

PROPOSAL FOR AN ASSESSMENT MANAGEMENT SYSTEM - FINAL REPORT

1. Introduction

This project was an investigation into the requirements and the feasibility of modularising a core piece of the student management system (also referred to as student information systems, or student record systems) functionality. Such functionality supports, to a greater or lesser extent, a key set of university processes supporting the academic and administrative activity of managing assessments. Assessments in this context mean written examinations, coursework, assessed practical, and so on. For this project, such a module is named an 'Assessment Management System'. It was envisaged that findings from this project could be shared across the sector, informing universities about theoretical potential opportunities for flexible service delivery or shared services for this area. The findings would also show the level of interest in such an opportunity, the appetite for change, and most importantly, any commonality in processes between universities that would qualify as a potential for shared services. Suppliers of the functionality were approached to ascertain whether the proposal for an assessment management system module could be developed and implemented, and to ascertain their level of interest in doing so.

2. The Issue

Within the University, it is estimated that there are hundreds of different 'assessment management systems'. Each Department/Faculty has created a system specific to their requirements, the responsibility of maintaining the system residing with the Department/Faculty. The term 'assessment management system' refers to an electronic system that stores details of assessments, and their corresponding result. Assessment management systems can be anything from a sophisticated database program to a simplistic excel workbook. A Department/Faculty will use an assessment management system to manage marks for coursework, examinations (to question level detail), and formal submissions such as a dissertation. The system usually calculates an overall result, which will be classification for completing students. After investigation in 2007, it was confirmed that 80% of assessment management systems are spreadsheet-based; the remaining 20% are databases.

The only centrally provided system is 'Mark-it'. This access database was developed in 2001 in response to the Humanities Division strategic decision to standardise examination regulations, the way in which awards are calculated across programmes offered by the division. A single system, with common rules (at that particular point in time), was implemented in the following Departments/Faculties: History; English; Economics and Management (Final Honour School only); Politics, Philosophy and Economics (Final Honour School only); Theology; Classics; Modern Languages (Final Honour School only). Mark-it was developed and is supported by the Applications Support team (Business Services and Projects) at a cost of approximately £60k per annum. Although the core programming of Mark-it is the same for each Department/Faculty, the user interface and specific business rules are different in each instance (there are currently 21 instances). This diversity of requirements is complicated and resource intensive to maintain.

At Oxford, Colleges play a key role, not only for student welfare and support, but also for teaching and assessment. College collections are formal assessments held in College, usually at the start of each term for all undergraduate students. The marks for College Collections are not collected centrally, however are circulated within College. Colleges have created and maintain their own student records systems, most of which store assessment related information. Colleges report performance statistics, write letters of reference, and (until 2011) produce academic transcripts for their students.

Each Department/Faculty and College faces the challenge of supporting and maintaining their own systems. It is often the case that the knowledge of such a bespoke system is retained only in a single point of contact, most commonly an IT support staff member or an academic in some cases. Administrators often do not have access to carry out basic updates to the system, or it requires specialist skills in order to achieve it. These factors, and others not detailed in this paper, present a tangible risk of disruption to a critical process.

The central student records system (OSS) is the source of results information to students, administrative staff, and the academic community. Because departmental systems are not integrated with OSS, this data must be largely manually extracted from departmental systems in order to be subsequently uploaded into OSS. This requires a duplication of effort, another stage of rigorous checking, and is a strain on resources at a time of year when they are already under severe pressure.

3. The Project Approach

The following major pieces of work were completed as part of the project:

- Performed a comprehensive process analysis and requirements gathering exercise with Departments/Faculties and Colleges across Oxford [COMPLETED]
- Consulted with IT infrastructure and OUCS to establish how an FSD environment influences the technical selection, and proposed development and implementation of an assessments management system [COMPLETED]
- Consulted with third party software suppliers regarding the selection and design of an assessments management system [COMPLETED]
- Consulted with other HEIs regarding the selection and implementation of assessments management components to a student records system, or distinct systems if appropriate [COMPLETED]
- Built a series of documents to outline the [selection process], requirements analysis, influencing factors, constraints, identified benefits during the project [COMPLETED IN PART]
- Published updates onto a project 'blog' site (<http://assessmentmanagement.blogspot.com/>) for other HEIs to review progress and decision making as part of the project work [COMPLETED]

