



## Project Document Cover Sheet

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## JISC Curriculum Design: JACDAW Project Plan

### *Overview of Project*

#### **1. Background**

Curriculum design at the University of Cambridge reflects our tradition of faculty leadership. While central administration ensures that appropriate QA procedures are followed and provides central oversight, curriculum design and delivery is highly devolved.

This arrangement facilitates research-led teaching and minimises the feedback loop between teachers and students, both contributors to Cambridge's teaching strengths. It also presents certain unusual challenges in the area of curriculum design and management. Others of these challenges are not unique to the University of Cambridge and have been identified in other institutions.

Teaching is a core activity of the University and the development and continuing management of its courses are activities of strategic importance. These are by implication strategic challenges, and by providing information and support tools this project seeks to support the University's efforts to address some of them:

1. The difficulty of meeting staff and student expectations for 'agile' curriculum redesign in a highly devolved organisation while maintaining central quality oversight.
2. The need to 'connect' different institutional systems to provide a coordinated and coherent view of teaching and learning provision. These systems include CamSIS (Oracle/Peoplesoft student information), CHRIS (human resources system), CamTools (Sakai collaboration and learning environment), CamCORS (supervision reporting system) and SWIFT (student feedback system). A key objective is to link student feedback and other quality indicators into the curriculum redesign process.
3. A growing number of new courses and programmes, particularly at MPhil level.
4. Pressure to consider new tripos structures reflecting growing interdisciplinarity in courses and growing demand for non-traditional subject specialisms.
5. The need to formalise the growing use of technology-based delivery and assessment for aspects of many courses.
6. Student and staff desire for more flexible delivery and assessment as revealed in the HE Academy Pathfinder project
7. Increasing difficulty of delivering student-led learning design in large cross-departmental triposes, especially the natural sciences tripos (NST), as numbers of students and course options increase.
8. The need to adapt courses to take account of the increasing diversity of the student intake as a result of Widening Participation initiatives, including supporting students in the transition from school studies to University.
9. The need, arising from the QAA's shift in focus from 'QA' to 'QE', to more fully document the processes by which courses are subject to ongoing reflection and improvement, without increasing administrative burdens on teaching staff.

10. Cambridge's devolved organizational structure increases potential for unnecessary duplication of effort.
11. Cambridge's frequently multi-departmental tripos system creates unusually complex curriculum management and resource-allocation problems.
12. The need to adapt to increasingly learner-owned learning innovations and resources.
13. Support vulnerable students and different learning preferences by offering alternative modes of learning and assessment

The University already has formal and informal processes by which it addresses all of these issues. This project will support those processes, aiming to increase their flexibility, by creating new options for addressing issues, and their productivity, by making it possible to achieve the same outcomes in less time, or better outcomes in the same time. It will do this by providing improved access to relevant information and tools, integrating them on a common IT platform to support the curriculum lifecycle, from initial conception, through approval and delivery, to retirement and archival.

For the purposes of this project, a curriculum may be understood as the description of the set of knowledge, skills and conceptual proficiency within a subject domain which a programme of study is designed to engender in its students. The web of knowledge circumscribed by a curriculum specification is necessarily shaped by a range of constraints such as time, students' learning in supporting areas, and teaching facilities. We do not, therefore, seek to consider curriculum design in isolation from its delivery, but in conjunction with course design and structure. This approach will greatly improve the project's ability to support responsiveness, flexibility and quality in learning design.

Within Cambridge, an undergraduate degree is known as a 'tripos', due to its three-part examination and award. Different schools and faculties take different approaches, but many triposes comprise elements from multiple departments, often taking a 'breadth first' approach in which students study a wide variety of subject in their 'part I' before gradually choosing a specialism in part II. Three-year courses are typically divided into parts IA, IB and II. Four year courses may subdivide part II into IIA and IIB or may introduce a part III, generally including a significant original research element.

The Pro Vice Chancellor for Education (PVCE) is responsible for the University's Teaching and learning Strategy. The PVCE chairs the General Board Education Committee (GBEC), which bears ultimate responsibility for quality assurance of the University's degrees and is assisted administratively by the Education Section (ES). The ES maintains course specifications in the CamData system. These descriptions allow the lecturers, departmental Teaching Committees and interdepartmental Management Committees who actually manage course content considerable latitude in modifying the curriculum. However any changes which impact the assessment or structure of programmes must be approved by the GBEC, with proposals generally passing through the hands of the Education Section *en route*.

A number of software tools may be utilised in the course of this project.

Kuali Student (KS) Learning Unit Management is a candidate platform for integration of support services. Kuali Student is a US\$50 million, 5 year, international community-source effort to produce a next-generation student services system, led by the University of British Columbia in Canada. It is designed from the ground up to operate within a full Service Oriented Architecture and to be configurable to support any individual institution's needs. It has a phased delivery plan in which eight service modules will be released over the next three years, beginning with the Learning Unit Management module in October 2009. The University of Cambridge is a contributing partner in the Kuali Student project and has access to development and pre-release versions.

The project will assess the utility of open source Kuali Student against the alternative, proprietary, Oracle/peoplesoft Fusion platform, which is used by the Cambridge Student Information System CamSIS. It will also attempt integration of the Kuali Student LUM module with other institutional systems, such as CamSIS and and the Sakai-based collaboration and learning environment CamTools, using the Kuali RICE enterprise services bus. The aim is to improve processes and support curriculum reform through the introduction of technology, while integrating existing systems around the curriculum model.

As originally conceived the project envisaged a significant role for the Phoebe pedagogic planner (Phoebe), an open-source pedagogic planning tool developed as part of the JISC Design for Learning programme by Oxford University, as another alternative to Kuali Student. Subsequent engagement with the Phoebe project has shown that although flexible the tool is intended for class design more than it is for course or curriculum design. There is nevertheless a place for design of learning interactions within curriculum design as conceived for the purposes of this project, and we intend to engage further with the successor project to Phoebe, 'Learning Design Support Environment for Lecturers'<sup>1</sup>, which is funded by the ESRC/EPSRC TLRP-TEL programme and is presently in its early stages.

Within CARET we have developed and maintained a further tool of potential value: a genetic-algorithm based scheduling tool able to accept a wide variety of planning constraints, which has been run successfully every year since 2005 on behalf of the very large Natural Sciences Tripos, scheduling first-year (part IA) practical classes against multiple student options and lecture courses. It was commissioned by the NST management committee, who were experiencing difficulties with the previous paper-based system due to increasing student numbers and course options. Since launch the system has become increasingly well regarded and has permitted the admission of a larger number of students without any expansion of laboratory resources. It may be of value to explore the possibility of using this tool in conjunction with Kuali Student Learning Unit Management to enable curriculum reform in complex situations with little slack, where changes are very difficult because they cause a cascade of knock-on effects.

Also within CARET recent education-focused research and development projects within CARET, including the Learning Landscape Project (2006-08) and the Teaching for Learning Network (2007-2008), have helped to lay some groundwork for this project, providing case studies of student experience. Ongoing technical projects such as E-Administration of Learning (in partnership with the Engineering and Physics departments), various assessment tools, the SWIFT survey tool and the CamTools VLE offer a number of other potentially valuable integrations.

This project will seek to develop support tools which will ultimately be available and of value to the entire university, but will engage initially with a pilot group of institutional partners representing a range of practice. The aforementioned Natural Sciences Tripos (NST) has engaged with CARET in this respect.

NST covers sixteen departments including Physics, Chemistry, and many more. Undergraduates can assemble their choice of scientific study incorporating elements from many disciplines. This is the largest tripos in the university and its unique degree of student-centred learning design is highly prized. The tripos has been expanding further, both in student numbers and content, putting increasing pressure on resource and curriculum management. This has led to a situation in which modifying course structures or introducing new material causes chains of impacts elsewhere, making reform difficult. The problem experienced in part IA practical scheduling is in many ways an early indicator of the NST's overall problem, first year practicals being especially resource constrained due to the division of students between a relatively smaller number of course options.

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1. See <http://www.tlrp.org/tel/ldse/> for further information.

The NST presents a problem with a wide variety of redesign features including cross-departmental course sharing, students with subject changes year to year, student-designed curricula etc. This it is hoped will be an excellent testbed for our work but before we can move forward with this we will need further engagement in various degrees from stakeholders at all levels.

## 2. Aims and Objectives

### *Aims*

The project has 3 overall aims, which will be viewed differently by the various stakeholders.

1. The overall project goal, which will enable us to work with full institutional buy-in, is to create an IT support process which makes the curriculum design and update process better or easier. Although determining the details of what that process might be and what challenges it will address is a key part of the project, to be undertaken in partnership with internal stakeholders, we anticipate that application of IT will give the University added flexibility to respond to increasing student numbers, changing student intake, increasing course diversity and other strategic drivers.
2. We will implement the new local guidelines for teaching and learning projects which are, in time, to require institutional-level sign off. This will secure buy-in from senior stakeholders in the University. This has some potential to conflict with the primary goal of the project, in that without this support it will be more difficult to engage other internal stakeholders sufficiently to accomplish this.
3. We anticipate that Quali will play a role within this project, and assuming that Quali development proceeds along expected lines, a connector between PeopleSoft student information systems and Quali's learning unit management module is a likely output. We plan to become the UK reference point for Quali Student. This is however subsidiary to the primary goal of the project and if it becomes clear that Quali Student can not fulfil the needs of internal stakeholders alternative tools and platforms will be considered.

### *Objectives*

The project objectives derive from the three overall aims.

1. An integrated IT support tool for curriculum design and review supporting the work of lecturers, central QAE, teaching committees, course organisers and administrators.
2. An integrated IT support tool for curriculum design and review based on Quali Student, or other management platform with service-oriented architecture.

Within the University:

3. Development and trials of curriculum design support tools takes place in at least five partner institutions, across at least five types of learning unit as distinguished by pedagogical approach, level, optionality, size and interdisciplinarity, with multiple instances of each.
4. The project has signed up governance committees, 8-20 lecturers and course organisers within partner institutions, and 3-7 from elsewhere in the University, by 20/07/09
5. Curriculum design support tools and accompanying training materials are available (on an opt-in basis) to staff and teaching institutions throughout the University.

6. Staff and teaching institutions throughout the University are aware of the availability and benefits of these outputs.
7. Project outputs are adopted by users in at least 2 teaching departments.
8. Project outputs support and have the support of central University QAE authorities including the PVCE and his Education Section.
9. Project outputs support and have the support of central University information management authorities including the Management Information Systems Division.

Within partner institutions:

10. Students see more topical courses and course options available to them.
11. Lecturers, teaching and management committees and course administrators are more productive, in that they are able to effect similar outcomes in less time than previously, or can achieve greater effects for a similar expenditure of time.
12. There is integration of course design and management with other institutional IT systems
13. Lecturers, course administrators and students have fewer form-filling and manual set-up tasks; the creation of courses triggers the automatic set-up of electronic support resources.
14. Teaching and management committees have increased flexibility to introduce and adjust learning units in support of strategic objectives.
15. Central QA requirements are integrally supported within curriculum design and ongoing QE activities of lecturers and teaching committees.
16. Teaching innovators have better access to and awareness of pedagogical, material and management resources available to them, including those of the Education Section and the Learning and Teaching Support (LTS) initiative.

Given the low numbers, long timescales and sensitivity to particular circumstances of the introduction of new courses, evaluation against a number of these objectives will necessarily be case-based. Course QA and review is a more regular process and numerical metrics may be applicable. As far as possible, these objectives have been designed so that it should be straightforward to determine when they have been achieved. In practice many relate to outcomes which may progress to a greater or lesser degree, with ultimate end-points determined by diminishing returns, by the maximum amount of change which is absorbable by the organisation over the course of the project, or by the limits of the project's resources. Because it is difficult to provide absolute measures of progress in these directions a number of these objectives are instead phrased comparatively. The project's intention to manage work throughout to maximise long-term benefits in all these areas is instead captured within the aims and outcomes sections.

Detailed objectives will be developed as part of an ongoing requirements discovery process. Formal 'design' engagement with stakeholders will elicit some desired outcomes, but it is expected that more informal evaluation of processes in partner institutions may suggest latent needs, as well as providing detailed representations of how informal current practice fits with formal processes. The project is structured so that intermediate solutions provide opportunities and context for the discovery of hitherto unarticulated needs. The evaluation plan therefore does not arise directly from the more evaluative objectives (particularly 11-15) but deliberately retains the full scope of curriculum design, management and review within its scope. Such an approach best supports the evaluation of systemic impacts of separate, perhaps numerous but small, changes. It also provides a superior

basis for the evaluation of the relative effects of project outputs against other factors which influence practice over the period of the project.

### **3. Overall Approach**

#### ***Scope and boundaries***

1. The project initially leaves open the possibility of specific support for all possible curriculum design, management and review processes, throughout the University. The project will engage with teaching institutions across the University to understand the range of institutional practice and concerns, working more closely with a pilot group in order to reduce the problem to a manageable size.
2. The specific processes which will be supported by the software platform will be determined in partnership with participating institutions.
3. QA and QE processes are within the scope of the project, being key concerns of the General Board Education Committee (GBEC), the Pro Vice Chancellor for Education (PVCE) and the Education Section (ES), whose participation is critical. Most significant curriculum innovations require the approval of this central authority.
4. Pedagogic design is not within the scope of this project, but links between it and curriculum design are. Thus, University initiatives to promote good practice may be supported within it, and potential links between pedagogic planners and course management systems may be explored.
5. Similarly, assessment is not within the scope of this project, but links between it and curriculum design are; for instance relating to generation of mark books and transcripts.
6. Cambridge University offers few distance learning options. Design of curricula specifically for remote delivery is therefore also out of scope.

