The University of Bristol DataHub - a prerequisite for an integrated learning environment?

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Abstract

Virtual or Managed Learning Environments (VMLEs) cannot be fully effective unless well-integrated with existing campus information systems. Institutional planning for the UK Research Assessment Exercise (RAE) has provided an unexpected impetus at the University of Bristol. The DataHub, a reporting database created initially to back-end a locally developed Web application (IRIS) to support the RAE submission, has been extended to include undergraduate and curriculum information drawn from the corporate student information system. The same authentication framework used by IRIS has also been used in developing a faculty-based staff and student intranet which is itself underpinned by information drawn from the DataHub. The university now wishes to develop this model further to provide a generalised learning and teaching portal that could be offered to all academic departments.

1. Problems

The problem of hardened information siloes is familiar to large organisations and universities are no exception. A student’s term-time address is recorded in at least six places but no-one can be sure which one, if any, is right. The student, who knows the answer, can’t see the information, let alone correct it. The “Joined-Up Web” was the theme of a recent conference and nowhere is the joining-up question of more relevance than in the context of VMLEs.

2. Incentives

Whilst national initiatives (such as Information Strategies and the Teaching Quality Enhancement Fund) have acted to raise the profile of information and communications technology (ICT) and learning and teaching strategies, they are nothing compared to the effect of the UK's Research Assessment Exercise (RAE).

With the logistical nightmare of the 1996 exercise still fresh in the institutional mind, and serious doubts about the quality of the software being offered to universities to collate information for the 2001 exercise, it proved possible to secure internal resources to build an Integrated Research Information System (IRIS).

The short-term goal of IRIS was to help deliver a successful RAE return in 2001; the longer term goal is to provide Web access to information on our research and enterprise activities.

3. Solution

The IRIS project involved building a Web-based application (using Java Server Pages) that would allow academic departments to view and, where appropriate, manipulate the information that would go to provide their RAE submission.

An important part of the project was the construction of a reporting database (Figure 1) to hold a partial snapshot of the relevant parts of our personnel, student and finance systems which could be regularly refreshed. Departmental users could then add local value in the shape of publications and free-text statements.

![Diagram of DataHub](image-url)
Users of IRIS authenticate (via Samba) against the existing campus-wide NT ("UOB") domain which controls access to network services for 4000+ staff and 12000+ students - crucially, in terms of administrative overheads, no new usernames and passwords were required. On logging in a role is assigned to each user which then determines what information can be seen and the operations that can be performed on it. The IRIS project has therefore provided a Web-based "research portal" for the university.

Importantly IRIS exposed data held in the existing corporate systems that had been rarely seen and, unsurprisingly, was therefore out of date. A feedback loop was consequentially established and the quality of the information in the back-end systems has been improved.

4. Plans

It has been a relatively small step to extend the range of information being stored in the reporting database beyond that required for the purposes of the RAE. For example, selected information about undergraduates as well as postgraduate students is now exported nightly, as is curriculum information.

In this way the IRIS reporting database has evolved into the "University DataHub" - a general vehicle for re-distributing corporate information around the institution. The DataHub venture draws inspiration from the MIT Data Warehouse project.

Figure 2 summarises the initial subset of data that is being considered - well structured ("catalogue") information in the category of "read-by-all" at the university.

We also view a Content Management System (CMS) as having an important role to play in promoting less well structured ("narrative") information into the structured domain so that it can be better managed.

The availability of DataHub information has allowed an intranet to be constructed for the Faculty of Law. The use of Zope has permitted the rapid development of a modest but effective integrated learning environment. This provides a prototype for a future "learning & teaching portal" that is complementary to the "research & enterprise" portal being delivered by IRIS.

Users of the Law Intranet also authenticate against the UOB domain and then, according to their role (student, staff or portal manager), are assigned appropriate levels of access.

At present the mode of use is prosaic but labour saving - the Law Intranet is being used to provide an alternative way to distribute information that previously arrived on paper. Class lists are now dynamic, being built from the DataHub, but departmental information (such as tutorial groups) is maintained locally (but still resides in a centrally-hosted database).

A news and events section (with automatic switch on and expiry of items) and bulletin boards (available on a course by course basis) are offering the Faculty of Law an opportunity to experiment with novel (for the staff concerned) approaches to learning and teaching.

5. Conclusions

This paper has outlined an opportunist approach to building the information architecture required if integrated learning environments are to be realised.

It is inevitable that for the present integrated learning environments will be delivered as Web portals. Such portals will be content-starved (or at least prohibitively resource intensive to maintain) unless they can can be underpinned by data currently held in corporate student information systems. Mechanisms such as the DataHub provide a vehicle for exposing such information to a variety of end-uses.

Commercial-off-the-shelf VLEs may be attractive in terms if presentation but expensive or hard to integrate with extant campus systems. The Faculty of Law experience suggests that using open source toolkits such as Zope then 75% of a well-integrated VMLE may be built for 25% of the cost of a commerical offering.

As institutions struggle to manage both their structured and less structured information assets better, it may be that a generic CMS solution is a better investment than a specific VLE.