4. Process Analysis and Requirements Gathering

A four-view model approach (people, processes, organisation, and technology) was taken to ensure that the analysis was as comprehensive as possible. It was clear from the outset that by reviewing processes and technology alone would not give an informed view of the feasibility of modularising assessment management functionality. The culture of the organisation itself, any business transformation it is going through at the time, and the people involved proved to have significant influence over the direction and control of the area. Particularly at Oxford, where only recently (2008 onwards) were results for individual items of assessment or examination collected into a central system. Before this time, the Department/Faculty was the sole source (albeit sharing hard copy information with colleges) and had complete control and responsibility over all assessment information and processes. This very fact makes it clear why there are so many variants of assessment management system across Oxford, often one or many in each Department/Faculty, so that they may support a process that to date has been very much controlled by them as individual 'units' rather than coordinated across the University as a whole.

Annexe 2: Process Definition provides documentation on the current processes associated with assessment management at Oxford. Although not every Department/Faculty in Oxford (there are over 130 in total) was included in the analysis work – seven representative Departments/Faculties were, giving a broad view of the differences and similarities in processes and in requirements for an assessment management system. This analysis work was then shared with other selected universities to comment on the extent of commonality with Oxford.

Alongside the process analysis work, a 'Blueprint' document was developed as a starting point to define requirements for an assessment management system. Annexe 3: Assessment Management System Blueprint and System Design gives a descriptive set of requirements for an assessment management system, and a diagrammatic description of how such a system may fit into a modular (service orientated architecture, flexible service delivery style system environment).

5. Feedback from the sector

Eleven universities were considered as part of the consultation work:

Imperial College London, University College London (UCL), University of Bristol, University of Leeds, University of Cambridge, University of York, University of Newcastle, University of Warwick, University of Nottingham, University of Edinburgh, DeMontfort University.

Within annexe 3 is the structure of questioning for each university. Site visits were carried out to four of the eleven universities (University of Bristol, UCL, Imperial College London, and the University of Leeds). Five universities were consulted as part of wider analysis work into student systems (University of Newcastle, University of York, University of Edinburgh, and DeMontfort University).

A key summary of the findings across the universities consulted indicate that:

a. Assessment management processes, and the people involved, do not differ significantly

Universities were asked to review the process documentation produced for Oxford. Overall, it was commented that assessment management processes do not differ significantly between universities. That said, there are certainly local differences at a more granular level. For example; the number of markers for an examination paper; the method to collect of raw marks from markers; the number of roles involved in the approval process for assessments; the method by which results for assessments are transferred between systems; the format of examination board reports; and so on. These types of differences are simply just minor variations of core processes and procedures that have similarity across the universities consulted.

The mandatory requirements remain the same across universities, in that reporting to statutory bodies (e.g. Higher Education Statistics Authority) the institution must report data pertaining to the progression or completion of each applicable student therefore such data must be collected and reported as one return (usually by a central administrative unit, using data from a student management system). The other overarching similarity is a strategic objective for universities to report a full academic history for each applicable, and to make that information available to the student it belongs to and to staff who have a legitimate need to use it (e.g. for writing references etc.). This objective is usually achieved by collecting such information into the student management system in order to provide hard copy transcripts, publish the data within a student portal, and report data in online data reporting tools for authorised staff to view.

b. The extent of use of the (centrally controlled) student management system to support assessment management does differ

Although there are significant similarities in processes and people involved with assessment management across the universities consulted, there are certainly some differences in the extent that the student management system is used to support those processes. An argument could be made that student management systems are often regarded as the 'central administration/registry' system and that departmental level staff have little to do with them apart from feed information into them. Because student management systems to date have shown little by way of flexibility in configuration, departments have needed greater functionality, under their control, at a local level and they have fulfilled this by developing and maintaining their own systems. Some universities, however, do utilise much more of the assessment management functionality – and it is used at the departmental level. A third variant (a hybrid) of this is the fact that some departments within a university will use student management system functionality and other departments will not and will use their own local system instead.