#### ***Strategy***

The length of the project suggests a 'spiral' model of needs analysis and software development, in which limited initial objectives are refined and extended in successive cycles, through both discovery of new requirements and as a planned programme of delivery on already-known ones. Because both requirements and solutions are able to evolve, informed by a series of prototypes, this model facilitates the discovery and fulfillment of needs in complex organisations.

The spiral model also provides a useful framework for risk management. More problems are uncovered early in the project, when more scope exists for rectifying them. In general prototypes will build on previous versions, but if necessary the model can accommodate substantial redesigns. For example, we might find Quali Student inappropriate to our partner's needs and decide to shift platform to Peoplesoft. The effort already expended in requirements capture would not be wasted, and considerable value would have already been obtained from earlier prototypes.

Ideally requirements and solutions converge and prototypes are able to build on previous ones. However this approach does have risks, which are discussed in the Risks section below.

In the classical 'successive prototypes' spiral model, each prototype is built anew from scratch. Although the effort needed to build and evaluate a number prototypes might be equal to or greater than that needed to build and then perfect a single one with greater functionality, the quid pro quo is considered to be the improved likelihood of identifying all

requirements in a complex scenario, and thereby of arriving at a system which matches up to the initial vision. In the 1980s in when the model was conceived, software re-use, frameworks and service-oriented architectures were not common currency and this was a rational trade-off. In the modern environment however it is extremely difficult to imagine a situation in which a succeeding prototype would not be able to build substantially on a preceding one, even with significant design changes. The downside of the spiral model – reduced functionality – thus goes away, leaving only the upside – enhanced requirements discovery in complex scenarios.

Development will proceed in four phases of six months each. In the initial phase of the project CARET will work with institutional partners to explore current practice, identify needs, and agree desired outcomes. Proceeding in part through appropriate case studies, the outputs of this phase will include initial requirements and engineering specifications. Familiarisation with the software platform will proceed in parallel. This phase is expected to be complete in September 2009.

The second, third and fourth phases introduce the technology support and will evaluate success. Technology support will be introduced in phase two as a result of phase one's details analysis and design. As a confidence-building measure (and training material) the first uses will be recreations of previously-captured case studies. Objectives are likely to be limited to a useful but achievable subset of the overall requirements. These will inform revision of the needs analysis as users discover how the tool works for them in practice. These revisions and a further set of the overall design requirements will be addressed in phase three. In this third phase, integrations with other institution IT systems will also be introduced. The fourth and final development phase will try to avoid introducing any major new features, instead focussing on relatively low-risk improvements to usability and utility of those already present.

It is expected that development activity will be complete by September 2011, with the remaining nine months of the project devoted to evaluation, transfer of project outputs to a sustainable footing, preparation of a final report and dissemination of results.

Throughout the project, risks will be regularly reviewed by the project manager, who will escalate them to the management committee if they become a concern.

### ***Critical success factors***

1. At all stages through the project we will follow the requirements for new learning and teaching projects at Cambridge, which have been recently promulgated by the GBEC. This will ensure that we follow a path which can lead to full institutional adoption.
2. Acceptance by teaching staff users is critical. It is important to have high-level support so that individual adopters can be confident the project is worth investing time in, but a top-down imposition of project outcomes is not desired. Acceptance and sustainability can only be obtained via a bottom-up, grassroots approach.
3. Relatedly, it is essential that the software design is driven by the staff who will use it, and that it genuinely meets their needs. A highly participatory design process is therefore planned, but balanced against the need to show benefits proportionate to the time invested by individuals in the design process.
4. As the indispensable core data type, it must be easy for non-technical staff to capture and maintain course descriptions within the support tool.

## **4. Project Outputs**

1. Initial project plan (08/05/09, WP1)

2. Baseline report identifying common themes, problems and scope of variation, and delineating centralised formal processes, their purposes, actors, and points of interface with departmental procedures. Anonymised cases for sharing with JISC cluster partners (27/05/09, WP2)
3. Detailed evaluation plan developed with partner institutions and tailored to specific interventions, including success indicators, correlated with workpackage plans (28/10/09, WP6)
4. Requirements papers representing high-level curriculum design change to be delivered by the project, including strategic and operational problems to be addressed. 'Before' use cases, formal and informal, based on case studies and validated by steering committee, highlighting problems, anonymised for sharing as necessary. 'After' use cases representing intended interventions and expected benefits (28/10/09, WP3)
5. Definition of machine readable data structures used to describe partner institutions' curricula. This is intended for sharing with other projects within the overall programme (28/10/09, WP5)
6. Interim report 1: Project status including engagement. Initial requirements, design including software platform review paper evaluating capabilities and gaps against project needs, and testing documents (30/10/09, WP4)
7. KS R1 technical report: Quali Student infrastructure and Learning Unit Management module functionality; review of Quali process and data models in the context of Cambridge University. Reference to JISC eLearning Framework Programme, the COVARM course validation reference model, the P-SPEX domain map of programme specification, and the XCRI programme specification schema. Target audience: JISC CETIS, UK HE teaching and learning support units (30/04/10, WP9)
8. KS LUM deployment and configuration tool and/or reference model adaptable for other UK institutions, with supporting technical documentation (28/04/10, WP5)
9. Interim report 2: initial build. Feedback from implementation, deployment, testing, training and early users of round 1 pilot. User and technical documents (28/04/10, WP6)
10. Evaluation paper comparing Oracle (inc. Fusion middleware) vs KS LUM. Integration proposals for CamSIS. Target audience: UK HE institutional IT units (01/10/10, WP10)
11. Interim report 3: embed and perfect. Revised requirements, design, test, technical, and user documents plus feedback and evaluation (inc. updated use cases) from round 2 pilot (19/10/10, WP6)
12. Interim report 4: integration phase. Revised requirements, design, test, technical, and user documents plus feedback and evaluation (inc. updated use cases) from round 3 pilot (19/04/11, WP6)
13. KS R2 technical report, incorporating updated R1 technical report. Possible Quali Student – Oracle connector module. This will be written to address both technical staff and those responsible for institutional IT support for learning and teaching (28/09/11, WP9)
14. Final version of CD support software, with accompanying user and technical documentation, deployed in partner institutions, available to whole university. (30/09/11, WP5)

15. Review of technical and pedagogical links between pedagogical planning and curriculum design. Possible integration with support tool, e.g. under the aegis of Learning and Teaching Support initiative. This will be written to support those with responsibility for QE activities (30/09/11, WP8)
16. Interim report 5: evaluation phase. Revised requirements, design, test, technical, and user documents plus feedback and evaluation (inc. updated use cases) from round 4 pilot (18/10/11, WP6)
17. Open licensed documentation and online training materials for Quali configuration (for technical staff) and use (for users and managers), designed for reuse at other institutions (30/12/11, WP7)
18. Evaluation report with post-intervention case studies highlighting the impact of innovations in curriculum design processes on partner institutions' ability to address strategic aims; evaluation of changes that have occurred as a result of project innovations and of lessons learnt through carrying out the project. This will be written to support the full range of roles involved in these processes including course designers, technical staff, institutional/faculty managers/heads, registrars, teaching committees (29/06/12, WP6)
19. Recommendations of how the requirements for new learning and teaching projects at Cambridge assure quality and well designed outcomes and might be used in other universities to guide similar projects there. Target audience: PVCs and those with responsibility for institutional IT support for learning and teaching (29/06/12, WP11)
20. Final report (29/06/12, WP11)
21. Three annual Quali Student conferences in UK (annually in 2010, 2011 and 2012, WP9)
22. A reflective blog on the issues encountered during the project, with regular contributions from a range of stakeholders (throughout project, WP11)

## 5. Project Outcomes

Within the University:

1. Detailed understanding of the requirements for new learning and teaching projects, in order for them to become fully adopted by the Education Committee.
2. Widespread take up and use of the new curriculum design and review support tool.
3. Teaching staff have access to models of individual and collaborative learning design, supported by next-generation software
4. Pilot implementation of an open source Learning Unit Management platform, demonstrating the potential for integration with existing institutional information systems.
5. Staff and teaching institutions across the University opt in to using an integrated curriculum design, management and review tool, which fits their needs, supports their processes, and offers new opportunities for enhancement.
6. Central University QA and learning and teaching strategy is integral within the new curriculum design and review support tool such that it supports devolved curriculum development and is not perceived as an external imposition.
7. Growing use of technology delivery and assessment for aspects of many courses is supported within the curriculum design, management and review process.

8. Processes for course creation and reform are transparent and well defined.
9. The integrative power of the new curriculum design and review support tool creates new opportunities for course design and delivery, supporting the University's ability to deliver its teaching and learning strategy.
10. Electronic capture of course requirements across departments and programmes facilitates better resource utilisation such that more options are available to a wider range of students.
11. Interdisciplinary cross-departmental courses are easier to arrange and their risks are better understood.
12. More detailed transcripts provide better evidence of student's skills and achievements for employers , professional bodies and cross-institutional and international programmes.
13. There is increased support for feedback from delivery into design, for example learner and staff feedback, learner performance, attendance patterns, and timetabling, scheduling and other resource considerations.

Contribution to the wider programme:

14. Reusable models of curriculum design processes and practice, and user requirements, in a major institution.
15. Examples of how the use of an integrative IT platform in the curriculum design process can lead to tangible benefits in terms of efficiencies, enhancement of the student and staff experience, and other key changes in what institutions can offer learners
16. An integrated curriculum design, management and review tool is available to UK institutions which has well-understood capability to model UK HE learning design.
17. Methodologies for evaluation of integrated environments for curriculum design.
18. Contribution to the JISC e-Framework and in particular, development and documentation of a Service Usage Model for Learning Unit Management.
19. Within CARET, a centre of expertise and information on Quali Student and how it can be used within the UK HE sector - a reference point for the UK community.

## 6. Stakeholder Analysis

The following table details overall stakeholder categories, including both internal and external stakeholders. 'Interest' has been used to outline stakeholders' motivation to engage with the project and its outputs, and 'stake' to outline the resource they will be asked to commit to it.

Stakeholder	Interest / stake	Importance	Engagement plan
Academic staff	<b>Interest:</b> enhancement and simplification of curriculum design and review processes <b>Stake:</b> contribution to requirements definition and evaluation activities, end user	high	Participative development, ensuring output value is proportionate to time invested. Engage via teaching committees.

CARET	<b>Interest:</b> improved support for teaching and learning, bridging education systems with administrative systems <b>Stake:</b> providing developer resource, project management, research and evaluation	high	
Departmental Teaching Committees	<b>Interest:</b> management of curriculum-related activities addressed by this project, including departmental QA <b>Stake:</b> agenda time, moral support, contacts	v. high	Regarded as gatekeepers to their departments. Seek views on issues, recent activity and contacts. Brief at least twice yearly.
Education Section	<b>Interest:</b> better and more efficient support of curriculum reform, easier cross-departmental analysis, better QAA reporting <b>Stake:</b> contribution to project management, core user, process improvement and evaluation activities	high	Invite head of section to sit on management committee / project board. Engage equally in participative design, Weight QAE elements of design.
Employers	<b>Interest:</b> appropriately trained graduates, input in to curriculum design <b>Stake:</b> none	low	Via business organisations, professional societies or via university liaison offices of large employers.
GBEC	<b>Interest:</b> teaching and learning strategy including QAE and learning and teaching support. Promoting continuous improvement of learning and teaching. Integration and interoperability of institutional systems <b>Stake:</b> agenda time, institutional contribution to the project	med	Via PVCE Conformance with new requirements for institutional adoption of teaching and learning projects.
Pedagogic planners community	<b>Interest:</b> links between pedagogic planning and course management <b>Stake:</b> cost and effort of collaboration	low	Engage exploratively, clarify mutual benefits before deeper commitment
JISC and the e-Framework	<b>Interest:</b> ensuring fit to the E-Framework objectives and promoting engagement from JISC developer communities <b>Stake:</b> Engagement on development, funding for the project	high	Project reporting, plus technical reports for CETIS
Kuali Student	<b>Interest:</b> improving Kuali functionality and access to UK user requirements <b>Stake:</b> provision of developer resource	med	Engage actively in design and contribute feedback on deployment and use. Contribute oracle link module. Act as UK EU champion
LTS initiative	<b>Interest:</b> promoting and embedding good pedagogical practice in the University <b>Stake:</b> time, possibly new support materials	low	Apprise regularly of project progress, seek input and collaboration at appropriate stages

Management Information Systems Division (MISD)	<b>Interest:</b> potential links with CamSIS information system <b>Stake:</b> support time, risk associated with links out of a database of sensitive personal data	med	Engage via project board. Engage directly at appropriate stage to a) understand oracle deployment including use case analysis b) APIs
NST Management Committee	<b>Interest:</b> complex curriculum management and design issues across multiple disciplines <b>Stake:</b> active support and engagement in design process as project partner, contacts	v. high	Engage as project's 'commissioning client'. Acknowledge lead role in requirements and evaluation.
Oracle / Peoplesoft	<b>Interest:</b> Competing information / process management platform and SOA, possible linkages with KS, supplier to Cambridge University <b>Stake:</b> design support	med	Personal contacts via John Norman. Balance mutual benefits of engagement.
Other projects engaged in the JISC programme, support and synthesis project	<b>Interest:</b> Benefit of learning from and sharing approaches, techniques, and outcomes of participation in the programme <b>Stake:</b> cost and effort of collaboration and interaction	medium	Support and Synthesis Programme, including project blog and CIRCLE. Quali Student conferences
Professional and Learned societies	<b>Interest:</b> numbers of graduates entering their field <b>Stake:</b>	Low	Contact during course capture process
PVCE	<b>Interest:</b> central QA oversight procedures, learning and teaching strategy, has not been a party to the original bid <b>Stake:</b> time to sit on project board, use of Education Section's resources	v. high	The PVCE will be apprised and given the opportunity to influence the project according to his preferred means
Staff Development	<b>Interest:</b> staff training; possible use of pedagogic planners as 'training' framework <b>Stake:</b> time	low	Apprise regularly of project progress, seek input and collaboration at appropriate stages
Students	<b>Interest:</b> access to improved course information, including course pre-requisites and study pathways, transcripts; more course options <b>Stake:</b> effort of participation in engagement/evaluation activities	high	Cake sessions with video booths, re-use of Learning Landscapes material where appropriate
UK HE institutions using PeopleSoft	<b>Interest:</b> integration of PeopleSoft with other institutional systems. Access to peer-institution use-case scenarios for systems integration and interoperability <b>Stake:</b> participation in sessions at User Group meetings	low	Peoplesoft user group meetings, contact via MISD
University Library	<b>Interest:</b> potential overall responsibility for managing teaching and learning support functions, provision of resources parallel to courses <b>Stake:</b> participation in stakeholder requirements meetings	med	Apprise regularly of project progress, seek input and collaboration at appropriate stages

Within the internal stakeholders individual personalities will play a strong role.

