the portal depends will take account of the portal project
   j. The uPortal service will be baselined[4] for the duration of the pilot
   k. Development processes will follow established methods
   l. System test plans and usability testing will be adopted
   m. The hardware deployed for the pilot is not expected to support future roll-out to a live service without a review of performance, capacity and resilience

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[4] The portal will use a single version of the uPortal framework for the duration of the pilot. There will be no attempt to change the version of the uPortal framework used during the pilot (for example, should a new version be released)

6. Constraints and Dependencies

6.1 Constraints

a. Technical limitations of the selected portal framework (uPortal)
b. Access to appropriate skills and knowledge to develop interfaces to the required range of services and resources (e.g. Syllabus Plus)
c. The compatibility of proprietary systems with the portal framework (includes Blackboard and Syllabus Plus)
d. Available developer time and associated resources
e. Security measures appropriate to maintain the integrity of the University's systems

6.2 Dependencies

a. The support of Faculty-based staff to deliver and promote the portal pilot, including:
   I. Faculty Administrator
   II. Faculty administrative staff
   III. Academic staff engaged with students using the portal
b. Support from hardware, systems and database specialists in IT Services
c. The web, database and authentication servers and other portal hardware
d. The bridge between ISIS and the portal (Application Server and Web Service provider)
e. Availability of the ISIS system, including data management by University administrative staff
f. Availability of the UWEonline (Blackboard) service
g. Availability of the Syllabus Plus service
h. Availability of the staff and student e-mail services
i. IT Infrastructure associated with access to the portal (e.g. University network)

7. Statement of Scope

The pilot portals are assumed to presage the development and roll-out of production equivalents. However, this document addresses only the pilot phase: it is assumed that the launch of any portal to the wider University will represent a distinct phase, requiring a review of resources (e.g. administration, hardware).

7.1 Scope of this phase

Student-facing portal
a. Identify the requirements to be addressed by a portal pilot available to students in the Faculty of Health and Social Care (initially assumed to be those studying physiotherapy, occupational therapy, radiotherapy and diagnostic imaging)
b. Benchmark the requirements with a faculty other than the pilot faculty (Bristol Business School), to ensure relevance to the wider University
c. Create a pilot student-facing portal to include channels to UWEonline (Blackboard VLE), Syllabus Plus (timetable) and student e-mail
d. Allow access through the portal to parts of ISIS (the student record), as defined by the requirements
e. Develop portal-specific functionality other than that available through existing systems (e.g. an announcements channel)
f. Prove the concept of online administration through the portal, initially through the enrolment of returning students
g. Make the student-facing portal pilot available to the appropriate staff and students

Staff portal
h. Develop a staff-facing portal to allow access to lists of students and their photographs arranged by group
i. Roll-out a pilot of the above to a faculty which timetables at the student level in Syllabus Plus

General
j. Identify and develop other services appropriate to delivery through the portal at the pilot stage
k. Allow single sign-on to portal services through a "Central Authentication Service"
l. Evaluate each pilot and its implications for a production-quality service

7.2 Exclusions from scope

a. The roll-out of a portal to University-wide service
b. Continuity and disaster recovery provision for a production portal
c. Modes of delivery other than workstation browser (e.g. mobile phone and PDA delivery of the portal are excluded from scope for this phase of the project)

7.3 Staff and Students affected

a. Those students included in the pilot student-facing portal will have the option to use it to access UWEonline, e-mail, timetable information and services related to ISIS and portal-specific services

b. Academic staff in the student-facing portal pilot faculty will be asked to promote use of the portal to students, and engage with the portal's facilities where these require academic staff contributions to deliver functionality
c. Administrative staff in any pilot faculty may review existing procedures to take advantage of services that can be delivered through the portal; some portal services may reduce workload for administrative staff
d. Academic staff participating in the pilot staff-facing portal (e.g. class photosets) will have access to new services through the portal
e. IT Services developers (including Business Systems and Academic Technologies staff) will contribute to the development and deployment of a portal, including graphic designers, database administrators, testers and business analysts
f. IT Services operational staff supporting hardware and infrastructure employed by a portal will commission and maintain portal-critical services
g. CETTS staff will support inclusion of Syllabus Plus in a portal
h. Faculty-based technical staff may adapt existing faculty services for inclusion in a portal, or may exploit new central services to meet local needs
i. Staff (academic and support staff) and students will be affected by the online enrolment project

8. Project Organisation

8.1 Portal Project Board

The project board will oversee the portal project. It will be responsible for ensuring that the project meets its objectives and delivers the projected benefits, that resources are appropriate to the project needs, that the project maintains its business focus and that the context, including risks, is actively managed.

