# Effective e-learning Content Discovery Using the Bath Profile

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## Abstract

*This paper describes the work of the UK JISC-funded Talking Systems project. It reports on how Dublin Core elements from SCORM learning objects were used for exposure to a library catalogue running a Z39.50 server complying with the Bath Profile in order to facilitate effective e-learning content discovery.*
***Keywords:*** *Z39.50, SCORM, Bath Profile*

## 1. Introduction

e-Learning is fast becoming a key aspect of learning and teaching in higher education institutions. However, in many universities, systems from several different vendors may be in use: instructional content is being created and delivered using a range of different authoring tools, and stored in a variety of formats and systems.

The standards that make up the SCORM aim to address this problem of multiple content formats and VLE platforms. However, whilst the mantra of the standards guru (reusability, accessibility, interoperability, and durability of content) is music to the ears of academics; even the strictest compliance to these standards will not change the barriers faced in *locating* e-learning content in the real world.

Imagine, for example, an institution where the SCORM has been implemented as a standard format for non-collaborative e-learning content, but where there are several different VLE platforms in use. A lecturer from, say, the School of Computer Science wants to offer some e-learning materials for her students who are struggling with a mathematical concept that she is unable to cover during her teaching, and yet are essential to their progress with an assignment she has set. She might do the following:

- Collate her existing resources on the topic
- Find a list of resources available from the library
- Use e-learning resources such as formative assessments that have been developed by her colleagues in, say, the School of Mathematics

The first two tasks are something that academics are very familiar with, and pose no problem to our lecturer. But how can she search for suitable e-learning content for her students? She doesn't have a username & password for the VLE in use in the School of Mathematics, and so cannot see what content is there.

Talking Systems aimed to address this problem of searching for and retrieving SCORM content from distributed and heterogeneous sources, without the need for centralized repositories. The same search that our imaginary lecturer performs in the library catalogue would return not just bibliographic references, but learning content too.

## 2. Project processes

### 2.1. SCORM content creation

We first created a highly granular asset base focused around key skills (information skills, essay writing, personal development etc.), which was used to create SCORM tutorials developed in Macromedia Authorware.

### 2.2. SCORM Dublin Core extraction

At the outset we assumed that we would be able to set up a connection between the Domino server and the Sirsi Unicorn library catalogue server in order to 'pump' metadata from our SCORM tutorials into new library records. For this purpose we started using Percussion Notrix, a Lotus Domino integration tool that automates ODBC scripting and allows the rapid development of connections between databases. However, we found that data pushed to a library catalogue bypasses important load and management functions, such as:

- authority file checks (that define consistency of data);
- loan status (e.g. 'on loan', 'reference only');
- indexing policies.

So we turned our attention to creating MARC records that could be incorporated into the existing load process, using the crosswalk for Dublin Core to MARC provided by the Library of Congress at the following address: http://www.loc.gov/marc/dccross.html

### 2.3. Implementation of the Bath Profile

Despite being a mature and stable protocol, Z39.50 is very poorly implemented, and as such can be rather frustrating to use in practice. A number of profiles have therefore been developed in order to explicitly structure client – server communication ('origin' and 'target' respectively in Z39.50 terminology) within confined

parameters so that both use the same semantic assumptions. One such profile is the Bath Profile (http://www.nlc-bnc.ca/bath/).

We were lucky to benefit from the help of Slavko Manojlovich from Memorial University, Newfoundland for Bath Profile implementation. His work primarily involved:

- Defining indexing policies
- Defining the Bath Profile attribute sets
- Creating a separate Z39.50 gateway for e-learning objects.

This latter enabled us to 'trap' all records for e-learning content in a separate catalogue so that users could search exclusively for content held in Learning Management Systems as opposed to traditional library content.

### 2.4. Testing

Using a Z39.50 client, we could now connect to multiple library catalogues and search for bibliographic references alongside our SCORM resources:

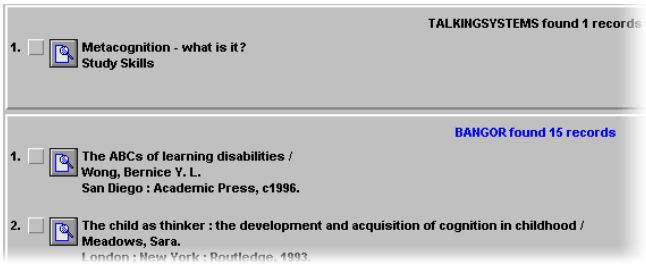


Figure 1: using the SIRSI WorkFlows Z39.50 interface to perform a title search in two separate library catalogues returns records for learning objects (top) and books (bottom).

## 3. Concluding remarks

Whilst the project has enabled the seamless search for e-learning content alongside traditional library content across wide environments, it requires users to configure a Z39.50 client. It is anticipated that the real value of the project will be realized in exposing these same Z39.50 services to automated gateways (such as the Arts & Humanities Data Service - http://prospero.ahds.ac.uk) that will allow functionality via a common web browser.

In order to make the system easier to administer, the automation of the Dublin Core Element harvesting also needs to be addressed. These issues will be discussed more fully in subsequent project documentation and dissemination activities.

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