This section will be updated as the project progresses.

## 7. Risk Analysis

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
late delivery of Quali Student Learning Unit Management Module	3	3	9	Peoplesoft is available today. If necessary, progress can be made with PeopleSoft whilst waiting for the Quali development to complete.  We have access to development code repositories and are monitoring progress.
Quali student LUM not suitable for use at Cambridge	2	4	8	We have studied this data model and believe it to be suitable. Quali have promised to adapt it if it is not; In the worst case, we have the skills to change it ourselves and it is open source.
NST management committee unwilling to engage	2	4	8	The NST management committee has now expressed positive interest in participating in the project. The NST management committee further has a good opinion of CARET, which has delivered electronic timetabling of part IA practical classes since 2005, following increasing difficulty with the existing manual system.  Further to this we have existing expressions of interest from alternative institutions, plus introductions via the Education Section to teaching committees throughout the University, and are confident of assembling a representative set of test partners.
NST departmental teaching committees unwilling to engage	2	4	8	Within the NST we must obtain engagement of at least a large fraction of the 16 departments, and potentially of course organisers and lecturers within them. To address this we will adopt a bottom-up approach alongside the top-down one to create widespread sense of ownership in the project.  Also, to begin we only need course information and access to recent curriculum design experience, using this to demonstrate function and potential benefits at a later point. Because it accords exactly with our own plans we can offer this as a gating milestone to potential NST participants if they are open to the idea but naturally cautious.

Other faculty partners unwilling to engage or lose interest	4	4	16	We have time for recruitment and engagement during the project setup phase; there are strong drivers for this change. In addition the commitment from the Education Committee will encourage engagement. The selection of curriculum design project(s) to work with will also encourage adoption, as large complex design projects will be keen to work with us to simplify their tasks
Fail to embed new practices during project	2	5	25	This project potentially represents a major shift in ways of working and even 3 years is a short time to achieve wide-scale adoption of new practices at Cambridge. However we will support the initiative beyond the end of the project and integration with existing systems should increasingly make electronic support the natural solution. Also, the project needs only to support existing processes in order to achieve significant benefits, while offering new opportunities for change which may or may not be exploited by teaching committees.
Poor communication results in low value to JISC community	1	4	12	We will work with the programme manager and synthesis project from the start to ensure good communication. Significant resources are budgeted for communications.
Strong minded independent Cambridge faculty oppose or disagree with the project	3	4	12	At now point will the project be presented as a central or external imposition. Staff will be engaged in participatory design in order to engender ownership and ensure utility. The outputs will be designed to be 'opt-in'
Key goals of PVC Education are different to those of other stakeholders	1	5	5	The PVCE's interest in the project is primarily that its benefits should be proportionate to its costs. This is only good practice and will not conflict with detail objectives of other stakeholders. We (and our stakeholders) will keep the PVCE informed as to the targeted benefit of the project.
Conflict between top down (meeting the requirements of key senior stakeholders) and bottom up (faculty/student engagement) methods each demanding different decisions at a more detailed level of the project	5	3	9	With a wide variety of stakeholders it is likely that requirements may conflict at some point. All the key users of the tools must be happy with them for the project to be successful. If such a conflict arises we will attempt to achieve consensus through negotiation.

Bad publicity about the project within Cambridge (causing faculty to disengage)	3	4	12	By adopting an incremental strategy we will avoid 'big' failures. By briefing very widely in the University we will minimise the possibility of negative rumours and 'not invented here' syndrome. By engaging the support of central authorities we will demonstrate institutional backing to end users.
Changes within Cambridge during the course of the project cause some faculty to disengage	5	3	15	The project's spiral development approach is well suited to adapting to a certain degree of change during the project. If the change is strategic or staff-based it may be necessary to engage alternative project partners. We will design the project from the beginning for ultimate deployment to the whole University and will engage widely so as not to overlook and accidentally design out alternative perspectives.
Inadequate staff skills at CARET to deliver the project goals	2	5	10	CARET comprises a corpus of 40-50 staff including some highly experienced personnel who can provide training and mentoring as necessary even if not directly assigned. It is expected that the core staff already in place will remain for the life of the project, but should the staff change replacements will be recruited and internal resource reallocated to cover the gap.
project staff budget is inadequate to deliver project goals (1.72FTE is budgetted)	3	5	25	The project plan budgets somewhat conservatively and as a relatively large organisation CARET can muster some slack. We will monitor staff hours against plan and escalate significant divergences to the Management committee. The project has numerous deliverables and objectives which can in general be scaled back gracefully.
finding that Phoebe is not relevant to the project or suitable for use at Cambridge	5	2	12	As originally conceived Phoebe would act as a 'feeder' or as an alternative to Quali Student course management. We now know it is not suited for a course management role, but it would still be of interest as a feeder except that no user community exists around it to support it. We are interested more in the links between pedagogic planning and course management than in pedagogic planning itself and so do not necessarily have to deploy a pedagogic planner. We are also looking at alternative pedagogic planning tools such as the London PP, and related tools such as Cloudworks, Compendium etc.

NST is too large an organisation and overwhelms the project	3	4	12	The NST's great values to the project are its strategic need and its variety of units, offering stretch goals for various curriculum design areas. These demands – which help us secure support within the University for tackling a “tricky problem” - are in a sense also risks. The Management committee and design team will keep achievability of goals at the forefront of their minds. The 'limited but useful' initial deployment in the spiral model also helps with this.
Scientific focus may mean that arts and humanities staff become disenfranchised with the project	5	4	20	We will design the project from the beginning for ultimate deployment to the whole University and will engage widely so as not to overlook and accidentally design out alternative perspectives.
not getting NST reorganisation approved as testbed for the project	3	4	12	The risk here is that a variety of smaller curriculum design projects as testbeds will not test our system as rigorously as NST and so may not be viewed as a full validation (especially as it will be known that NST is the big task of the years of the project). It would, however, enable us to engage a wider variety of subject groups ensuring wide takeup, and may prove more accessible to the majority of users in the university at large
changes in personnel occupying senior stakeholder roles during the course of the project	5	3	15	It is likely that some staff will change during the project and this is out of our control. We can reduce the impact of this by remaining flexible with our stakeholder analysis and engagement methods (as new staff may prefer different levels and types of engagement). We can also encourage success by ensuring that the project is aligned with role/institutional goals, not just individual preferences, so that new post-holders can see that the project will help them. We will monitor the political environment so we are prepared for changes before they happen and ready to put additional effort into engaging with new staff. By following institutional guidelines for teaching and learning projects - even if these, due to staff changes, mutate during the project - we will more easily be able to work with new staff.

Cambridge staff are unaware of the project	4	3	12	<p>If faculty are unaware of our work, there is a risk that at the completion of the project outputs may be viewed with suspicion. However, given the strong Cambridge tradition of faculty decision making, and the number of faculty who have strong viewpoints and expect their views to be heard and acted upon, there may be some risk in being too public a project, in that we may receive too many requests / demands from too many quarters to integrate successfully.</p> <p>The mitigation for this is to ensure that publicity on campus is clear and controlled, and to allow some method for faculty to discuss effectively in appropriate contexts, and discouraging repeated, unproductive interactions. This must be balanced with a careful control and monitoring of the political environment of the project, as individual personalities and positions within the university will affect how the project is perceived and taken up.</p>
Cambridge students are unaware of the project	4	3	12	We will run cake sessions advertised in departmental and university newsletters.
New guidelines for teaching and learning projects are not widely accepted	3	3	9	Although in a Cambridge environment, top-down edicts are not always accepted, these guidelines are reasonable and are key to securing senior staff engagement. If they are rejected by faculty later on, that may affect some of the arguments by which we would hope to secure adoption of the project, but we will still have other selling points such as process improvements, demonstrated success with pilot, and institutional adoption, which should encourage faculty take up.
new guidelines for teaching and learning projects change during the course of the project	4	4	16	We will track the political environment which might lead to changes in the guidelines
Spiral model: requirements change so much from cycle to cycle that the project delivers an series of separate small or prototype systems.	5	4	20	If these protosystems are coherent within the context of a supporting vision for curriculum design this outcome might nevertheless be counted a success, except that a different model of software development might have been more appropriate. If they are not, then not only do we fail to progress towards the primary project aim, we have lost the opportunity to investigate and learn from a significant technical problem. The project will seek in its early stages to to lay a technical foundation, delivering services core to an overall vision which will be fully developed over subsequent phases.

Spiral model: as the project progresses requirements are added at such a rate - perhaps as it becomes exposed to more stakeholders - that it bloats out of control.	5	5	25	Instead of a system crafted though testing to address a well-targeted need, we end up with an over-extended and under-tested solution which disappoints many stakeholders. To avoid this it will be important to engage all stakeholders at an early stage and agree what needs we are going to address, with achievable 'bite-sized' objectives within them. By scoping the problem in this way we will be able to identify a majority of core requirements at the beginning of the project, uncovering some more as it progresses. If progress if good, or even after the present project should it be successful enough to be placed on a sustainable footing, it will be possible to address 'desirables' as well as 'must haves'. There may even be opportunities to extend the scope of the project address related needs.
Engineering-led design frustrates effective support of curriculum design	5	4	20	Requirements and solutions tend in practice to inform one other, at least to some extent. In the context of the spiral model, this presents a risk, in that radical re-engineering of the prototypes may be made more difficult should it prove necessary. At the same time this dialogue makes radical re-engineering less likely, suggesting what can be done and thereby influencing requirements in the direction of what is technically achievable. Although this can help maximise the benefits of particular technology, left unmanaged it has the potential to lead to engineering-led design. The project feels that the best approach to this is to acknowledge this dialogue so that it can be reflected upon and managed, realising its benefits without allowing it to go so far as to become detrimental.

This section will be reviewed and updated as the project progresses.

## 8. Standards

We will use open standards wherever possible. For course capture we will use an XML schema, possibly based on XCRI. If stakeholder needs analysis produces a requirement for publication of course specifications, we will evaluate the XCRI course advertising profile (XCRI-CAP). Other standards will be defined by the interfaces to software e.g.: Quali Student, PeopleSoft.

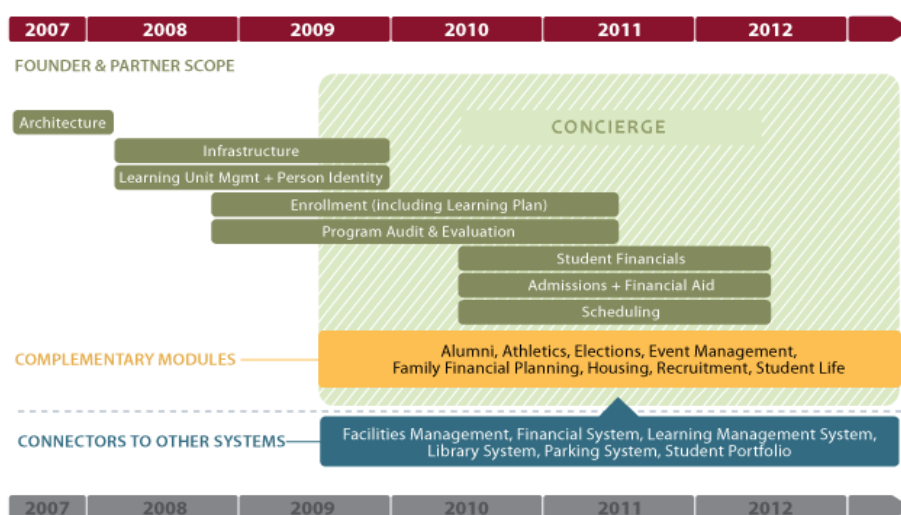
Requirements, design, and system documentation will be produced in UML 1.4.