There may be lots of reasons for such a situation. Many of which are associated with the culture, history, and administrative structure of the university itself. Some universities

have a more devolved administrative structure than others; some universities have a more top-down ‘power’ type culture rather than federated ‘like minds’ type culture. In ‘power’ type cultures it could be argued that there is greater conformity in using student management systems, whether they ‘fit’ or not. Another clear reason is the level, or lack, of investment into student management systems technology. Some universities who were consulted have invested a great deal of time and money into developing assessment management functionality to fit the requirements of their university (this is often alongside review of policy and procedures, harmonisation of examination regulations etc.). The universities consulted who have not invested in student management systems to support assessment management stated that it was because either:

- the ‘off-the-shelf’ product would require too much development work, which would be disproportionate to the benefits it would give
- they would struggle to gain willingness from departments to use the functionality and could not enforce the use of it
- departments want to stay in control of their assessment related data
- a few departments have complained about the significant amount of local support they have to provide (at a cost to the individual department), but the number is too small to justify an investment in this area by the university
- the funds to develop systems simply are not available
- “Things seem to work fine as they are. Registry gets the information they need but I really don’t know how departments generate that information, or how much burden it is - they just do it”

c. The holistic view is not always considered

This project highlighted a discrepancy in the view of central registry staff with those working in departments, with regard to assessment management systems. Of those consulted who work in departments, there was an overall response in support for improving assessment management functionality through modularising it. However, there was a mixed response from those consulted who work in registry type areas. Some responses were in favour and could see benefit, others were vehemently opposed, seeing no benefit to the university whatsoever. An assumption is made that often individuals in registry type functions do not know the exact detail of process at a departmental level, therefore not appreciating the level of administrative effort and support for technology that is needed. If an assessment management module were to be developed it would need requirements input from both registry type functions and, perhaps more importantly, departmental level input.

“At this university we have put a great deal of work this year into moving away from a free-standing module registration system to develop use of the integrated module registration facility that comes with the Tribal SITS student record system that the University uses. Our IT Services had declared the free-standing system to be technically unsustainable and additionally it had various shortcomings with data load and co-

ordination into SITS. The last thing we'd want to do now is move away again to a non-integrated facility. There would of course be a need to feed all assessment data (not just module registrations) collected by some separate system back into whatever student record system was in use, and I think you would encounter significant problems with this, especially given the variety of record systems that institutions employ. As regards mark processing and award calculation, I think you would have an additional problem with the variability in conventions and systems in these areas across institutions - I doubt that any two universities would manage these processes in quite the same way. I suspect an additional area where your concept is likely to encounter difficulty, given the intimate interrelation of assessment processes with other student-related processes, would be managing effectively the module-results based statutory returns to HESA/HESES."

This feedback is particularly interesting as it does not consider the use of efficient data exchange technologies. This project does concur however that without full integration of such module, the concept is fundamentally flawed. This project does agree to a certain extent with the level of difference seen across universities to manage assessment management processes; however the core processes are similar if not identical.

"There is an institutional mandate that SITS is used. The university would not wish a situation where some departments used SITS but others were free to opt to use some other independent system."

This feedback proves that the holistic view is not fully appreciated. A system that fits registry type processes may not fit those of departments. To find efficiencies for the university as a whole, then the complete end to end assessment management processes and those involved must be considered.

d. Some universities believe that assessment management functionality is too integral to the student management system to remove as a stand-alone module

Many of the universities consulted questioned the feasibility of removing assessment management functionality from the student management system. This was simply because it forms one of the most significant parts of the system, with a significant amount of inter-dependency with other data held within the system. The concept of modularising student management systems is still in its 'infancy', it is true to say that universities remain tied to the monolithic-system thinking and are not aware of any alternative solutions. However, some of the universities consulted are starting to think in modular terms. The University of Leeds, and the University of Nottingham (alongside the University of Oxford) have all embarked in projects to test the feasibility of modularising student management systems. It is these universities who are open to the option of modularising assessment management into a stand-alone system. The University of Leeds are implementing a module which manages information about the curriculum, and integrates with the student management system (and other relevant systems). The University of Nottingham and University of Oxford have taken part in a

proof of concept project to ascertain if the development of a module to manage postgraduate research student administration is feasible. Such module would also aim to provide enhanced functionality and usability, have full integration possibilities, and seamlessly exchange data with student management systems. Projects like those offer synergies with this project in terms of testing the feasibility of disaggregating key student management system functionality from the 'core system' - creating and stand-alone, yet fully able to integrate, module. Assessment management should be seen as another candidate for modularity; curriculum management and the management of postgraduate research student administration are just as key as assessment management.