Professor Steve West, Chair (Pro Vice Chancellor, Dean, Health & Social Care)
Barry Cawthorne (Academic Development Co-ordinator)
Rich Egan (ITS, Project Manager)
Steve Grive (Head of IT Services)
Warwick Jones (Associate Dean, Bristol Business School)
Steph Keeble (Head of the Centre for Student Affairs)

8.2 Portal Management Group

The Management Group is responsible for strategic management of the project. The group will specify functionality, ensure that the project meets requirements and manage scope.

Barry Cawthorne, Chair (Academic Development Co-ordinator)
Helen Cole (ITS, Business Systems Manager)
Rich Egan (ITS, Academic Technologies Manager)
Kevin Foreman (Associate Dean, Health & Social Care)
Leon Smith (Head of Centre for Examination, Timetabling and Technical Services)
Margaret Needles (Directorate, Online Re-enrolment Project Manager)

Co-options
Sid Baldwin (Web Services Team Leader)
Katie Huthnance (Business Analyst)

8.3 Core Development Team

The portal development team are responsible for building, deploying and day-to-day management of the portal and associated web services.

Sid Baldwin (Web Services Team Leader, ATG)
Jonathon Barton (ISIS Developer, Business Systems Team)
Rory Galvin (Java Programmer, ATG)
Paul Hunnisett (Java Programmer, ATG)
Katie Huthnance (Business Analyst, Business Systems Team)
Aaron Johnson (XLST Developer, ATG)

Also
A representative of administrative staff from each pilot faculty

9. Risk Management

0100 Personnel					
ID	*Risk*	*L*	*I*	*Risk*	*Mitigating*
0101	Sudden loss of key development staff; Changes in project team; Appropriate development skills not available	1	2	2	Consolidation of development toolsets across projects, to maximise resilience; spreading knowledge through collaborative development practices
0102	Competing demands on development staff (UWEonline, ISIS, etc)	3	3	9	Project Management structure
0103	Competing demands on Faculty staff prevents adequate participation in pilot	3	3	9	Portal Project Board

0200 Schedule and budgets					
ID	*Risk*	*L*	*I*	*Risk*	*Mitigating*
0201	Overly optimistic timeframe / schedule	1	3	3	Project's technical specification
0202	Inadequate resources available to adopt project for production purposes	2	3	6	Portal Project Board

0300 Requirements and analysis					
ID	*Risk*	*L*	*I*	*Risk*	*Mitigating*
0301	Misaligned or unshared priorities; Requirements do not match user needs	2	2	4	Requirements developed in consultation with faculties; Bench-marking, detailed analysis, prototyping
0302	Inadequate scope management means portal does not adapt to meet evolving University needs *or*	1	3	3	Phased project accommodates periodic review of requirements;

ID	Risk	L	I	Risk	Mitigating
	scope creep undermines project				development approach
0303	Underestimated procedural impact on administrative or other staff	1	3	3	Engagement of other stakeholders; non-critical pilot
0400 Political					
ID	*Risk*	*L*	*I*	*Risk*	*Mitigating*
0401	Excessive demands/expectations of portal service, including timescales and functionality, 24/7 etc	3	2	6	Managed roll-out, to include workshops and support group
0402	Faculty I.T. initiatives with competing/duplicate functionality result in confusion (to students/staff/processes)	3	1	3	Seek means to link to faculty-specific initiatives through portal; encourage faculty developments to emphasise faculty-specific imperatives
0403	Tension emerges between drive for increased "compatibility" of systems and process, and perceptions of "centralisation"	2	1	2	Distributed service management localises ownership
0404	Lack of commitment to project from academic or administrative staff due to lack of sympathy with (or appreciation of) project	2	3	6	Relevant and beneficial project outcomes; consultation, active participation of pilot Faculty management
0500 I.T. Systems					
ID	*Risk*	*L*	*I*	*Risk*	*Mitigating*
0501	Upgrades to other systems undermine technical architecture of project (e.g. new versions of Blackboard, Syllabus Plus, uPortal)	2	2	4	Engagement of ITS in procurement and roll-out
0502	Unstable/poor performance of IT systems undermines portal (hardware or networks fail; scalability problems; data corruption/loss of data)	1	3	3	Adequately specified hardware; pilot to understand technical implications;

