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# The Portole Project: supporting e-learning

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The PORTOLE (Providing Online Resources To Online Learning Environments) Project was a JISC-funded project which sought to produce a range of tools for tutors which could be used to enable them to discover information resources and to embed these into their course modules from within a University Virtual Learning Environment (VLE). The VLE in use at the Universities of Leeds and Oxford is the Bodington system. A key deliverable of the Project was to produce tools that were designed with ease of incorporation into other VLE environments in mind. This paper discusses the background to the project and the key outcomes. A working service has been developed and is now being tested and evaluated with academic staff.

## INTRODUCTION

The PORTOLE Project was funded by the Joint Information Systems Committee (JISC) as part of the DiVLE Programme (Linking Digital Libraries with Virtual Learning Environments – JISC 07/02). PORTOLE was a consortial undertaking of the Universities of Leeds and Oxford and the Resource Discovery Network (RDN). PORTOLE was a 10 month Project which started on 1 October 2002 and completed on 15 August 2003. The University of Leeds was the lead site for the Project.

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## BACKGROUND

Access to high quality online information sources is essential for both students and tutors. A key role for the tutor has always been to guide their students to resources that support their learning – whether in traditional printed book form or in online format. Students rely on their tutors to identify relevant resources, provide a context in which they can be understood and put a quality stamp on these resources. However, it can



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often be time-consuming for the tutor to find quality-assured resources to recommend, and in some cases, suitable resources may be difficult to track down (for example, multi-media materials). Information resources are also often fragmented – for example; a tutor seeking materials in social policy may need to navigate a complex set of different web resources. Each of these will have a different search interface and may require the awareness of different search query languages.

Increasingly, when tutors find relevant resources to recommend to their students, they want to do this through a Virtual Learning Environment (VLE). The VLE provides the ideal environment for bringing together links to supporting resources with other teaching materials such as lecture notes, online tests and discussion areas. However, it is often difficult for the tutor to embed information resources into the VLE environment in a coherent and cohesive way as output formats and link structures may differ considerably from resource to resource. Tutors also face problems with keeping their links up to date. A tutor managing a number of modules may find it difficult to ensure that links to external sources remain current, and may struggle to find the time regularly to check and update links. Online resources may also lack the required sign-posting which explains context and relevance for the student. For example, a tutor might want to point students to a certain section of a web site, which might be relevant for lectures in a specific teaching week.

It is widely recognised that these difficulties inhibit the potential take-up and use of online resources in teaching. PORTOLE was conceived as a tool which would enable tutors to access the JISC Information Environment via the VLE in order to find and utilise appropriate content in support of learning. The intention was also to integrate access to JISC IE resources with local digital resources.

The Project initially identified a number of key resources which would be integrated into the tool:

- The Resource Discovery Network (RDN)
- The University of Leeds Library Catalogue and other library catalogues (eg: University of Oxford, COPAC)
- The University of Leeds Library ROADS database

The RDN provides access to over 50,000 quality-assured internet resources across a wide range of subject areas. All resources have been selected by subject specialists in partner institutions and carefully indexed. Detailed

resource descriptions are provided. The inclusion of the RDN in the project enabled us to provide access to quality-assured content which is being externally maintained.

The University of Leeds Library Catalogue provides access to bibliographic information about the 2.6 million plus resources in print and electronic format held by the University of Leeds Library. The inclusion of the Library Catalogue in the project enabled us to provide access to the wealth of resources held by the Library, including information about print and electronic journal holdings.

The University of Leeds Library ROADS database is used to provide access to subject-based listings of electronic subscriptions and external web sites of particular relevance to University of Leeds staff and students. Over 4000 resources are included in the database. The inclusion of the ROADS database enabled us to provide access to information about subscription databases and links to other specialist resources. All resources are quality-assured and maintained by University Library staff.

The Google search engine was also added to the list of key resources. Google was included as it is a key resource used by a large number of academic staff to locate resources on the web. Google uses a highly effective relevance ranking algorithm, although resource quality issues are still evident.

The intention was for tutors to be able to cross-search these resources and retrieve an integrated set of links which would then be selected for inclusion in the VLE. A tutor would enter the VLE and utilise a search interface to cross-search the selected databases. An integrated, de-duplicated results set would be returned to the tutor, who would then be able to review and select suitable resources from those listed. Selected resources would be downloaded to the VLE for display as a dynamic web page within the VLE environment. Custom annotations could then be added by the tutor to supplement or replace the resource descriptions provided from the RDN or other databases. The metadata for each record would be maintained by the source database, so that link checking and maintenance would be performed externally on centrally or nationally supported resources, and the tutor would not need to be concerned with this. Finally, students would view the resources with their associated annotations.

PORTOLE utilised the JAFER client developed by the University of Oxford with JISC DNER funding, to provide a java-based toolkit for building a Z39.50 client. The Z39.50 search and retrieve protocol is one of

the key components of the JISC Information Environment and acts as a protocol between middleware and the content providers.

## PROJECT RESULTS

The Project has successfully produced an interface which can be used to cross-search a number of databases. The search interface is shown below: (Figure 1)

The search interface can be used to search simultaneously across the Library Catalogues at the Universities of Leeds and Oxford, in addition with the RDN and Google. It was not possible to include the Leeds University Library ROADS database during the project as this database required additional technical development which was outside the immediate scope of the project.

Once a search has been performed, the results are then presented to the tutor (Figure 2).

The tutor can select items and then add annotations to provide context for the student.