A final argument for a lack of desire to modularise assessment management is that some universities have invested significant amounts into their current student management system. Even though they appreciate the short comings of such systems, the system provides basic functionality in order to do the minimum of what is required (i.e. collect and store assessment information and results, store progression outcomes and awards etc.). Any further investment into this area is not seen as high priority. Although, perhaps this viewpoint is not taking into account the holistic view, in particular that of departments.

e. IT infrastructure is a constraint

Although most of the universities consulted appeared to have a strategic plan for Service Orientated Architecture (SOA), they were certainly at different stages of establishing it. At Oxford, IT infrastructure development is moving gradually in the SOA direction, however the current infrastructure still proves to be a constraint to achieving benefit from modularising systems. Other universities consulted also gave feedback that although they agreed with the concept of moving assessment management into a modular student system environment, they were concerned that their current IT infrastructure would make the situation unworkable with many ineffective system interfaces required, and the real possibility of unreliable data exchange leading to significant impact on university processes.

f. Flexible Service Delivery does offer benefit for assessment management

Assessment management is almost certainly a candidate for becoming a modular system. However, there is not sufficient evidence at this stage to suggest that assessment management would benefit from a Shared Service (perhaps that is too much of a radical suggestion at the current time of writing). Assessment management under a Flexible Service Delivery framework offers great benefit to departments (the source of assessment data and the owners of the majority of assessment management processes). Removing assessment management from student management systems would allow for functionality to become more flexible, more configurable, ability to 'turn on' and 'turn off' functionality if it is not applicable, more controllable by departments themselves, less 'distance' from the data, perhaps greater granularity of roles and workflows.

Ultimately, offering an ‘assessment management web service’ to push and pull data between the module and any other student management system that is relevant. Universities will continue to have a hybrid of departments who wish to continue using local systems to manage assessments, if that is their decision then they must ensure the systems are locally supported and maintained. That said, those local systems must be part of the Flexible Service Delivery framework alongside an ‘assessment management system’ and a student management system. Those local systems may well benefit from using an assessment management web service to exchange data across systems.

6. Supplier Feedback

A review of the marketplace revealed that, in the UK, widely known assessment management systems did not exist. Although, an established company in New Zealand called A Plus+ (Annexe 5) do offer this type of functionality to the tertiary education sector. However, a review of the system revealed that it fell short of the basic requirements needed to support assessment management processes in higher education in the UK. In the UK only local solutions exist, some that are very advanced and functionality rich. Such example is that of ‘Invigilator’ by Symplectic Ltd (<http://www.symplectic.co.uk/products/invigilator.html>). Invigilator is used by Imperial College London only, and not institutionally wide. Given that however, it certainly has the scope to support assessment management as a modular system within the flexible service delivery framework.

Some of the main suppliers of student management systems were asked to comment on the feasibility of modularising assessment management functionality. Such companies included the market leader, Tribal. Another supplier contacted was UNIT4, who partnered the University of Nottingham and the University of Oxford on the JISC funded Postgraduate Research Student Administration Module (PRAM) project. UNIT4 have shown enthusiasm to explore the benefit of modular student systems.

Each supplier showed interest in the possibilities for an assessment management system module. Although, all were quite cautious about the lack of potential interest in this area. UNIT4 were keen to follow up on research from this project, exploring what type of functionality the assessment management system module would have to have in order to be of marketable use.