ID	Risk	L	I	Risk	Mitigating
					ITSDRC; data back-up procedures
0503	ISIS or other systems compromised by portal activities (e.g. overload of system by opening up access)	1	3	3	Limited pilot; phased roll-out; isolation of ISIS calls to application server
0504	Security levels inadequate; Security breaches due to portal activities	1	3	3	Accounting of security risks throughout development
0600 Development					
ID	*Risk*	*L*	*I*	*Risk*	*Mitigating*
0601	uPortal framework inadequate; product is inflexible	1	3	3	Proof-of-concept; ongoing awareness of other products
0602	Lack of appropriate uPortal support from open source community (product failure)	2	2	4	Experiences with proprietary do not suggest that is a complete solution
0603	Testing fails to identify user or system issues	1	2	2	Test first development approach, robust testing framework
0604	Lack of proof-of-concept for groups, roles and permissions undermines pilot	1	3	3	Early emphasis on addressing this issue in pilot development
0700 Other					
ID	*Risk*	*L*	*I*	*Risk*	*Mitigating*
0701	Organisational changes impact on the project	2	3	6	Portal Project Board
0702	Portal enables breaches of Data Protection, privacy, accessibility other legislation	1	3	3	Web standards must be applied to portal developments
0703	Project outcomes not taken up	1	3	3	Publicity; User engagement initiatives

10. Project Contingency Plans

The project will be piloted in one faculty, but its objectives and development will be bench-marked against a second faculty. Should the first faculty be unable to support the pilot, it may be possible to transfer the pilot to the second faculty.

The pilot has been scoped to encompass four principal services: UWEonline, Syllabus Plus, e-mail and functionality based on ISIS (online administration, to include support for the online enrolment project). Access to the first three services will continue to be available outside the portal, as presently the case. In the event of project failure, students engaged in the portal pilot will retain the same access to these services as all UWE students.

For services based on ISIS, portal development assumes that specialist "channels" be created to enable user access and functionality through the web. Although a portal framework requires that these have an interface appropriate to their integration in the portal, each is in effect a "mini-application" in its own right (much as UWEonline or Syllabus Plus will remain discrete applications, but be visible through the portal). The majority of these "mini-applications" could potentially be re-purposed to other web uses, allowing access outside the portal (assuming appropriate security and authentication measures were applied). Should the portal project fail, it is anticipated that any online administration developments would retain value to the University; subject to additional development work, they could be made available to students in other ways.

This includes portal support for the online enrolment project.

Where other functions are developed (beyond the four principal services), these may or may not be wholly contingent on the portal for delivery. An example might be a uPortal announcements channel.

The development approach will assume collaboration by developers on each *use case*, as mutually-supportive critics. This will reduce the project *bus number* by sharing understanding of each use case[5].

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[5] The project 'Bus Number' is the number of people on whom development solely depends (if hit by a bus tomorrow, this project would grind to a halt)

11. Estimated Project Costs

Costs for 2005/06 will depend on pilot outcomes, but are anticipated to include scaling-up of the service for roll-out. It is expected at the time of writing that there will be a greater emphasis on availability and resilience if the portal is to become a "one-stop shop" for services online, and that there will be a coincident growth in demand as a consequence of wider roll-out. Higher-specification servers will be required to deliver highly available portal services, and this is reflected in the higher estimates for hardware. Where second servers are purchased, these will be load-balanced with the servers deployed for the pilot, in the manner already adopted for UWEonline.

11.1 Cost Plan

Staffing 1 x Java Programmer for **2 years**, fixed-term inclusive of on-costs exclusive of performance-related increments 1 x XSLT Developer for **2 years**, fixed-term inclusive of on-costs exclusive of performance-related increments	60,160 58,690
Capital investment : 2004/05 budget approved To support the deployment of a pilot service, including: Portal server (production) Portal server (staging) Authentication server (CAS, production) Portal/CAS development server Portal database server (production) INGRES application server (production) Web service provider server (production) Development server for Ingres Application Server & Web Service Provider Related components (e.g. JDBC Connectivity, SSL certificate) Appendix B provides a summary of capital commitments to date.	80,000
Capital investment : 2005/06 bid	TBC
Total	198,850

11.2 Opportunity Costs

Opportunity costs represent the diversion of existing staff and resources to the portal project.