This section will be updated as the project progresses.

## 9. Technical Development

The project will accord throughout with JISC best practice guidelines.

The key technology in this proposal is Kualu Student Learning Unit Management (LUM) module. As a community-source project Kualu Student benefits from an active development community comprising mostly paid developers contributed by participating universities, including Cambridge. We are closely engaged with Kualu at both managerial and technical levels, and both the Project Director and Technical Lead are attending Kualu events on a regular basis. Kualu's organisational focus is currently on development of the LUM module and early releases will be available to us in in June 2009.



*Kualu Student development timeline: <http://student.kualu.org/timeline.html#thumb> on 09/04/09*

We will attempt to reuse existing technology where possible. Technical development involving existing systems will be conducted while playing an active role within the communities around the systems. In particular, the CamSIS student information system, a centrally-managed Oracle/Peoplesoft deployment, offers at once a valuable integration point with Kualu Student and a potential alternative to it. Oracle has adopted a service-oriented architecture (SOA) from the forthcoming release 10 ('Fusion') onwards, promoting interoperation of the kind we envisage for Kualu. Oracle has an interest in integrating with the Sakai VLE, having adopted it as part of its HE solution portfolio. Oracle are also interested in evaluating interoperation with, and capabilities of, Kualu Student and have expressed willingness to co-operate with us in this project.

We have engaged with Phoebe via other Phoebe users in the JISC community and with the Phoebe development team to track technical development and experiences there. Phoebe is no longer under active development, so we intend to shift our engagement to its successor LDSEL project, still in its early stages.

CARET's electronic scheduling tool is effective, accepted and expandable. It could very easily address a larger problem such as scheduling all teaching time in the NST, including lectures and practical classes in all years, being limited primarily by the ability of its operators to accurately collect all course specifications. Translation of course specifications between the representations used by KS and this tool is expected to be straightforward.

As described in the Strategy section, both needs analysis and software development will proceed using a 'spiral' methodology, allowing multiple cycles of development and user feedback. Each cycle will be a complete software development cycle including requirements, design, system and technical documentation, and unit, module, system, integration, load and user testing.

JIRA<sup>2</sup> will be used for software issue logging and support. A separate JIRA instance will be used for project change management, controlled by the project manager. Software configuration management will be accomplished using an SVN repository, which will also contain user and technical documentation (generated from source code using Doxygen<sup>3</sup>), plus requirements, design, and system documentation (in UML version 1.4).

## 10. Intellectual Property Rights

We anticipate that all software outputs will be released as open or community source, following the licensing terms required by the other open source components with which new software will be integrated.

Project reports and output documentation will be released under a Creative Commons licence.

All project deliverable will be published via the project website and made freely available to the academic community. Where appropriate, materials will be offered to relevant repositories (including JORUM and CloudWorks) to support wider dissemination and sustainable access.

## *Project Resources*

### 11. Project Partners

This project is internal to the University of Cambridge and there are no subcontractors detailed at this stage, although that the project Critical Friend Stephen Brown may be commissioned to provide additional support e.. by sitting on the management committee.

In terms of institutional partners for piloting a Quali deployment, we have initiated partner relationships with institutions that are at different stages of thinking and practice in relation to curriculum improvement and reform.

The following teaching institutions have expressed interest in the project:

#### ***The Natural Sciences Tripos Management Committee***

The NST is the University's largest tripos, both by undergraduate intake and number of departments (16).

Recognising its unusual provision of student-designed learning and strategic challenges of maintaining this provision while expanding student numbers and content choice, the large variety of curriculum elements, and also the possible ability of the project to enable large-scale reform which would otherwise be impossible, our preferred internal partner for this project is the NST.

The potential large-scale reform arises from what the Education Section and NST management committee acknowledge to be the increasing inadequacy of manual curriculum management processes. These consist of rolling over the previous year's timetable and fitting mostly the same courses within that structure, with a very small amount of 'horse trading'. Resource constraints are sufficiently tight that both horse trading and larger-scale reform is limited by the propagation of knock-on effects. In recent years, new practicals have had to be scheduled in vacations and lunchtimes, and an entire computing tripos added to the existing NST body has proved impossible to reconcile with biological science options, adversely impacting students interested in pursuing studies in computational biology.

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2 See <http://www.atlassian.com/software/jira/>

3 See <http://www.stack.nl/~dimitri/doxygen/>

It is unlikely that such a large reform would be targeted by the NST at the start of the project, our aim will be simply to support the necessary elements within the context of limited initial objectives, building in particular on CARET's positive relationship with the NST management committee, resulting from CARET's reliable delivery electronic timetabling of part IA practical classes since 2005, following increasing difficulty with the existing manual system.

The NST management committee has expressed interest in participating in the project and is likely to be our pilot organisation. This will be confirmed at a meeting with the committee chair on 22/05/09.

Other project partners will be sought in order to provide alternative perspectives on the design of the support tool, by means of case studies or by participation in requirements groups. Recruiting will be completed in July 2009.

### ***The School of Clinical Medicine***

A large and well-resourced School, offering a suite of established pre-professional programmes, Cambridge's provider of education, training and research in medicine and the clinical sciences has recently undergone a formal process of course accreditation and review by the General Medical Council. Having achieved excellent feedback from the GMC, the School is motivated to commit to an ongoing process of curriculum improvement, evaluation and review. The School is currently planning a major review of ERWeb, its IT system for teaching and learning, creating a timely opportunity for innovation in this area.

### ***Modern and Medieval Languages (MML) Tripos***

While this Management Committee has not yet been approached specifically in regard to this project, it has a history of good relations with CARET and would likely be willing to participate in case studies if asked. MML has an exceptional number of options but a relatively stable curriculum. It may provide a useful 'minimum contact' use case for the proposed support tool.

### ***Division of Professional Studies, Institute of Continuing Education***

The Division of Professional Studies, part of the University's Institute of Continuing Education, provides a range of credit and non-credit programmes, qualifications and education designed for professionals wishing to update their knowledge and skills or to undertake career development or change. The Division is committed to ensuring appropriate curriculum design and delivery for the needs of its student body, and makes more intensive use of e-Learning and blended learning than our other partners. It also has a greater need to respond quickly to changes in its markets by developing or changing courses.

### ***MPhil in Computational Biology, Department of Applied Mathematics and Theoretical Physics***

### ***MPhil in Technology Policy, Judge Business School***

These two MPhil programmes, now housed in separate institutions, were originally created under the aegis of the Cambridge-MIT Institute (CMI), as part of a set of six Masters-level programs in cutting-edge research areas. At the conclusion of the CMI initiative, the legacy MPhil programs developed under CMI's umbrella were migrated to new departmental "homes". CMI was initiated as collaborative venture between the University of Cambridge and Massachusetts Institute of Technology, with a specific remit to encourage entrepreneurship, innovation, and knowledge transfer in the UK economy. The MPhil programmes in Computational Biology and Technology Policy continue to reflect aspects of

this remit, but their transfer to the departments has necessitated review and, in some cases, re-orientation of program goals and emphasis. They are interesting also as postgraduate programmes.

## 12. Project Management

We will follow JISC project management guidelines, which are similar to those in use at CARET for other projects. The project manager will spend 0.5FTE on the project.

Team members are listed the table below.

Name	email	Role	FTE
Amyas Phillips	amyas.phillips@caret.cam.ac.uk	Project Manager	0.5
Avi Naim	avi.naim@caret.cam.ac.uk	Software Engineer	0.25
Ian Boston	ian@caret.cam.ac.uk	Software Architect	0.2
Harriet Truscott	harriet@caret.cam.ac.uk	Researcher	0.5
Patrick Carmichael	patrick@caret.cam.ac.uk	Senior Researcher	0.2
John Norman	john@caret.cam.ac.uk	CARET Director	0.02
Laura James	laura@caret.cam.ac.uk	Senior Manager	0.01
Catherine Howell	catherine@caret.cam.ac.uk	Researcher	0.01
Matthew Jones	mrj35@caret.cam.ac.uk	Researcher	0.01
Dan Sheppard	dan@caret.cam.ac.uk	Senior Software Engineer	0.01
Guy Chisholm	guy@caret.cam.ac.uk	Ops Team	0.03

Most team members are not full time on this project and other CARET team members will be brought in as required to meet specific needs of the project as they arise. This project will take precedence over other project work in terms of staff allocation.

Others engaged with the project around the University of Cambridge are not detailed here. They will include staff from participating teaching bodies, MISD, Education Section, and Staff Development.

Day to day management of the project will be through an experienced project manager who will report to CARET Director, John Norman. John Norman sits on the University's top IT committee, the Information Strategy and Services Syndicate (ISSS), and chairs its order-of-business subcommittee, the information Strategy Working Group (ISWG). He is thus able to champion the project at a high level within the University, from the position of an 'insider'.

The project has a second champion in Alice Benton, head of the Education Section, who is responsible for supporting and implementing the directions of the PVCE and GBEC.

CARET management meetings will take place fortnightly.

It is essential to agree project governance structures with key stakeholders including the PVCE and project partner institutions. These are now (09/05/09) in place and it is planned to put in place a bicameral committee structure.

A Project Board will oversee the project, its composition and terms of reference being determined by the PVCE or his nominated party. The intention is that the Project Board will give particular attention to the project's accordance with strategic University objectives. It is anticipated that the Board will meet once a term and occasionally report to the Information Strategy Working Group (ISWG) and the Information Strategy and Services Syndicate (ISSS, the top-level IT committee).

A Management Committee will also be formed, its composition and terms of reference being determined in consultation with project partners. It is desired that this committee represent only the most direct stakeholders, inviting other representatives as necessary. It is anticipated that the committee meet twice a term to review progress and outputs, advise the project team, represent the interests of project partners, agree significant decisions and changes, and evaluate risks. A place on the Steering Committee will be offered to the project's JISC Critical Friend Dr. Stephen Brown.

The education committee of the general board (GBEC) may wish to consider the project, according to its criteria for consideration of proposals for learning and teaching projects.

Alongside teaching institutions within the University, CARET will work with key representatives from interested internal bodies including the Colleges, the Computing Service, the Education Section, MISD, and the University Library, and externally with Quali Student developers and the JISC.

### **13. Programme Support**

No programme support needs are anticipated.

### **14. Budget**

See Appendix A.

## ***Detailed Project Planning***

### **15. Workpackages**

See Appendix B.

### **16. Evaluation Plan**

The JACDAW project will deploy and evaluate the use of the Quali Student Learning Unit Management module for representing existing curriculum designs and curriculum reform processes. The aim of the project is not only to implement the software, but to improve processes and support curriculum reform across the university through its introduction.

These improvements should be evident at different levels:

- at a micro-level: improved individual experience of students; better support the work of teachers in developing new teaching and learning activities; easier administration of students, courses and resources.
- at a meso-level: improved course management, resource allocation and employment; more 'agile' course redesign; improved technology-enhanced learning provision.
- at a macro-level: improved institutional level integration between CamSIS (student management), CHRIS (human resources), CamTools (VLE) and CamCORS (supervision management); more efficient resource employment across the institution; recognition of Cambridge as the UK reference point for Quali Student

The evaluation framework of the project recognises the need to take account not only of technical implementation issues but also of complex institutional settings and curriculum designs. This has made it necessary to draw on models of evaluation which recognise the complexity not only the 'interventions' but also of the context against which they are taking place and the perspectives of multiple stakeholder groups.

An evaluation plan based on Engestrom's 'Developmental Work Research' (DWR) model (itself based on the theoretical framework of 'cultural-historical activity theory') has been developed. In the 'rationale' that follows, this model and the way in which it might inform project activities are described, and a number of related approaches and concepts are also identified.

Most critically, the formative and participatory nature of DWR makes it appropriate for a complex project of several years length and during which it is essential that stakeholder engagement is maintained. As a 'developmental' model, DWR also provides a unified basis for the conceptualisation of existing practices, the shaping of engagement with participants, and the evaluation of the impact of project activities in terms of the *transformation of practice*. Evaluation activities will therefore be 'fit to purpose' for the project, while offering a structured and replicable process for reporting on progress against project and programme objectives.

### **Rationale**

The challenge for a project of this kind as it attempts to introduce new practices into complex, changing and naturalistic settings, is to develop a conceptual framework which supports enquiry and analysis while remaining accessible to participants and sufficiently 'agile' to respond to changes in direction.

The approach selected draws principally on Engestrom's model of 'Developmental Work Research' (DWR) which is itself informed by 'cultural-historical activity theory' (CHAT). CHAT and DWR are well-established frameworks for studying and supporting change in settings where multiple stakeholders (with differing concerns and perspectives) interact and where knowledge and processes are frequently tacit.

The project also draws on other approaches and traditions: the evaluation strategies borrow from House's 'Deliberative Evaluation' (also developed to engage with multiple stakeholders in complex situations) and from Lewin's model of action research for organisational change. Like 'Logic Modelling', It also recognises the need to document both conceptual models (of participants) and to build up broader, empirically-based 'programme models' which form the basis of evaluations.