7. Summary of Project

By way of a summary, there are particular elements of assessment management that do lend themselves to a modular approach. In actual fact, it is currently the case that there are thousands of assessment management ‘modules’ in place across universities – they can be found in the Departments themselves. The issue is the data exchange, more specifically the lack of, between those systems and the ‘central’ student management systems. This often causes additional effort by Departments to return much needed academic information for other processes, such as progression reporting to HESA; generation of transcripts; or the management of degree ceremonies; and so on. This effort is often overlooked or not even apparent to those managing student management systems (most commonly managed by central units such as Registry or Information Systems).

Depending upon who (Registry vs. Department) was consulted as part of the project, the viewpoint was very different.

There is great opportunity to provide a better service to Departments. An assessment management system that is centrally supported would remove the effort (resources, costs, risks) of support and maintenance away from Departments. However, the system would need a great deal of flexibility in its design in order to allow local configuration (i.e. allowing the system to be within the Department's control to configure), and also to encapsulate all of the localisations (the minor differences in processes, the ability to turn on/off functionality) required.

The final fundamental issue is with regard to data exchange between the assessment management system module and the core student management system. Without full integration, real time information exchange, and low effort maintenance, the proposal is fundamentally flawed. A standard for assessment management information would be a significant step towards flexible service delivery. This would ensure data consistency across and between systems, potentially reducing effort and increasing quality.

This project concludes that this is a highly emotive subject; those consulted were either highly guarded about the topic, or very keen for revolutionary change. Approaching the topic in the future, this should be taken into account. This project also concludes that current student management systems do not offer those involved with assessment management, meaning both registry related staff and departmental staff, the full functionality they require or the flexibility of configuration needed to support all processes. Whether disaggregating the functionality from student management systems would resolve this issue is unknown, a pilot project similar to PRAM would be necessary to complete in order to ascertain the proof of this concept.