Academic Technologies Group (ITS)
1 x Team leader @ 100% FTE
1 x Java programmer @ 80% FTE
1 x System administrator @ 10% FTE
1 x Graphic designer @ 2% FTE

Business Systems Team (ITS)
1 x Business analyst @ 50% FTE
1 x Developer @ 80% FTE

Centre for Examinations, Timetabling & Technical Services (CETTS)
1 x Administration @ 5% FTE

Faculty of Health & Social Care
TBC – Pending resolution of pilot phase functionality

Hardware
1 x existing server re-deployed as development database server

12. Project Plan

12.1 Overall Project Phasing

The project has completed the following stages for the portal as a whole:

Preliminary Phase
1. Product evaluation
2. Proof-of-concept

The project will now undergo the following stages:

Phase 1 : Pilot
3. Pilot of student-facing portal
4. Pilot of staff-facing portal (initially scoped to include group photo sets)
5. Pilot of online enrolment project phase 1

Beyond this, it is expected that the project will either attempt a larger pilot or that the portal will be rolled out in a closely managed mode. However, the nature of future developments will depend on the outcomes of the pilot phase, including the evaluation.

It is also anticipated that additional functionality will be added to the portal in the course of each pilot, based on ongoing user feedback, test cycles and opportunity.

12.2 Development Plan

1000	**Establish development team** Recruit staff Establish development practices	
1100	**Commission hardware** Development portal/CAS host Development database host Development Application Server/web service provider host Production web service provider host Production Application Server host Production CAS host Production portal host Production database server host	
1200	**uPortal** Apache Java SDK 1.4 Tomcat Ant SQL Server uPortal 2.3.5 Ingres Application server Ingres Web Service Provider (IIS & COM object) Repeat cycle for live	
1300	**CAS** Apache Java SDK 1.4 Tomcat CAS (Development) LDAP integration (Development) SSL (Development) CAS (Production) LDAP integration (Production) SSL (Production)	
1400	**Blackboard Integration** CAS Log in Blackboard channel : My Courses Blackboard channel : My Community Organisations Blackboard channel : Jumppad Repeat cycle for Blackboard Test Server Roll-out to production servers	
1500	**Syllabus Plus Integration** Faculty-based filter for access to Syllabus Plus Proxy personalised timetable Apply XSLT to timetable Roll-out to production servers	
1600	**Webmail Integration** Student webmail channel Single-sign on (Cryptowallet) Staff webmail link Roll-out to production servers	
1700	**ISIS Channel Part 1** Student address/contact details channel Exam results channel	

	Integrate with uPortal Business analysis and liaison with Faculty Administration Academic history channel Review provisional marks channel Bench-mark with second faculty Roll-out to production servers	
1800	**Group Communication*** Populate uPortal with sample group: module run enrolments Identify other required groups Systems analysis Populate uPortal with other required groups Announcements channel Group communication enabled in uPortal Roll-out to production servers *Dependant on availability to portal of group information	
1900	**Library Channel** Systems analysis Link to personal library record Electronic journals password-protected links	
2000	**Test Cycle : pre-pilot (student-facing)** Usability test QA compliance Sign-off	
2100	**Launch (student-facing pilot)** Faculty liaison Launch plan Promotion Launch	
2200	**ISIS Channel Part 2** Identify other user priorities (e.g. deadline alerts, CSA/student group requirements) Bench-mark with second faculty Business analysis Development cycle (requires scope) Roll-out to production servers	
2300	**Student Photosets (staff-facing portal)** Prove publishing of photographs Identify pilot faculty Business and systems analysis Establish data links Photograph collation in portal Watermark photographs Permissions architecture to control access Limit access to UWE network (privacy & data protection) Test	
2400	**Launch (staff-facing pilot)** Launch Promotion	
2500	**Online Enrolment** Functionality defined for pilot phase Pilot faculty identified Business analysis Development	

	Testing	
2600	**Launch (Online Enrolment)**	
	Launch	
	Promotion	

12.3   Timeline

Date	Objective	Description
28/01/05	Student-facing pilot faculty confirmed	Further to conversations in HSC, the pilot faculty is confirmed
07/02/05	Portal Management Group	Decision on inclusion of 1800 (Group Communication) in pilot: availability of adequate group information is established
25/02/05	Portal project Board	Portal Project Board approve student-facing pilot launch date
14/03/05	Student-facing pilot demonstration available User testing of student-facing pilot begins	A demonstration version of a **subset** of the student-facing pilot is available for use in workshops User testing of some aspects of the pilot functionality may begin
18/04/05	Student-facing pilot launch	The student-facing pilot is launched in the pilot faculty. Years 1-3 Physiotherapy, 1st Year Radiotherapy Diagnostic Imaging students on campus
9/05/05	Phase 2 Student-facing portal development begins	Item 2200 underway by this date in development environment
TBC	Staff-facing pilot launch	Dependency: availability of groups data from Syllabus Plus
TBC	Online enrolment pilot launch	The online enrolment components are launched (project management external to portal project)

Appendix A : Technical Implementation Plan

A.1 Technical architecture

A.1.1 Authentication

To deliver role-based or personalised services, a portal requires that each user "log on" and thus identify themselves. Ideally, they should then not be required to "log on" again, when moving between services delivered through the portal: for example, when moving from the portal to UWEonline.