DWR is concerned with documenting and supporting the **Transformation of Practice**, and in doing so it asserts a central relationship between **subject** (usually a stakeholder) and **object** (measurable, usually predefined objectives) in pursuit of transformative **outcomes**.

This process is enabled by mediating **tools** (technologies, processes, concepts); different tools may make different contributions to the achievements of object and outcome. Tools may be replaced, adjusted, or mobilised by participants in the process - in fact a broad repertoire of tools is often associated with expertise or capacity to solve problems and achieve objects and outcomes.

DWR identifies three categories or sets of factors which may impact on these processes: described as **rules**, **community** and **division of labour**, these are embedded and "tacit" (according to Polanyi) or "black-boxed" (in Latour's terms). These can be barriers to, or enablers of, changes in practice - Engestrom describes how there are **tensions** between these and the other elements of the activity system or the working environment.

### **Using DWR Concepts in Relation to Curriculum Redesign**

It may be useful to consider how these concepts might relate to the kinds of activities already described by respondents in the early engagement phase of the project:

#### **Example 1: A Meso-Level Activity - A Proposal for a New Course**

"A member of the teaching staff has an idea for a new learning unit, identifies the appropriate teaching committee and makes a presentation to it. After an initial informal review by the committee of the proposal and its fit with the aims and objectives of the wider course, a working group is formed to undertake further drafting."

DWR concepts of **community** (the committee, the department, the students and the wider university); **rules** (how processes are understood and informed; how meetings are convened and organised); and **division of labour** (membership of committee and working group, involvement in drafting and decision making) are useful in understanding how these processes are enacted in practice. Analysis of documents, interviews, observations and other data would allow exploration of the tensions between the **subject** (the instigator of the innovation) and these other elements. For example, the individual might need to do some groundwork in order to find out how to get issues onto the agenda of the committee.

### **Example 2: A Micro-Level Activity - Technology Support for Group Work**

"A member of the teaching staff wants to integrate some case based learning, simulation and role-play activities into an existing course. They have obtained approval from the relevant teaching committee to undertake these activities as a pilot ahead of more widespread adoption of such approaches. However, the activities envisaged involve students working in small groups using laptops with access to internet connections, a virtual learning environment and access to electronic library resources. The teacher needs to establish that learning spaces and technological support are available, and that students have sufficient technological expertise to take part in the new learning activities."

In this example, the introduction of new approaches and **tools** into an existing and established course are intended to change the **object** and the **outcome** which is defined in terms of changes in students learning practices (not simply different learning outcomes). In this case, the tensions which emerge may relate to access to resources and learning spaces; but more critically between the new **tools** and attitudes and expectations of the teacher and learner **community** and brought about by changes in the **division of labour** - in that there will be new patterns of teacher-learner interaction which may need to be introduced carefully

### ***DWR Shaping Research and Evaluation within the Project***

DWR will shape an integrated process of research and evaluation, informing both Research Questions and Evaluation Foci:

#### **Research Questions and Evaluation Foci**

In the broadest terms, these questions and foci can be represented as:

- How things are now (and how they came to be so)? (RQ)
- How things might change? (RQ)
- How things do change? (EF)
- How things are at the end of the project? (EF)
- How the introduction of new approaches has contributed to the transformation of practice? (EF)

Translated into specific research questions and evaluation foci in a specific setting, research activities (such as interviews and documentary analysis) will therefore ask:

- Who initiates curriculum change in this setting? (Subject)
- What are the drivers for these initiations? (Subject)

- How are these changes operationalised? (Object)
- What are the intended and actual transformations of practice that result? (Outcome)
- What practices, processes and rhetorical devices are used to effect these changes at present? (Tool)
- What is the nature, role and scope of existing practices that determine how 'things are done'? (Rules)
- What is the role of others (teachers, students, disciplinary communities) in determining what happens and what the outcome may be? (Community)
- Are there distinctive roles, hierarchies and gatekeepers who decide how (or whether) change is enacted? Do innovators have to seek allies in positions of power and influence in order to achieve their objectives and desired outcomes? (Division of Labour)
- Are there secondary and unexpected outcomes? (Outcomes)
- Where do tensions exist and how are these resolved? (Tensions)
- How might things be done differently? What tensions might act as drivers of, or barriers to, change? (Tensions)

DWR provides a means of mapping existing practices, the tensions that might exist in systems as they are currently configured, and the means by which changes in practice are achieved. In the longer term, it makes it possible to compare the activity systems before and after changes have been effected - the 'development' of the teaching, learning and administration practices.

### ***Kuali Student and other Examples of 'Tools'***

Kuali Student and Phoebe represent special cases of the introduction of new **tools** into existing systems, so a key focus for 'before-and-after' evaluation will be the extent to which the kinds of systems exemplified above are altered by the implementation of these software applications.

One focus of evaluation would, therefore, be the extent to which the systems of activity described by initial mappings have changed over the life of the project, and the extent to which this can be attributed to new software tools.

These largely qualitative accounts would be supplemented by quantitative measures of the reach and impact of the new tools (measured in terms of objects and outcomes in DWR terms):

- Time to develop new curriculum designs
- Time to implement new curricula in practice
- Numbers of individuals using new tools to develop curriculum designs
- Numbers of individuals using new tools to develop multiple curriculum designs (i.e. transformation of own practice)
- Numbers of students engaged in new curricula
- Numbers of instances of 'multi-agency' or 'multi-stakeholder' collaboration around new curriculum designs
- Numbers of instances of 'multi-agency' or 'multi-stakeholder' collaboration around new curricula in practice

DWR concepts and approaches will contribute, therefore, to understanding existing practices and engaging participant; to the communication of user requirements and also to the evaluation of the impact of the new software tools upon these now-better-understood environments.

Just like any other innovation, it is anticipated that there will be tensions between these new tools and other elements of the prevailing systems, and that different contexts will throw up a range of different issues in their adoption.

### **Research and Evaluation Methods through the Project Lifecycle**

DWR will be used in analysis and evaluation across the substantive phases of the project as follows:

Phase	Methods	Focus of Enquiry
2	Documentary Analysis Interviews Analysis of Online data Retrospective analysis of prior initiatives including critical incident analysis Predictive models - where might the tensions be?	Mapping existing practice
3	Documentary Analysis Analysis of Phoebe and Kuali models Process documentation using think-aloud protocols Focused interviews Reflective interviews Analysis of Online data	Understanding change processes
4	Online analysis of numbers, nature and impact of Phoebe and Kuali models Reflective interviews with range of stakeholders about new processes and their reach and impact Case Studies of Implementation Cross-case analysis Summative evaluation	Evaluating the reach and impact of new practices

Initial mapping of existing practice is being undertaken and will form the basis of a second 'Phase 2' set of activities, which will focus on drivers, barriers and tensions.

The evaluation team will develop a series of focused and reflective interview, think-aloud protocol and online data analysis tools grounded in DWR concepts.

During the initial (phase 1) design of the project, detailed evaluation measures will be developed alongside the proposed interventions:

Timing	Factor to Evaluate	Questions to Address	Method(s)	Measure of Success

## **17. Quality Plan**

<b>Output</b>	Initial project plan (08/05/09, WP1)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>

08/05/09	Fitness for purpose	Review by project manager.	Aims clear. All sections complete. Reasonable plan to achieve objectives.	AP	
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<b>Output</b>	Baseline report identifying common themes, problems and scope of variation, and delineating centralised formal processes, their purposes, actors, and points of interface with departmental procedures. Anonymised cases for sharing with JISC cluster partners (27/05/09, WP2)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
27/05/09	Fitness for purpose	Review by project manager.	Anonymised. Illustrates formal processes centrally and in a variety of departmental case studies, informing design locally and enabling other programme participants to compare with their own processes.	HT	
	Usability	Review by project manager.	Readily comprehensible in terms of design patterns and constraints	HT	

<b>Output</b>	Detailed evaluation plan developed with partner institutions and tailored to specific interventions, including success indicators, correlated with workpackage plans (28/10/09, WP6)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
28/10/09	Fitness for purpose	Review by Management Committee	All outputs and interventions have associated, reasonable success metrics or other evaluation strategies	PC	

<b>Output</b>	Requirements papers representing high-level curriculum design change to be delivered by the project, including strategic and operational problems to be addressed. 'Before' use cases, formal and informal, based on case studies and validated by steering committee, highlighting problems, anonymised for sharing as necessary. 'After' use cases representing intended interventions and expected benefits (28/10/09, WP3)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>

28/10/09	Fitness for purpose	Review by development and eval teams	Sufficient information to support detailed design of software and accompanying evaluation	AP	
	Validity	Review by requirements working group	Acceptance of use cases, planned changes and case studies	AP	

<b>Output</b>	Definition of machine readable data structures used to describe partner institutions' curricula. This is intended for sharing with other projects within the overall programme (28/10/09, WP5)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
28/10/09	Fitness for purpose	Internal trial	All partner institution course structures are captured	AP	
	Interoperability	Internal trial	XML is well-formed and valid according to the schema	AP	

<b>Output</b>	Interim report 1: Project status including engagement. Initial requirements, design including software platform review paper evaluating capabilities and gaps against project needs, and testing documents (30/10/09, WP4)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
30/10/09	Fitness for purpose	Review by Management Committee	Correctly represents project status including initial design	AP	

<b>Output</b>	KS R1 technical report: Quali Student infrastructure and Learning Unit Management module functionality; review of Quali process and data models in the context of Cambridge University. Reference to JISC eLearning Framework Programme, the COVARM course validation reference model, the P-SPEX domain map of programme specification, and the XCRI programme specification schema. Target audience: JISC CETIS, UK HE teaching and learning support units (30/04/10, WP9)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
30/04/10	Fitness for purpose	Internal review	KS is placed in context within the e-learning framework. Technical readers can quickly understand KS LUM functionality and relevance.	IB	

<b>Output</b>	KS LUM deployment and configuration tool and/or reference model adaptable for other UK institutions, with supporting technical documentation (28/04/10, WP5)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
28/04/10	Adaptability to other HE institutions	Internal review	Readers / users understand where local adaptations may be necessary and how to accomplish them	IB	
	Usability	Internal review	Readers are able to quickly understand the tool / models relevance to them and how they can use it	IB	

<b>Output</b>	Interim report 2: initial build. Feedback from implementation, deployment, testing, training and early users of round 1 pilot. User and technical documents (28/04/10, WP6)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
28/04/10	Fitness for purpose	Review by Management Committee	Correctly represents project status including next phase design	AP	

<b>Output</b>	Evaluation paper comparing Oracle (inc. Fusion middleware) vs KS LUM. Integration proposals for CamSIS. Target audience: UK HE institutional IT units (01/10/10, WP10)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
01/10/10	Fitness for purpose	Review by project manager.	Relative strengths, weaknesses, design approaches and integration points are clearly set out. Potential integration mechanisms with CamSIS are described.	IB	

<b>Output</b>	Interim report 3: embed and perfect. Revised requirements, design, test, technical, and user documents plus feedback and evaluation (inc. updated use cases) from round 2 pilot (19/10/10, WP6)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
19/10/10	Fitness for purpose	Review by Management Committee	Correctly represents project status including next phase	AP	

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<b>Output</b>	Interim report 4: integration phase. Revised requirements, design, test, technical, and user documents plus feedback and evaluation (inc. updated use cases) from round 3 pilot (19/04/11, WP6)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
19/04/11	Fitness for purpose	Review by Management Committee	Correctly represents project status including next phase design	AP	

<b>Output</b>	KS R2 technical report, incorporating updated R1 technical report. Possible Quali Student – Oracle connector module. This will be written to address both technical staff and those responsible for institutional IT support for learning and teaching (28/09/11, WP9)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
28/09/11	Fitness for purpose (report)	Review by Management Committee	Correctly represents CARET's understanding and experience of KS platform, KS LUM and other modules, including development of custom connector modules.	IB	
	Fitness for purpose (software)	Internal review	Connector module is readily deployable to a KS installation. In Cambridge, course instantiation creates and populates VLE pages.	IB	
	Usability	Internal review	Readers are able to quickly understand the Quali Student R2's relevance to them and how they might use it	IB	

<b>Output</b>	Final version of CD support software, with accompanying user and technical documentation, deployed in partner institutions, available to whole university. (30/09/11, WP5)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>

30/09/11	Adherence to specification	Internal design audit.	Features selected for implementation in preceding design documents are evident and function as intended.	IB	
29/06/12 (with evaluation report)	Fitness for purpose	Feedback from users at all levels, review by management committee	The tool is widely used and supports the project aims and outcomes.	AP	
	Usability	Feedback from users at all levels, review by management committee	Users readily understand the tool's use and are not afraid to 'give it a try'	AP	

<b>Output</b>	Review of technical and pedagogical links between pedagogical planning and curriculum design. Possible integration with support tool, e.g. under the aegis of Learning and Teaching Support initiative. This will be written to support those with responsibility for QE activities (30/09/11, WP8)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
30/09/11	Fitness for purpose	Review by LTS	Readers understand relationship of course management with teaching design, and how the functions might support one another.	HT	

<b>Output</b>	Interim report 5: evaluation phase. Revised requirements, design, test, technical, and user documents plus feedback and evaluation (inc. updated use cases) from round 4 pilot (18/10/11, WP6)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
18/10/11	Fitness for purpose	Review by Management Committee	Correctly represents project status including outstanding feature requests	AP	