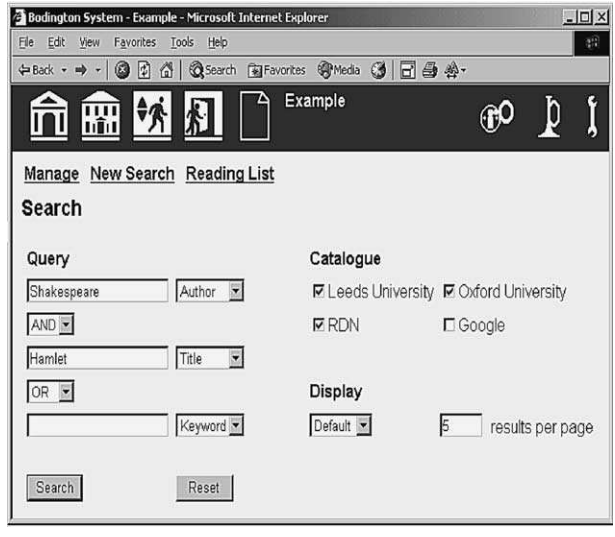


FIG. 1: *Screenshot of PORTOLE Search Interface.*

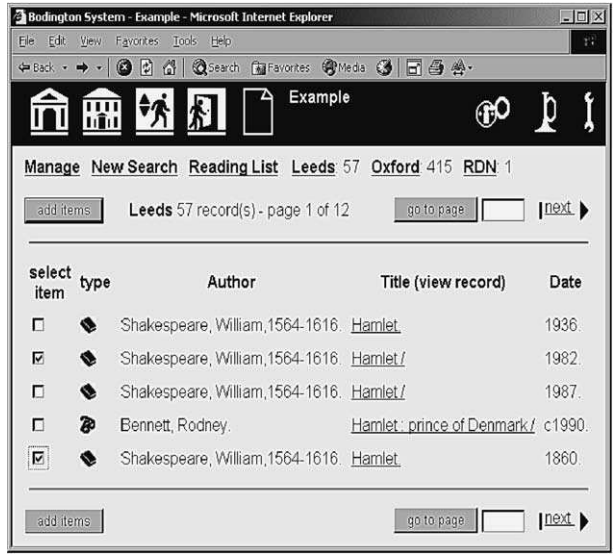


FIG. 2: *Screenshot of PORTOLE search results.*

When the tutor is happy with the list, he or she can then save it so that students can access a read-only version of the list. The tutor can modify the list at a later date.

A number of key lessons have been learned from the project. Focus groups were undertaken as part of the Project, and the following key issues emerged:

- The PORTOLE system is unlikely to be of relevance to all courses and subject areas. Some subjects tend to have a greater reliance on 'classic' texts than others; consequently, reading lists for these subjects tend to be static and not subject to change over time. PORTOLE is most likely to be of value to those subjects which are developing and changing rapidly, and where a large number of new resources are being produced either in paper or web format. We believe that there is a role for PORTOLE alongside other tools intended for the management of more 'static' reading lists.
- Academic staff do not seem to value the resources provided by the RDN, and instead prefer to use search engines such as Google. We hope that the improved visibility of the RDN through the PORTOLE project may lead to increased recognition of the value of this service.

- PORTOLE will only be of true value to users if we are able to expand the system to incorporate additional search targets. Users have particularly flagged the need for the inclusion of journal articles. Potential exists to take these requirements forward, but additional thought would need to be given to the information architecture of the system. Consideration would also need to be given to other projects currently underway at Leeds, in particular plans for the implementation of a 'Library Portal'. We need to establish where and how PORTOLE fits into these developments before taking forward any additional development in this area.

## FUTURE DEVELOPMENTS

A number of long-term issues exist in relation to further development of the system. A number of suggestions for further development have already been raised, and whilst these were outside of the scope of the original project, the project team believes there would be some value in investigating these further.

1. The ability to provide the Library with alerts when new items are added to resource lists. This was requested by the Library staff who were involved in the project. There are a number of alerting and reporting tools within Bodington which might be used for this purpose. However, a fuller requirements analysis is required before this development can be taken forward.
2. The addition of further search targets has also been requested. It is possible to add new Z39.50 targets quite easily, and the Leeds team will undertake a scoping exercise to establish a priority list. The Leeds team also intends to investigate the utilisation of an OpenURL resolver to provide functionality for direct linking to journal articles. The University of Leeds will be implementing an OpenURL resolver in summer 2004. Once this is implemented, it will be necessary to review how metadata is being stored in PORTOLE in order to establish how best to link to the OpenURL resolver.
3. The Project has also touched on the issue of relevance ranking. Relevance ranking is a complex area, and very difficult to achieve, as different databases use different ranking algorithms. Combining these is technically impossible without a substantial understanding of the algorithms used. Many of our source databases, such as library catalogues, do not perform relevance ranking.
4. The project also aimed to explore the transferability to other VLE platforms of the model for resource list creation. As both

institutions are using the Bodington system, the project has not explored how the model could be used within other VLE platforms. Bodington does not currently interoperate well with other VLEs. Further funding would be required to extend the model to other VLE systems, and work in this area would be most likely to focus on the area of metadata standards for resource lists.

Developments in this area would create significant added value from the Project for the wider higher education community.

## CONCLUSION

The PORTOLE project has been successful in producing a working system, and positive feedback has so far been received from the focus groups and from those staff involved in testing. A full assessment of the success of the project requires a period of ongoing evaluation, and the project team aims to take this forward over the coming academic year.

The project has assisted in the development of working relationships between the key players; particularly between the VLE Teams at Leeds and Oxford. This can only be beneficial for the ongoing partnership of the two institutions, and for our shared commitment to develop Bodington as an open source VLE. There will be an ongoing requirement for cross-divisional and cross-institutional collaboration in promoting and disseminating the system.