To establish this "single sign-on" the portal will employ a number of strategies, including CAS (Central Authentication Service). A user will log in to CAS rather than the portal. CAS will check their user details against a definitive source (in this case, the University's existing LDAP service). Should access be approved, CAS will create and maintain a "ticket" for the user, which is issued to their browser for the duration of their visit.

The portal, UWEonline and other services will "trust" CAS. If the user, as identified by their CAS ticket, is authenticated in CAS, they will be allowed access without being challenged for a user ID and password.

CAS is an open source initiative, particularly suited to integration with uPortal. It should be noted that CAS is complementary to existing services such as LDAP, and not an alternative or competing technology. CAS is required to deliver "persistent sign-on" (authenticate once, access many services), building upon LDAP which delivers "consistent sign-on" (authenticate for each service, but using the same userID and password).

Although uPortal is compatible with CAS, not all web-based services will be able to exploit this technology, and other technologies may be required to meet specific challenges (e.g. Cryptowallet).

Proof-of-concept
Access to the portal and UWEonline via CAS has been proven.

A.1.2 Identity information and roles

A set of basic data will be required for the portal itself to function. Generally, this will be **identity** information, used to allocate roles and groups to users, and will include:

- Name
- Student and other identity numbers
- E-mail address
- University role (student/staff, the latter possibly also subdivided into academic/administrative/technical)
- Faculty or service department
- Primary award (for students)
- Module enrolments (for students)
- RASP (for students)

Such data will be required each time a user accesses the portal. Therefore, the portal should have fast and (in processing terms) low-cost access to this data. For example, it would be inappropriate for the portal to make calls upon ISIS to retrieve this data, since each log in to the portal would then have a performance implication for ISIS.

The portal must therefore access this information from LDAP, MIIS or a similar identity service.

Proof-of-concept
The structure of roles and groupings was not considered in the proof-of-concept for the portal. This area represents a new development and will be primarily influenced by emerging requirements.

A.1.3 Permissions and preferences

Access to areas of the portal will largely be based on roles defined as part of a user's identity. The portal will control such access, based on settings within portal's own database or configuration. The portal will require such groups and roles to be populated with data ultimately derived from ISIS and Syllabus Plus. However, it is anticipated that these will be collated via the MIIS (Microsoft Identity Integration Server) and LDAP (Lightweight Directory Application Protocol) services already in service at the University. The population of the latter services may require schema or other changes to LDAP, which may in turn require the advice of external consultants.

User preferences within the portal will be stored in the portal's own "data hub".

Proof-of-concept
The proof-of-concept addressed user preferences successfully. Further permissions functionality will depend on resolution of the identity and roles issues above.

A.1.4 Information sources

A number of information services will be accessed to deliver functionality through the portal. These include:

- UWEonline (Blackboard)
- ISIS
- Syllabus Plus
- Student and staff e-mail systems

In addition, there may be channels to other services, including bespoke services developed to deliver online enrolment, other aspects of online administration or communications (e.g. an announcements channels).

One or more channels to each will be required. Their scope will depend on the nature and range of data drawn into the portal framework, and the intended use of that data. Each will deliver specific functionality through the portal.

A.1.4.1 UWEonline

It is intended that the portal offer single-sign-on access to UWEonline through CAS, and integrate UWEonline announcements in any portal announcements channel. The

project will also explore the potential to deliver contextual links to course and community enrolments in UWEonline.

> **Proof-of-concept**
> The proof-of-concept demonstrated single-sign-on access to UWEonline through CAS and the portal, and the inclusion of simple lists of UWEonline course enrolments.