<b>Output</b>	Open licensed documentation and online training materials for Kualii configuration (for technical staff) and use (for users and managers), designed for reuse at other institutions (30/12/11, WP7)				
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Timing	Quality criteria	QA method(s)	Evidence of compliance	OIC QA	Quality tools (if applicable)
30/12/11	Accessibility	TechDis checklist			
	Fitness for purpose	Post-delivery surveys	Users feel comfortable to begin using the tools following the training.	AP	
		Internal review	Readily adaptable to use in other institutions.	AP	

<b>Output</b>	Evaluation report with post-intervention case studies highlighting the impact of innovations in curriculum design processes on partner institutions' ability to address strategic aims; evaluation of changes that have occurred as a result of project innovations and of lessons learnt through carrying out the project. This will be written to support the full range of roles involved in these processes including course designers, technical staff, institutional/faculty managers/heads, registrars, teaching committees (29/06/12, WP6)				
Timing	Quality criteria	QA method(s)	Evidence of compliance	OIC QA	Quality tools (if applicable)
29/06/12	Fitness for purpose	Review by Management Committee	Outcomes against aims, objectives and outcomes are individually discussed. Problems, benefits and lessons clearly described and accessible.	PC	

<b>Output</b>	Recommendations of how the requirements for new learning and teaching projects at Cambridge assure quality and well designed outcomes and might be used in other universities to guide similar projects there. Target audience: PVCs and those with responsibility for institutional IT support for learning and teaching (29/06/12, WP11)				
Timing	Quality criteria	QA method(s)	Evidence of compliance	OIC QA	Quality tools (if applicable)
29/06/12	Fitness for purpose	Review by Project Board	The application of the rules to this project, and its value, is clearly explained.	AP	

<b>Output</b>	Final report (29/06/12, WP11)				
Timing	Quality criteria	QA method(s)	Evidence of compliance	OIC QA	Quality tools (if applicable)
29/06/12	Fitness for purpose	Review by Management Committee	Correctly represents project exit status including sustainability.	AP	

<b>Output</b>	Three annual Quali Student conferences in UK (annually in 2010, 2011 and 2012, WP9)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
2010, 2011 and 2012	Fitness for purpose	Feedback forms, analysis of attendee organisations	Attendance by wide range of organisations including JISC CD projects and other learning design groups. Delegates learn about KS, interact and participate in discussion.	AP	

<b>Output</b>	A reflective blog on the issues encountered during the project, with regular contributions from a range of stakeholders (throughout project, WP11)				
<b>Timing</b>	<b>Quality criteria</b>	<b>QA method(s)</b>	<b>Evidence of compliance</b>	<b>OIC QA</b>	<b>Quality tools (if applicable)</b>
2010, 2011 and 2012	Fitness for purpose	Traffic analysis	Blog is read by fellow programme participants and by interested parties in the University.	AP	

Further details may be added into the quality plan as the project develops.

## 18. Dissemination Plan

### *Internal Dissemination*

Our research so far has further emphasised the non-hierarchical, individualistic attitude of University members when it comes to curriculum design. This is paired with a widespread suspicion of institutional IT projects among staff, and a concern about the introduction of 'technology for technology's sake'. Our internal dissemination plan will fail unless these attitudes are understood and planned for. Moreover, we strongly believe that JACDAW will only become a sustainable resource if it is seen by University teaching staff as their own creation, meeting their real needs. Thus, dissemination of the project activities should be seen not as a broadcasting of activities to interested parties, but as a conversation amongst people who may at any moment step up to take an active role within JACDAW.

If this is genuinely to be so, we must be willing for our stakeholders to shape and change the way in which project activities are disseminated. The dissemination plan given here is that suggested by the project team: we will not merely accept changes from our stakeholders, but welcome them. Indeed, "dissemination" may well be the wrong word for a project in which stakeholders truly participate as equals.

One key point must be made here: highly sensitive material has already emerged from the evaluation phase, and if we are to retain the level of trust that staff have placed in us so far, we must continue to plan for and respect the confidentiality of sensitive material. It has become clear that material can in fact be considerably more sensitive inside the University

(where astonishingly little information is enough for individuals and their words to be identified by colleagues) than outside the University.

The key message for 2009-2010 is that the JACDAW project is led by University teaching staff to meet their existing and future needs in curriculum design. The dedicated project team exists to support University staff in this process, and to ensure that a full range of voices are heard.

As such, the team has developed three key dissemination touchstones:

- Facilitate communication among peers, rather than official pronouncements
- Communicate using media and language which reflect the University staff community
- Show ourselves worthy of trust.

Project members have seen in the past that the most successful way to encourage the uptake of a project is for Departmental champions to share their experience of the benefits with their colleagues. These conversations allow peers to share the precise ways in which it can benefit their needs, using the language of their discipline and situation. Our dissemination strategy thus aims to maximise this type of activity.

The choice of the Natural Science Tripos as the pathfinder project has been designed to facilitate a high level of both formal and informal conversation by peer champions within University Departments. The NST involves 16 Departments (somewhat over 10% of the total number of Departments and Faculties within the University): each of those Departments offers both individual and joint NST teaching. As such, we will support and encourage representatives from each Department in reporting the progress of JACDAW to their Departmental colleagues. For example, the geologist most involved in NST curriculum design will be supported in presenting his / her experiences to the Department of Geography. (From past experience, a project team can support this type of conversation in various ways: by providing technical support, attending and being willing to answer tricky questions, providing an accessible city-centre room, or simply by funding tea and cake for attendees!) Representatives from History and Philosophy of Science will be supported in reporting their experiences with JACDAW to key Faculties from the School of the Arts and Humanities and the School of the Humanities and Social Sciences. Representatives from Psychology and Biosciences will be supported in reporting their experiences with JACDAW to key Faculties from the School of Clinical Medicine.

The following table describes our initial plans for internal dissemination, which can be more accurately described as promoting conversation among potential participants.

<b>Timing</b>	<b>Dissemination Activity</b>	<b>Audience</b>	<b>Purpose</b>	<b>Key Message</b>
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June 2009	Develop internal-facing project website	University teaching and administrative staff	Provide place for staff members to find up-to-date information about the project	Teaching staff planning curriculum innovation could benefit from new software from 2010; JACDAW is a stakeholder-led project; JACDAW will provide relevant, easy-to-use software at a low cost to the institution;
June 2009	Develop internal-facing project blog	University teaching and administrative staff	Demonstrate that JACDAW is stakeholder-led, and will create relevant, easy-to-use tools; suggest that JACDAW is an exciting project in constant development.	JACDAW is a stakeholder-led project; JACDAW will provide relevant, easy-to-use tools at a low cost to the institution;
June 2009	Trial a number of different 'chat strategies' to find how University teaching and administrative staff would prefer to initiate conversations with the JACDAW team. (Provisionally may include some of the following: face-to-face drop-in sessions, publication of e-mail addresses, a guided online feedback form, a guided paper feedback form, Twitter and a video feedback facility)	University teaching and administrative staff	Start the JACDAW conversation with people not involved in the pathfinder project; ensure that we get a wide range of people who feel able to speak to use in a productive way.	JACDAW is a stakeholder-led project; you are entitled to participate in JACDAW at any moment.

Nov 2009	Reconsider use of Twitter in light of University Library pilot	University teaching and administrative staff	May be an appropriate way to suggest that JACDAW is up-to-date in its use of technology, and that progress on the project is steady.	JACDAW is going well; relevant and easy-to-use tools will be delivered without a disproportionate cost to the institution.
Oct 2009	Implement 'chat strategy' chosen following initial trial	University teaching and administrative staff	Start the JACDAW conversation with people not involved in the pathfinder project; get a much wider range of concerns	JACDAW is a stakeholder-led project; you are entitled to participate in JACDAW at any moment.
Oct 2009	Recruit University academic and administrative staff to give video snippets on the JACDAW project	University teaching and administrative staff	Demonstrate that JACDAW is valued by University teaching staff	JACDAW is a valuable project which will produce relevant, easy-to-use tools.
Oct 2009	Recruit guest bloggers from other Universities to blog about the process of Curriculum Design at their institution.	University teaching staff and key members of the student body	Encourage view of curriculum innovation as a vital component of the University's continuing progress	Curriculum innovation is recognised to be valuable by top research Universities
2009-2011	Support and encourage Departmental peer champions in raising awareness of the project and reporting early success	University teaching and administrative staff	Raise awareness of project; promote understanding that this is a staff-led project.	Teaching staff planning curriculum innovation could benefit from new software from 2011; JACDAW is a stakeholder-led project.
2009-2011	Support and encourage College peer champions in raising awareness of the project and reporting early success	University teaching staff who are also members of colleges	Raise awareness of project; promote understanding that this is a staff-led project.	Teaching staff planning curriculum innovation could benefit from new software from 2011; JACDAW is a stakeholder-led project.

2009-2011	Recruit and support cross-departmental peer champions in raising awareness of the project and reporting early success	University teaching and administrative staff	Raise awareness of project; promote understanding that this is a staff-led project.	Teaching staff planning curriculum innovation could benefit from new software from 2011; JACDAW is a stakeholder-led project.
2009 - 2012	Regular brief updates in appropriate University newsletters	University teaching and administrative staff	Raise awareness of project; demonstrate project is progressing well	Teaching staff planning curriculum innovation could benefit from new software from 2011; JACDAW is going well;
2010	Focus on JACDAW at monthly University Learning and Teaching Lunch	University staff with a particularly strong interest in teaching	Raise awareness of project; promote understanding that this is a staff-led project.	JACDAW is a stakeholder-led project; JACDAW is going well; JACDAW welcomes new participants.
2009-2012	University staff cake meetings	University teaching and administrative staff; student representatives	Share project progress, encourage involvement, answer questions.	JACDAW is a stakeholder-led project; JACDAW is going well; JACDAW welcomes new participants.
2011-2012	Support and encourage Departmental peer champions in reporting the results of the project and encouraging widescale adoption by peers	University teaching and administrative staff	Promote potential benefits; encourage uptake.	Teaching staff planning curriculum innovation will find the JACDAW tools make their life easier.
2011-2012	Support and encourage College peer champions in reporting the results of the project and encouraging widescale adoption by peers	University teaching staff who are also members of colleges	Promote potential benefits; encourage uptake.	Teaching staff planning curriculum innovation will find the JACDAW tools make their life easier.

2011-2012	Recruit and support cross-departmental peer champions n reporting the results of the project and encouraging widescale adoption by peers	University teaching and administrative staff	Promote potential benefits; encourage uptake.	Teaching staff planning curriculum innovation will find the JACDAW tools make their life easier.
2011	Introduction to JACDAW at monthly University Learning and Teaching Lunch	University staff with a particularly strong interest in teaching	Promote potential benefits; encourage uptake.	Teaching staff planning curriculum innovation will find the JACDAW tools make their life easier.
throughout the project	“joinable” (to Cambridge users) VRE (CamTools) site where project progress and public documents are shared	faculty members, who wish to see evidence that the kinds of methods they believe in are being followed by the project	reassure faculty that we are taking a rounded approach and that their preferred style of work is involved (eg statistics, or user workshops)	share research methods and data (as appropriate given the public forum)
throughout the project	Top-down engagement via Project Board and Management Steering Committee, and by CARET director John Norman on ISSS and ISWG committees	University and departmental administrators	Apprise of project goals and progress, provide oversight	Project is properly run and consistent with University strategy and policies
At request of pro-VC for Education	Provision of materials for high-level dissemination and engagement	University members; members of other Universities	Ensure information about project is available to all stakeholders	JACDAW has full support of Pro-VC for Education; JACDAW supports the concerns of Pro-VC for education.

## External dissemination

Timing	Dissemination Activity	Audience	Purpose	Key Message
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Project Acronym: JACDAW

Version: FINAL (v3)

Contact: Amyas Phillips (amyas.phillips@caret.cam.ac.uk)

Date: 08/05/2009

ongoing, posting at least every 2 months	project blog (cross posted to CIRCLE site)	JISC staff, other projects on the programme, synthesis team	share non-sensitive items of interest about the project, point at newly available project outputs	public progress of the project; interim learnings that might help others; public items of interest related to the project
ongoing	attendance at JISC programme, support and synthesis events, and cluster CAMEL events	JISC staff, other projects on the programme, synthesis team	share experiences and learnings	progress of the project; ensure learnings are shared promptly
3 times within project	Kuali Student UK workshop	JISC and UK HEIs interested in learning more about Kuali	share Kuali experience and expertise, gather feedback from potential/extant UK user community	progress of Kuali and adoption in the UK
ongoing	Attendance at JISC Learning and Teaching Experts Group	other LTEG attendees	share experiences and learnings, and methodologies where appropriate	how the project and evaluation, and also the institutional engagement, are progressing

## 19. Exit and Sustainability Plans

### **Sustainability Plan**

There is a essentially one sustainable output of this project. The rows in the following table divide points only for readability, not different outputs.

