

## Submission for UCISA Award for Excellence 2010

Institution Name: **The University of Bradford**

Originating Department : **IT Services, a Directorate of Learner Support Services**

Contact Name (and email address): **Graham Hill (g.c.r.hill@bradford.ac.uk)**

Objective of the *Project/Service*: **Integrating thin-client systems for secure e-Assessment**

Description of the *Project/Service*: **This project addressed a key area of institutional concern for Higher Education: delivering effective and efficient e-assessment in a flexible, secure, and accessible way.**

Supporting documentation about the *Project/Service*: **Attached**

Name of Staff involved (including job titles and email addresses):

**Ms Sara Eyre, Head of IT Customer Services (now retired)**  
**Prof. Peter Hartley, Professor of Education development (p.hartley@bradford.ac.uk)**

Support of Institution UCISA Representative

Name: **Sara Marsh, Director of Learner Support Services and Graham Hill, Director of IT Services**

## The Initiative: Integrating thin-client systems for secure e-Assessment

The University of Bradford's new facility for formative and summative computer-aided assessment (CAA) is, we believe, unique in the UK and across Europe, thanks to innovative use of thin client technology. It is an excellent example of the creative integration of external support and cross-institutional collaboration.

This project addressed a key area of institutional concern for Higher Education: delivering effective and efficient e-assessment in a flexible, secure, and accessible way. It had a number of contributory stakeholders:

- High Education Academy (HEA) Pathfinder project reviewed and improved institutional procedures for CAA
- JISC Institutional Exemplar project enabled us to develop and implement the necessary software integration
- University's key technology partner, SUN Microsystems, provided thin client technology and technical advice
- University Estates and Facilities department created new physical space with significant sustainability credentials and innovative internal layout based on our analysis of current best practice across the sector
- Educational developers and IT specialists based in The University's innovative Learner Support Service collaborated with academics, administrative and estates staff to ensure that the facility met current and future needs.

The service uses thin client (Sun Ray) technology. This replaces the conventional PC desktop with screen and keyboard linked to central servers which control identity management and software access, including the ability to 'switch off' specific software features. This provides a new, flexible, personalisable and scalable system for summative e-assessment. It is now working close to capacity during our examination periods. The system securely integrates with other key University processes (e.g. student records and examination scheduling) and delivers standard network services and formative assessment when not used for summative purposes. The facility also supports innovative teaching practice. When not formally booked, the 100 seat facility is available 24/7 for student access.

Thin client offers major advantages over conventional PC-based e-assessment systems in terms of scalability and economy. It provides an environmentally-friendly, secure and sustainable alternative to the PC. It also offers additional flexibility. A broader range of e-assessments can be delivered without needing elaborate installation procedures or additional software to control security and access. Only resources demanded by the assessment can be accessed by the candidate, providing educational flexibility not available in current PC-based systems without major additional investment.

This project delivered specific aims from the University's Learning, Teaching and Assessment Strategy and E-Strategy. We have demonstrated that this technology can provide an easy-to-manage, secure and reliable classroom resource for CAA with major benefits for both teaching and administrative staff. The system also supports smart cards (which we have successfully tested) which can add an extra layer of security and user authentication. Our development plans include extending assessment methods and flexibility (e.g. word-processed examinations, further mixed-mode assessments) and the implementation of smart card technology.

Our findings and procedures are valuable to all HEIs who wish to better integrate e-assessment with other university systems and particularly to those in need of models, interfaces and protocols for flexible and secure e-assessment.

## Additional Information

There are two web sites available with further information about the initiative:

<http://www.jisc.ac.uk/whatwedo/programmes/institutionalinnovation/its4sea.aspx>

and

<http://lanthanum.cen.brad.ac.uk/lss/tqeg/projects/its4sea/>

The following quotes exemplify the major achievement of this project.

"I've already told the Deputy VC that we will need another cluster like this within 2 years",  
Prof. Nigel Lindsey, Director of Learning and Teaching

"This is just what I always wanted but we couldn't do on the PCs!", Dr. Bob Lomas, Lecturer  
in Technological Management

These quotes relate directly to the successful creation of the new assessment facility and, in the second one, the use of software (Appsense) to control the software which was made available for the examinations. This enthusiasm has been echoed by external visitors from other institutions.

Following the successful trials involving over 400 students in the January 2009 examination period, a further 9 new modules were timetabled to use online assessment for summative assessment for the first time at the end of semester 2 in June 2009, covering over 900 student assessments. In January 2010 over 1,500 students used the facility for assessment.

Feedback from students taking their exams online has also been encouraging; in one group of 163 students, 128 agreed or strongly agreed with the statement 'Would you like to have other summative assessments in this format'.

There have been many major benefits to our examination processes:

- There was no need to check and scan 190 Optical Mark Recognition sheets thus saving approximately 9 hours work; the marks were available at the end of the afternoon for import into the student record system.
- Students with extra time allowed were scheduled into the area adjacent to the main assessment room and started at the same time as the bulk of the class who could leave without disturbing them.
- Students were enrolled faster against the appropriate modules in the student records system although major issues remain with the reliability of data for both module assessment modes and student enrolments.
- There was an increased take up of specialist facilities by students with disabilities as they were informed individually where and when their assessment would occur compared with the previous system of having to look up each module and see where the assessment was scheduled.
- Personalised examination timetables were emailed to all students. This highlighted to every individual whether they were entered for the correct assessments and led to many changes to module registrations at the last minute.

- Students requiring extra time, or their own separate room for exams, were scheduled within the computerised timetabling system for the first time. Previously these students were scheduled manually.
- ExamAdmin provided a flexible and easy to use interface that gave the examination Office staff control over which examination records were extracted from the student records system. Previously this was hard coded, and not under the user's control.
- The automatic production of data quality reports so that academic schools could validate the accuracy of student examination data before any scheduling was performed.

The following 3 supporting images are also provided:





Graham Hill  
January 2010