A.1.4.2 ISIS

It is intended that the Portal service exploit INGRES Application Server as a preferred method for communication with ISIS.
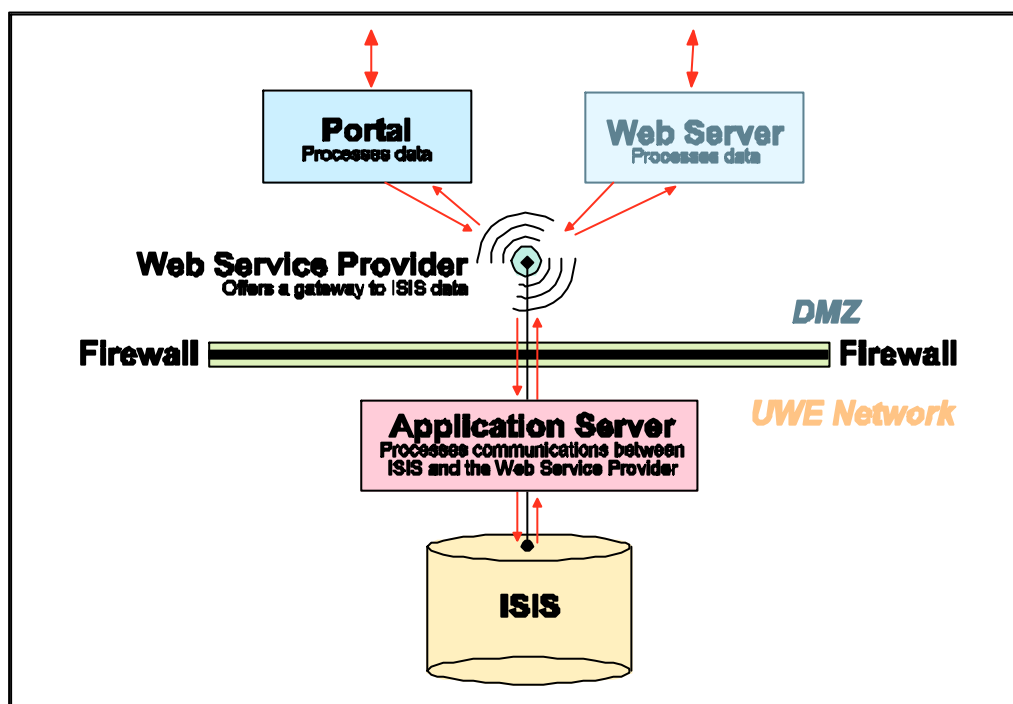
The Application Server can interpret external requests (for example, web requests) into existing ISIS procedures. It handles both inbound and outbound traffic, can forward changes to ISIS, and can return information from ISIS. To some extent, this will allow us to leverage existing ISIS functionality for portal purposes, minimising development work.

The Application Server will be configured to only receive requests from a dedicated Web Service provider. The latter will be beyond the firewall, to permit communication between the Web Service provider and the Portal. A firewall port will be opened to permit communication between the Web Service Provider and the Application Server, and the latter will only accept requests from the Web Service Provider. The Web Service Provider thus becomes the sole means of communication between the web and ISIS.

Because the application server will not permit its own clients to run procedures other than those permitted through its configuration, we believe this arrangement allows the greatest pragmatic degree of security, while permitting:

> a) real-time communication between the portal and ISIS

> b) incoming data to be recorded in ISIS

Proof-of-concept

A proof-of-concept has been successfully conducted with student address maintenance for the portal, allowing real-time interaction with ISIS data in a development environment. It is intended that this model of communication between ISIS and the web be piloted for the Postgraduate Online Application Form project currently underway, in collaboration between the Enquiries and Admissions Service (EAS), Marketing and IT Services. The technical architecture for this is outlined below.
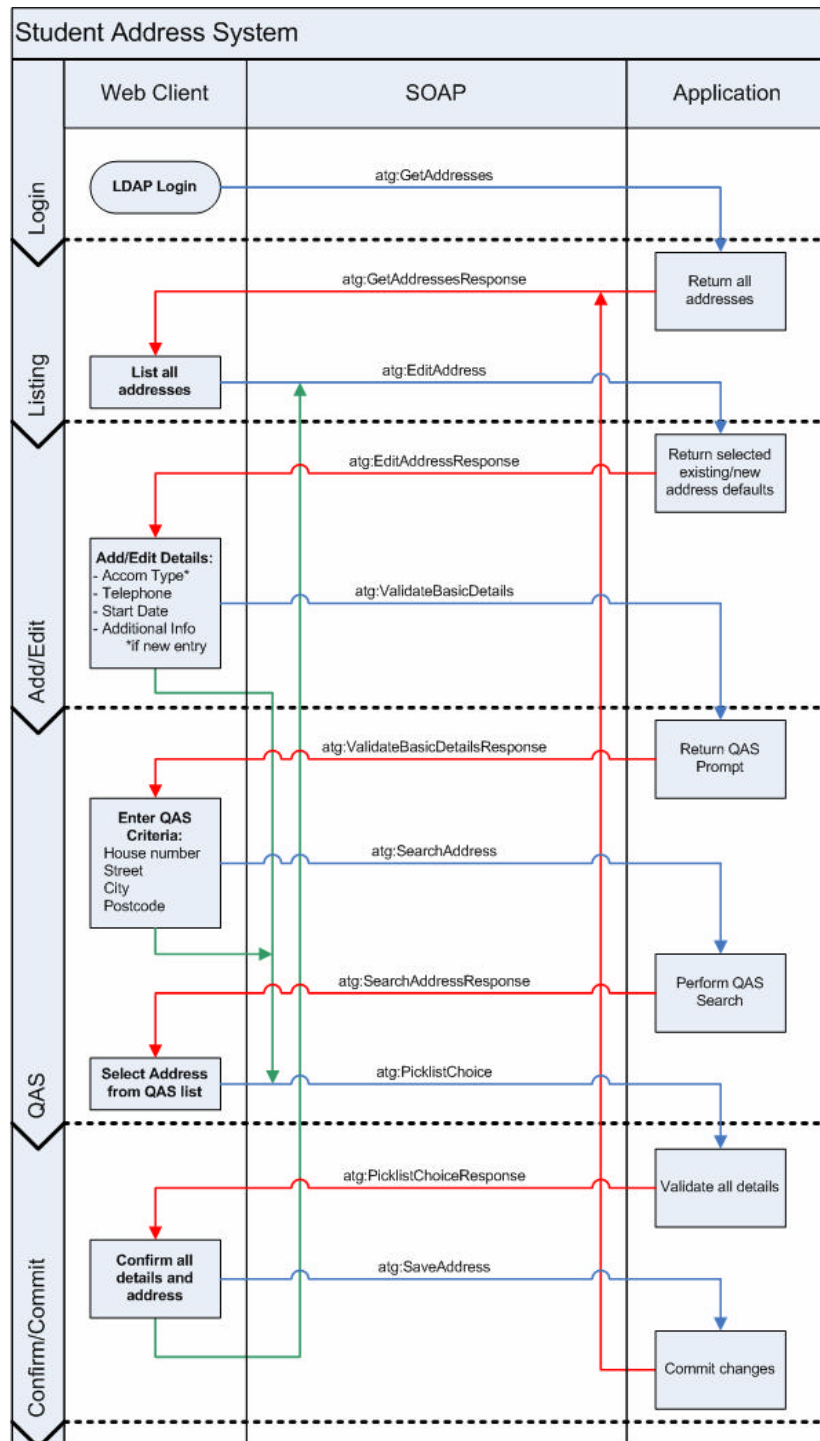
A.1.4.3 Syllabus Plus

There are two potential methods of integrating Syllabus Plus data with the portal:

> a. Direct access to the Syllabus Plus database
> b. Integrate content published by the Syllabus Plus web server in the portal

The former represents the more significant development challenge, in that it assumes close familiarity with the database structure, and requires the bespoke development of scripts for each function required. The latter offers many basic services such as personal timetables, which could be published in the portal (and to some degree customised through the application of protocols such as XSLT).

The project will exploit both options, on a pragmatic basis: where possible, existing Syllabus Plus web server pages will be published through the portal, modified as appropriate; where needs cannot be met in this way, bespoke scripts will make direct calls to the Syllabus Plus database.

Proof-of-concept
To date, we have only integrated (and modified) content published by the Syllabus Plus web server.

A.1.4.4 E-mail

The portal will ultimately need to integrate at least two discrete e-mail services: the staff e-mail system based on Exchange; and student e-mail based on Sun services. It is assumed that the portal will be able to distinguish between staff and students (see "Identity Information" above), and thus provide the appropriate service to each user.

Given the wealth of functionality offered to staff by Outlook web access, the portal will provide links to that service. For student access, IT Services expect to conduct a new review of web-based e-mail clients in light of the move to Sun services, and this may offer an opportunity to adopt a client which can be incorporated as a channel in the portal. If not, a new webmail channel may be required for the portal.

Proof-of-concept
At the time of the proof-of-concept, both staff and students were using the same Simeon web service. A uPortal webmail channel was deployed, which could access that web service. However, developers in ITS were unhappy with the quality of that channel, and the subsequent migration of staff to Excahnge and students to Sun offers an opportunity to review e-mail integration ahead of the pilot.

A.2 Software

The MLE technical specification group, in light of a detailed portal product evaluation received from the web team and subsequent discussions at the meeting of 13th May 2003, recommended in a paper on 16th May 2003 that the University adopt the JA-SIG *uPortal*[6] framework to support its portal pilot. This places an emphasis on the Java programming language and XSLT protocol for controlling presentation.