8. Annexes

a. Annexe 1: Scope of Project



scope_plan.pdf

b. Annexe 2: Process Definition



fsd_am1.pdf



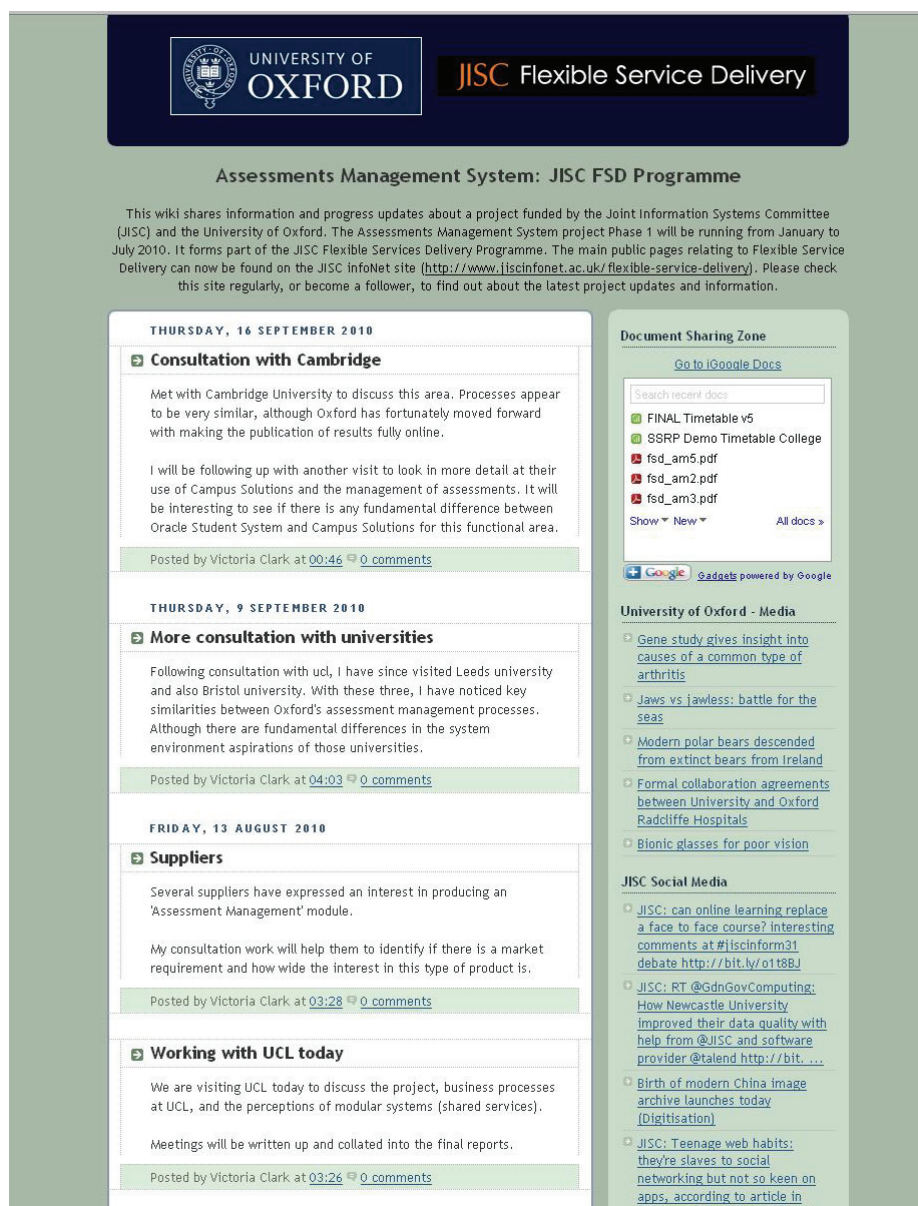
fsd_am2.pdf

c. Annexe 3: Assessment Management Blueprint and System Design



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d. Annexe 4 – Sample of Project Blog site



UNIVERSITY OF OXFORD JISC Flexible Service Delivery

Assessments Management System: JISC FSD Programme

This wiki shares information and progress updates about a project funded by the Joint Information Systems Committee (JISC) and the University of Oxford. The Assessments Management System project Phase 1 will be running from January to July 2010. It forms part of the JISC Flexible Services Delivery Programme. The main public pages relating to Flexible Service Delivery can now be found on the JISC infoNet site (<http://www.jiscinfonet.ac.uk/flexible-service-delivery>). Please check this site regularly, or become a follower, to find out about the latest project updates and information.

THURSDAY, 16 SEPTEMBER 2010

Consultation with Cambridge

Met with Cambridge University to discuss this area. Processes appear to be very similar, although Oxford has fortunately moved forward with making the publication of results fully online.

I will be following up with another visit to look in more detail at their use of Campus Solutions and the management of assessments. It will be interesting to see if there is any fundamental difference between Oracle Student System and Campus Solutions for this functional area.

Posted by Victoria Clark at 00:46 0 comments

THURSDAY, 9 SEPTEMBER 2010

More consultation with universities

Following consultation with ucl, I have since visited Leeds university and also Bristol university. With these three, I have noticed key similarities between Oxford's assessment management processes. Although there are fundamental differences in the system environment aspirations of those universities.

Posted by Victoria Clark at 04:03 0 comments

FRIDAY, 13 AUGUST 2010

Suppliers

Several suppliers have expressed an interest in producing an 'Assessment Management' module.

My consultation work will help them to identify if there is a market requirement and how wide the interest in this type of product is.

Posted by Victoria Clark at 03:28 0 comments

Working with UCL today

We are visiting UCL today to discuss the project, business processes at UCL, and the perceptions of modular systems (shared services).

Meetings will be written up and collated into the final reports.

Posted by Victoria Clark at 03:26 0 comments

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- Formal collaboration agreements between University and Oxford Radcliffe Hospitals
- Bionic glasses for poor vision

JISC Social Media

- JISC: can online learning replace a face to face course? interesting comments at #jiscinform31 debate <http://bit.ly/01t8BJ>
- JISC: RT @GdnGovComputing: How Newcastle University improved their data quality with help from @JISC and software provider @talend <http://bit.ly/01t8BJ>
- Birth of modern China image archive launches today (Digitisation)
- JISC: Teenage web habits: they're slaves to social networking but not so keen on apps, according to article in <http://www.bbc.co.uk/news/education-11888888>

e. Annexe 5 – Presentation by A Plus+ (Tertiary Education Assessment and Results Management tool)



aPlusQuickIntro.pdf