<b>Project Outputs</b>	<b>Why Sustainable</b>	<b>Scenarios for Taking Forward</b>	<b>Issues to Address</b>
Final version of CD support software, with accompanying user and technical documentation, deployed in partner institutions, available to whole university. (30/09/11, WP5)	The CD support tool and its supporting elements will continue to offer valuable benefits to the University as described in the project outputs, justifying continuing financial support. As a significant open source resource for HE institutions, KS expertise will allow CARET to continue improving and integrating support for teaching and learning, while acting as a refernce for other UK institutions.	Following the same route to sustainability as the CamTools VLE, schools and departments making heavy use of the tool contribute towards its continuing maintenance and development. As a mission-critical service this becomes an important part of CARET's operational existence. Once sufficient take-up has been achieved, central University funding is found instead.	The support platform must offer genuine and significant benefits, in operational efficiency and quality of teaching outcomes and student experience, even taking into account the costs of adopting it and maintaining it.
KS LUM deployment and configuration tool and/or reference model adaptable for other UK institutions, with supporting technical documentation (28/04/10, WP5)		The NST presents sufficient scope (16 departments) and prestige that it would on its own make an excellent launchpad for extending the services developed in the course of this project to the rest of the University. Our alternative plan of multiple smaller pilot partners presents an equally viable platform for continuing expansion.	
Definition of machine readable data structures used to describe partner institutions' curricula. This is intended for sharing with other projects within the overall programme (28/10/09, WP5)		If Peoplesoft is used rather than KS, it is likely that operations will be transferred to the MISD. If the project partner is the NST and it adopts electronic timetabling to allow course reform, it will be necessary for the NST to re-establish a full-time timetabling officer.	
Open licensed documentation and online training materials for Quali configuration (for technical staff) and use (for users and managers), designed for reuse at other institutions (30/12/11, WP7)			The project director, by virtue of his position on key university committees will play an important role in championing continuing institutional support for the project. In addition an active and enthusiastic stakeholder community will provide further support.
Possible Quali Student – Oracle connector module (28/09/11, WP9)			Depending on the specificity and base platform of this connector, the module may be maintained within the KS project, by Oracle or by CARET.

## **Exit Plan**

<b>Project Outputs</b>	<b>Action for Take-up &amp; Embedding</b>	<b>Action for Exit</b>
Baseline report identifying common themes, problems and scope of variation, and delineating centralised formal processes, their purposes, actors, and points of interface with departmental procedures. Anonymised cases for sharing with JISC cluster partners (27/05/09, WP2)	This report is primarily to inform subsequent engagement and software development within the project. However it may be of value to the LTI and ES in their QAE roles, and to other or subsequent projects as supporting material.	Share with LTI and ES. Archive on the project website and in Jorum.
Detailed evaluation plan developed with partner institutions and tailored to specific interventions, including success indicators, correlated with workpackage plans (28/10/09, WP6)	This report is primarily to inform subsequent engagement and software development within the project.	Anonymise and archive on the project website and in Jorum.
Requirements papers representing high-level curriculum design change to be delivered by the project, including strategic and operational problems to be addressed. 'Before' use cases, formal and informal, based on case studies and validated by steering committee, highlighting problems, anonymised for sharing as necessary. 'After' use cases representing intended interventions and expected benefits (28/10/09, WP3)	This report is primarily to inform subsequent engagement and software development within the project.	Anonymise and archive on the project website and in Jorum.
Definition of machine readable data structures used to describe partner institutions' curricula. This is intended for sharing with other projects within the overall programme (28/10/09, WP5)	This report is primarily to support subsequent software development and service delivery within the project. The data formats may also be of value to programme partners and to other or subsequent projects as supporting material.	Archive on the project website and in Jorum.
Interim report 1: Project status including engagement. Initial requirements, design including software platform review paper evaluating capabilities and gaps against project needs, and testing documents (30/10/09, WP4)	This report is primarily to inform subsequent engagement and software development within the project.	Anonymise and archive on the project website and in Jorum.

KS R1 technical report: Quali Student infrastructure and Learning Unit Management module functionality; review of Quali process and data models in the context of Cambridge University. Reference to JISC eLearning Framework Programme, the COVARM course validation reference model, the P-SPEX domain map of programme specification, and the XCRI programme specification schema. Target audience: JISC CETIS, UK HE teaching and learning support units (30/04/10, WP9)	This report is primarily to inform subsequent engagement and software development within the project.	Archive on the project website and in Jorum.
KS LUM deployment and configuration tool and/or reference model adaptable for other UK institutions, with supporting technical documentation (28/04/10, WP5)	This early-version tool is intended to support other UK HE institutions in deploying KS and KS LUM. It will also feed back UK-specific requirements in to the KS community.	Contribute to KS community requirements gathering. Archive on the project website and in Jorum.
Interim report 2: initial build. Feedback from implementation, deployment, testing, training and early users of round 1 pilot. User and technical documents (28/04/10, WP6)	This report is primarily to inform subsequent engagement and software development within the project.	Anonymise and archive on the project website and in Jorum.
Evaluation paper comparing Oracle (inc. Fusion middleware) vs KS LUM. Integration proposals for CamSIS. Target audience: UK HE institutional IT units (01/10/10, WP10)	This report is intended both to inform subsequent engagement and software development within the project, and to assist UK HE institutions considering adopting one of the other of these systems for student information and course management.	Ensure accuracy and purely technical viewpoint then circulate to JISC CETIS and archive on the project website and in Jorum.
Interim report 3: embed and perfect. Revised requirements, design, test, technical, and user documents plus feedback and evaluation (inc. updated use cases) from round 2 pilot (19/10/10, WP6)	This report is primarily to inform subsequent engagement and software development within the project.	Anonymise and archive on the project website and in Jorum.
Interim report 4: integration phase. Revised requirements, design, test, technical, and user documents plus feedback and evaluation (inc. updated use cases) from round 3 pilot (19/04/11, WP6)	This report is primarily to inform subsequent engagement and software development within the project.	Anonymise and archive on the project website and in Jorum.

KS R2 technical report, incorporating updated R1 technical report. Possible Quali Student – Oracle connector module. This will be written to address both technical staff and those responsible for institutional IT support for learning and teaching (28/09/11, WP9)	This report is intended both to inform continuing engagement with KS post-project, and to assist UK HE institutions considering adopting KS for student information and course management.	Circulate to JISC CETIS and archive on the project website and in Jorum.
Final version of CD support software, with accompanying user and technical documentation, deployed in partner institutions, available to whole university. (30/09/11, WP5)	This is the core output of the project and should by the end of development already be well-embedded in pilot sites.	CARET plans do deliver ongoing value to Cambridge University with this platform. The software will remain live and maintained in a repository. CARET will seek new funding for this service, including by acting as a UK reference point for KS deployments.
Review of technical and pedagogical links between pedagogical planning and curriculum design. Possible integration with support tool, e.g. under the aegis of Learning and Teaching Support initiative. This will be written to support those with responsibility for QE activities (30/09/11, WP8)	This report is of specific interest to the QAE community and will be circulated internally via ES and LTI and externally via the HEA Teaching and Learning Experts group and QAE SIG.	Archive on the project website and in Jorum.
Interim report 5: evaluation phase. Revised requirements, design, test, technical, and user documents plus feedback and evaluation (inc. updated use cases) from round 4 pilot (18/10/11, WP6)	This report is primarily to wrap up software development within the project.	Anonymise and archive on the project website and in Jorum.
Open licensed documentation and online training materials for Quali configuration (for technical staff) and use (for users and managers), designed for reuse at other institutions (30/12/11, WP7)	This forms part of the ongoing support of the CD support tool.	Archive snapshots in Jorum and project website, maintain latest versions on CARET website.
Evaluation report with post-intervention case studies highlighting the impact of innovations in curriculum design processes on partner institutions' ability to address strategic aims; evaluation of changes that have occurred as a result of project innovations and of lessons learnt through carrying out the project. This will be written to support the full range of roles involved in these processes including course designers, technical staff, institutional/faculty managers/heads, registrars, teaching committees (29/06/12,	Circulate internally to GBEC and PVCE and project partner. Anonymised version to circulate externally within the programme.	Anonymise and archive on the project website and in Jorum.

WP6)

Recommendations of how the requirements for new learning and teaching projects at Cambridge assure quality and well designed outcomes and might be used in other universities to guide similar projects there. Target audience: PVCs and those with responsibility for institutional IT support for learning and teaching (29/06/12, WP11)	Circulate internally to GBEC and PVCE and project partner. Circulate externally within the programme.	Anonymise and archive on the project website and in Jorum.
Final report (29/06/12, WP11)	This report is primarily to wrap up the project and summarise its outputs and outcomes for the information of future projects.	Anonymise and archive on the project website and in Jorum.
Three annual Quali Student conferences in UK (annually in 2010, 2011 and 2012, WP9)	Disseminate design patterns and KS knowledge.	Check copyright. Post presentations (including video) on conference website within project website. Archive on the project website and in Jorum.
A reflective blog on the issues encountered during the project, with regular contributions from a range of stakeholders (throughout project, WP11)	This is intended as a form of ongoing discussion throughout the project.	Archive on the project website and in Jorum.

## ***Appendices***

## Appendix A. Project Budget

<b>Directly Incurred Staff</b>	<b>Aug08-Jul09</b>	<b>Aug09-Jul10</b>	<b>Aug10-Jul11</b>	<b>Aug11-Jul12</b>	<b>Total Budget</b>
Research Associate, sp45, 0.86 FTE					
Senior Research Associate, sp58, 0.07 FTE					
Project Manager, RA sp52, 0.55 FTE					
Principal Research Associate, sp62, 0.14 FTE					
Research Associate, sp41, 0.05 FTE					
Research Assistant, sp36, 0.05 FTE					
<b>Total Directly Incurred Staff (A)</b>					
<b>Non-Staff</b>	<b>Aug08-Jul09</b>	<b>Aug09-Jul10</b>	<b>Aug10-Jul11</b>	<b>Aug11-Jul12</b>	<b>Total Budget</b>
Conferences					
Travel and expenses					
Hardware/software					
Dissemination					
<b>Total Directly Incurred Non-Staff (B)</b>					
<b>Directly Incurred Total (A+B=C)</b>					
<b>Directly Allocated</b>	<b>Aug08-Jul09</b>	<b>Aug09-Jul10</b>	<b>Aug10-Jul11</b>	<b>Aug11-Jul12</b>	<b>Total Budget</b>
5 - Academic Grade 11, sp62, 25 days each					
6 - Academic Grade 12, sp69, 22 days each					
20 – Senior Lecturer, sp62, 20 days each					
Estates					
<b>Directly Allocated Total (D)</b>					
<b>Indirect Costs (E)</b>					
<b>Total Project Cost (C+D+E)</b>					
<b>Amount Requested from JISC</b>					
<b>Institutional Contributions</b>					
<b>Percentage Contributions over the life of the project</b>	<b>JISC</b>	<b>Partners</b>			<b>Total</b>
	43%	57%			100%
<b>No. FTEs used to calculate indirect and estates charges, and staff included</b>	<b>No FTEs</b>	<b>Which Staff</b>			
	1.72 FTE	All Directly incurred Staff			

## Appendix B. Workpackages

ID	Workpackage / Action	Earliest start	Latest Finish	Objective / Outputs	Milestones	Responsibility
1	project start	01/09/08	01/09/08		1	
2	<b>WP 1: Project set-up, governance and initial stakeholder engagement</b>	01/09/08	20/07/09	Establish partners for Quali pilot, with appropriate governance and institutional support		
2.1	Recruit developer and project manager	01/09/08	27/03/09			LJ
2.2	Institutional canvassing	01/09/08	27/02/09	High-level acceptance and buy-in from PVCE, Management Information Systems Division, University Computing Service, University Library, Education Section		JN
2.3	Establish institutional partnerships around the university for CD process review	01/09/08	28/11/08	Commitment from individuals and departments to participate in case studies.		CH
2.4	Recruit institutional partners for pilot deployment of curriculum design support	02/03/09	25/05/09	Diverse group of departments engaged to develop and pilot a curriculum design support tool.		AP
2.5	Recruit 8-20 lecturers and course organisers within partner institution and 3-7 from elsewhere in the University	26/05/09	20/07/09	Engage contacts directly engaged in a variety of curriculum design and management processes, able to provide valuable case study material.		HT
2.6	Go/no-go decision re. NST as pilot partner	12/05/09	12/05/09		2	
2.7	Set up Project Board: recruit key reps PVCE, Duncan McCallum Deputy Academic Secretary, MISD, ES, Staff Dev (?), CARET, schedule meeting times.	26/05/09	20/07/09	University-level oversight body. Members and terms of reference inc. relationship to ISSS Committee to be determined with the PVCE.		JN AP
2.8	Set up Steering/Management Committee: recruit reps from partner departments and other direct stakeholders	26/05/09	20/07/09	Joint management body with institutional partners and other key stakeholders. Members and terms of reference to be determined with the institutional partners but preferably including curriculum management officers from some non-participating departments.		AP
2.9	Initial project planning	15/12/08	08/05/09	<b>initial project plan</b>		LJ AP
2.10	initial project plan	08/05/09	08/05/09		3	
3	<b>WP 2: Review of Current Processes and Practice</b>	01/09/08	29/05/09	Understand central and departmental processes, formal and informal, for curriculum design		
3.1	Develop evaluation model suitable for long multi-factor project	01/09/08	17/04/09	DWR framework.		PC
3.2	Review of departmental practice through case studies of curriculum design	01/09/08	29/04/09	Identification of common themes, problems and scope of variation. Set of basic use cases.		HT
3.3	Top-down review of processes for formal course validation and QA oversight	01/09/08	29/04/09	Delineation of centralised formal processes, their purposes, actors, and points of interface with departmental procedures.		HT
3.4	Draft baseline report	30/04/09	30/04/09		4	
3.5	Baseline report revision and preparation	05/05/09	27/05/09	<b>Baseline report. Anonymised WP outputs inc. use cases for sharing with JISC cluster partners.</b>		HT
3.6	Baseline report	29/05/09	29/05/09		5	