Subsequent development work to build a proof-of-concept portal resulted in the adoption of the *Central Authentication Service* (CAS)[7] single sign-on solution developed largely at Yale University as an open source initiative. This will call upon the existing LDAP service already deployed at UWE, to provide user accounts for authentication.

For a database server to support the portal, the University's existing expertise in INGRES and *Microsoft SQL Server*, and the preference of IT Services for the latter in web-specific applications, has lead to the adoption of *Microsoft SQL Server*. This will be used to maintain portal-specific data, including configurations.

The INGRES Application Server and an associated Web Service Provider will provide a bridge between the portal and ISIS.

A.3 Hardware

Portal web/application host

This delivers content to users, and will host the *uPortal* application and related services (to include *Apache Tomcat*). Both Windows and Unix platforms are viable for this purpose, but based on enquiries by ITS development staff to colleagues at other UK HEIs, and the prevalence of Sun Solaris to support the uPortal framework across the sector, a Sun Solaris platform has been procured for the portal application server.

Portal database host

The portal maintains its own data in a dedicated database (for example user preferences and access permissions within the portal). For the database server, IT Services expertise in *Microsoft SQL Server* makes this the preferred solution. Windows servers will support this database server.

Central Authentication Service (CAS) host

A discrete authentication server was preferred to support the single-sign-on CAS service. This will be based on the Sun Solaris platform.

Bridge to ISIS

The bridge to ISIS consists of the Ingres Application Server and a Web Service Provider outside the firewall. Both will be based on Windows servers procured for the portal project. This platform was selected due to the availability of Windows-based COM objects to facilitate the linkage of the web service provider to the Ingres Application Server.

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[6] http://www.uportal.org/
[7] http://tp.its.yale.edu/tiki/tiki-index.php?page=CentralAuthenticationService

Staging and development hosts

Traditional development practice assumes a three-stage publishing process:

I. New development work may only be undertaken on "development" hosts, to which only developers have access. This isolates development-related interruptions of service.
II. When a tranche of new work is ready to be inspected, it is published to a "staging" service for testing and quality inspection. Access to this server would typically be available to all testers and representatives of the user community.
III. Once new work has been tested and approved for release, it is published to the live or "production" service.

A single Sun Solaris machine been procured to act as the development environment for both the Portal web/application host and CAS host. A single Windows machine has been procured to act as a development host for both components of the bridge to ISIS (Application Server and Web Service provider). An existing machine has been re-purposed to act as development host for the portal database.

No staging hosts have been procured in advance of the pilot phase, but it is anticipated that a portal staging host will be deployed before completion of the pilot.

Other hardware

As an integration tool, the portal will also draw upon other systems, including the Syllabus Plus, UWEonline and ISIS hardware. It will also depend on infrastructure such as University networks and LDAP. These are summarised in the project dependencies.

A.4 Development approach

The project will assume a form of the agile programming[8] development approach, in which scope management is expected to be an ongoing process (change must be accommodated, and the portal project will be evolutionary).

Requirements will be defined as _use cases_. These describe discrete units of work that have a distinct feature. It is intended that developers work in pairs as mutually supportive critics.

The ITS Project Manager will initially act as Customer Representative, representing the concerns of the "development client" (initially the Portal Management Group) to the development team. It is anticipated that as user requirements emerge in the course of each pilot, representation of the "development client" will change.

A.5 Testing Strategy

Portal development will emphasise a test-driven strategy, in which each identifiable feature ("use case") is bounded by an acceptance test. Continuous system integration and testing demands that the most recent version of a component is always functional. New features will be incorporated into the development portal as soon as they are complete.

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[8] http://www.agilealliance.com and http://www.agilemodeling.com/essays/proof.htm

This assumes the "reflective" engagement of developers in the test process. This level of testing assumes an emphasis on system integrity and delivery of development objectives (answering the questions "does this work?", "does it do what it is supposed to do?" and "does it break something else in the process?").

Once adequate new functionality is available to justify a second level of testing, the existing quality assurance processes within the development team will be employed. These will emphasise fitness to purpose, including usability and compliance with University web standards.

Workshops and one-to-one usability testing on the Krug model[9] will be required, drawing upon staff and/or students from a pilot Faculty, to achieve a third level of testing at significant stages of portal roll-out.

To facilitate the above, the traditional development approach assumes a three-tier server model (development server, staging server and production server). Here, the staging server acts as a view of developed work which can be employed for testing, training and quality assurance, discrete from both the live service and the volatile development environment.

The staging server has been omitted from the initial procurement phase of the project, as the production server can fill this role prior to launch. However, once the pilot is live, it is assumed that a staging server will be established.

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[9] http://www.sensible.com