ID	Workpackage / Action	Earliest start	Latest Finish	Objective / Outputs	Milestones	Responsibility
<b>4</b>	<b>WP 3: Understanding the initial issues and identifying changes desired by the end of the project</b>	01/06/09	28/10/09	Strategic and operational CD goals agreed by central and departmental stakeholders		
4.1	Analysis of recent and current curriculum design and review processes within partner institutions: meetings, interviews, observations, documentation	01/06/09	30/09/09	Before' use cases, formal and informal, based on case studies and scenarios and validated by steering committee, highlighting problems, anonymised for sharing as necessary.		HT
4.2	Preliminary listing of high-level requirements (themes)	06/07/09	06/07/09		6	
4.3	Workshop series for senior management of partner groups, iterating outputs with review by Steering Committee and Project Board	21/07/09	23/10/09	<b>Requirements papers representing high-level curriculum design change to be delivered by the project, including strategic and operational problems to be addressed. 'After' use cases representing intended interventions and expected benefits.</b>		AP PC
4.4	Anonymize WP outputs as necessary for sharing with JISC programme	30/09/09	28/10/09	<b>Anonymised versions of WP outputs for sharing within the JISC programme</b>		AP HT
<b>5</b>	<b>WP 4: Initial Design: planning innovations in curriculum design processes</b>	31/08/09	28/10/09	Outline technical solution.		
5.1	Selection of core software platforms (among KS, Oracle, Phoebe, IA Scheduling, eAdmin and any others identified)	31/08/09	01/10/09	<b>Initial functional specification. Documented analysis of needs, capabilities and gaps supporting choice of platforms.</b>		JN DS
5.2	Final go / no-go decision re. KS	01/10/09	01/10/09		7	
5.3	Design of support tools and process changes in order to realise desired changes	02/10/09	28/10/09	<b>Initial engineering specification and architectural design (requirements, design and testing documents). Outline deployment plan. Interim report 1.</b>		AN AP
6	Interim report 1 - requirements, solution architecture	30/10/09	30/10/09		8	

ID	Workpackage / Action	Earliest start	Latest Finish	Objective / Outputs	Milestone	Responsibility
7	<b>WP 5: Piloting CD support tool with a range of programmes or modules</b>	01/07/09	18/10/11	Spiral' model build and deployment of CD support tool serving Cambridge institutions through real usage.		
7.1	Capture course specifications of participating departments	01/07/09	28/10/09	<b>Machine readable data structures containing complete curriculum descriptions including delivery structure and resource requirements, maintainable and suitable for use in a variety of support tools. Documentation of data structures.</b>	DS	HT
7.2	Set up software development environment	01/07/09	28/10/09	Servers for deployment, test deployment. Software and project JIRAs. SVN repository. Shared repository for other project deliverables and working materials.	GC	
7.3	round 1 - build and evaluate	30/10/09	28/04/10			
7.3.1	Configuration and deployment of KS (or Oracle) for Cambridge	30/10/09	25/12/09	<b>Deployment and configuration tool and/or reference model adaptable for other UK institutions. User and technical documentation. CD support software v1.</b>	AN	IB
7.3.2	Detailed planning with implementors for pilot roll-out	30/10/09	28/12/09	Agreed deployment plan	AP	IB
7.3.3	Recreate documented instances of curriculum change within tool, including any	28/12/09	25/01/10	Document fitness of KS to support current and proposed future practice in issue tracker	HT	AN
7.3.4	Requiring new teaching reform proposals to use tool throughout, shadowed if necessary in paper form	26/01/10	28/04/10	Pilot case studies	AP	
7.3.5	use and support	28/12/09	28/04/10		AP	AN
7.4	round 2 - refine, extend and re-evaluate ('embed and perfect')	30/04/10	19/10/10			
7.4.1	requirements and design	30/04/10	14/05/10	Revised requirements, design and test documents.	AN	IB
7.4.2	build and deploy	17/05/10	15/06/10	Revised user and technical documentation. CD support software v2	IB	DS
7.4.3	use and support	16/06/10	19/10/10		AP	AN
7.5	round 3 - refine, extend and re-evaluate ('integration phase')	29/10/10	19/04/11			
7.5.1	requirements and design	29/10/10	12/11/10	Revised requirements, design and test documents.	AN	IB
7.5.2	build and deploy	15/11/10	14/12/10	Revised user and technical documentation. CD support software v3	IB	DS
7.5.3	use and support	15/12/10	19/04/11		AP	AN
7.6	round 4 - refine, extend and re-evaluate ('evaluation phase')	29/04/11	18/10/11			
7.6.1	requirements and design	29/04/11	13/05/11	Revised requirements, design and test documents.	AN	IB
7.6.2	build and deploy	16/05/11	14/06/11	Revised user and technical documentation. CD support software v4	IB	DS
7.6.3	use and support	15/06/11	18/10/11		AP	AN
7.7	development complete	30/09/11	30/09/11	<b>Final version of CD support software, with accompanying user and technical documentation, deployed in partner institutions, available to whole university.</b>	9	
8	interim report 2 -initial build and deployment	30/04/10	30/04/10		10	
9	interim report 3 - 'embed and perfect'	29/10/10	29/10/10		11	
10	interim report 4 - 'integration phase'	29/04/11	29/04/11		12	
11	interim report 5 - 'evaluation phase'	31/10/11	31/10/11		13	
12	draft final report	30/04/12	30/04/12		14	

ID	Workpackage / Action	Earliest start	Latest Finish	Objective / Outputs	Milestones	Responsibility
<b>13</b>	<b>WP 6: Evaluation of new processes</b>	<b>26/05/09</b>	<b>02/07/12</b>			
13.1	Develop evaluation framework, drawing on specific departmental context of pilot deployments	26/05/09	28/10/09	<b>Evaluation plan developed with and tailored to partner institutions, including success indicators, correlated with workpage plans. Feedback from implementation, deployment, testing and training stages, plus early user feedback. Interim report 2. Interim report 3 Interim report 4 Interim report 5 - 'evaluation phase' Evaluation report with post-intervention case studies highlighting the impact of innovations in curriculum design processes on partner institutions' ability to address strategic aims; evaluation of changes that have occurred as a result of project innovations and of lessons learnt through carrying out the project.</b>	IB	HT
13.2	round 1 early feedback and evaluation	28/12/09	28/04/10		HT	
13.3	round 2 feedback and evaluation	30/06/10	19/10/10		HT	PC
13.4	round 3 feedback and evaluation	29/12/10	19/04/11		HT	PC
13.5	round 4 feedback and evaluation	29/06/11	18/10/11		HT	PC
13.6	Final post-intervention case studies and evaluation inc. relative costs and benefits for technology-supported process vs previous practice	02/05/11	02/07/12		HT	
<b>14</b>	<b>WP 7: Embedding of new processes</b>	<b>25/01/10</b>	<b>02/07/12</b>	Transfer of project from experimental to deployed status		
14.1	Staff training	25/01/10	30/12/11	<b>Documentation and online training materials for Kuali configuration and use, designed for reuse at other institutions. Users understand and are able to use initial tool feature set Users understand and are able to use enhanced tool feature set Users understand and are able to use enhanced tool feature set (likely to include integration with other institutional IT systems) Users understand and are able to use enhanced and final tool feature set University-wide availability of support services similar to those adopted within pilot group. Development of sustainable CD support tool support function within CARET or alternatively Staff Development or the Education Section, including identification of Integration with other institutional IT systems (CamSIS/Oracle, CamTools/Sakai, SWIFT, eAdministration, CHRIS) via source-system maintained APIs. Testing of same.</b>	AP	HT
14.2	round 1 training for project partners	26/01/10	15/02/10		AP	HT
14.3	round 2 training for project partners	16/06/10	29/06/10		HT	
14.4	round 3 training for project partners	15/12/10	28/12/10		HT	
14.5	round 4 training for project partners	15/06/11	28/06/11		HT	
14.6	Adaptation and rollout of CD support tool to whole University	20/06/11	16/12/11		AP	AN
14.7	Transfer to support function	31/10/11	29/06/12		JN	AP
14.8	Co-ordination and testing of system integration	30/04/10	02/01/12		IB	AP
14.9	Operational maintenance and helpdesk support for system users	25/01/10	02/07/12		GC	

ID	Workpackage / Action	Earliest start	Latest Finish	Objective / Outputs	Milestones	Responsibility
15	<b>WP 8: Engagement with Phoebe and/or LPP / LDSE</b>	01/09/08	30/09/11	Learn from a learning design system focussed on pedagogical support and interaction design		
15.1	Engage with Phoebe, determine interest in developing sustainable community	01/09/08	27/02/09	Decision on deployment of Phoebe within this project.		LJ HT
15.2	Investigate possibilities to use Phoebe or other pedagogic planners to serve as a preliminary design step to feed KS	27/02/09	30/09/11	<b>Review of technical and pedagogical inks between lesson planning and curriculum design, integration with support tool, e.g. with support of Learning and Teaching Support initiative</b>		HT
16	<b>WP 9: Engagement with Kualii Student project</b>	18/05/09	02/07/12	Contribute to KS codebase		
16.1	Analyse KS datamodel	18/05/09	06/07/09	Analysis of KS data models in light of comparable models and emerging user requirements		AP IB
16.2	KS LUM workshop	23/07/09	23/07/09		<b>15</b>	
16.3	Evaluate KS LUM ability to model Cambridge processes	07/07/09	28/08/09	Draft workflows described in 'Quality Guide' and obtained from pilot group requirements process. Response from KS to our design requirements.		AP IB
16.4	Check out, build and run instances of pre-release 1 KS services	01/06/09	29/10/09	Transparency of development progress. Experience deploying modules.		AN
16.5	Kualii Student R1 (earliest) - basic infrastructure, Learning Unit Management, Person Identity	27/10/09	27/10/09		<b>16</b>	
16.6	KS R1 technical report	30/04/10	30/04/10		<b>17</b>	
16.7	Evaluate KS R2: potential value of new modules and features in CD processes	14/01/11	11/03/11	Functional evaluation of KS R2 modules' application to CD for UK HE		AP HT
16.8	Build, implement and test KS R2	14/03/11	02/09/11	<b>Technical report of KS R2 modules' configuration and deployment for UK HE</b>		AN IB
16.9	Kualii Student R2 (likely) - Enrollment, Learning Plans, Program Audit and Evaluation	30/06/11	30/06/11		<b>18</b>	
16.10	Kualii Student R3 (likely) - Student Financials, Admissions, Scheduling	29/06/12	29/06/12		<b>19</b>	
16.11	Engage with KS design and feedback to represent UK (and Cambridge) requirements	01/06/09	02/07/12	KS features include support for UK-specific situations as identified in Cambridge and via Support and Synthesis project.		IB

ID	Workpackage / Action	Earliest start	Latest Finish	Objective / Outputs	Milestones	Responsibility
<b>17</b>	<b>WP 10: Oracle evaluation and comparative analysis</b>	<b>18/05/09</b>	<b>28/09/11</b>	<b>Evaluate alternative system and promote standards-based interoperation</b>		
17.1	Initial evaluation of Oracle ability to support Cambridge CD processes in light of emerging use cases	18/05/09	28/08/09	Analysis of Oracle (CamSIS) data models and workflows. Response from Oracle to our design requirements.	IB	AP
17.2	Evaluate relative abilities and strengths of Oracle (CamSIS) vs. KS LUM, including planned developments, and implications for integration with CamSIS	08/02/10	01/10/10	<b>Evaluation paper comparing Oracle vs KS LUM. Integration proposals for CamSIS.</b>	IB	JN
17.3	KS LUM integration with Oracle	29/10/10	28/09/11	KS LUM / CamSIS / CamTools integration via KS RICE (if possible as a KS Connector Module) or Oracle Fusion SOA,	IB	AN
<b>18</b>	<b>WP 11: Engagement with Synthesis Project, Programme and JISC community</b>	<b>01/09/08</b>	<b>02/07/12</b>	<b>Share learnings, particularly regarding KS, and learn from other projects.</b>		
18.1	Engagement with Synthesis and Support Project, JISC community	01/09/08	02/07/12	Contributions to CAMEL, Synthesis Project, JISC E-Framework, reflective blog.	IB	AP
18.2	Disseminate KS experiences and knowledge	01/09/08	02/07/12	<b>3 annual Quali Student conferences in UK. Senior members of KS will be invited speakers.</b>	HT	
18.3	KS conference 1	09/02/10	09/02/10		20	AP
18.4	KS conference 2	08/02/11	08/02/11		21	AP
18.5	KS conference 3	07/02/12	07/02/12		22	AP
18.6	End-of-project dissemination	31/10/11	29/06/12	Preparation for and participation in final KS and programme conferences. Internal dissemination via LTS, ES. Preparation of Final Report and learnings from implementation of requirements of learning and teaching projects.		HT
19	project end	02/07/12	02/07/12		23	