Review of REPLIKA project and relevance to Streamline

1. Summary

REPLIKA (European **Rep**ository for **L**earning **I**nnovation and **K**nowledge **A**cquisition) was a [Leonardo da Vinci Pilot Programme](#) running for 3 years in the period 2003-06. UK partners were at Huddersfield University, Doncaster College and University of Hull. European partners were: [Fundacion Universidad-Empresa Region de Murcia (Spain)](#), [Odense Technical College (Denmark)](#) and [Technical University of Liberec (Czech Republic)](#).

The work built on an earlier project (HLSI – **H**igh **L**evel **S**kills for **I**ndustry) when much of the technical infrastructure was developed. Learning Objects could be catalogued and submitted to a Digital Repository using the familiar Microsoft Word interface. Retrieval was intended to be achieved in similar fashion or by direct access through a web interface.

2. Technical Review

The overall process may be thought to encompass a number of stages:

1. Creation of a Learning Object
2. Addition of Meta-tag information to the Learning Object
3. Submission of a Learning Object to the Digital Repository
4. Searching for Learning Objects within the Digital Repository
5. Retrieval of Learning Objects
6. Use of Learning Objects within an appropriate delivery system

No attempt will be made here to define the term Learning Object. For practical purposes, it may be considered to be a self contained (digital) unit of learning (of any size but usually fairly granular) which has been categorized using meta-tags and which conforms (to some degree) to SCORM, IMS and Dublin Core meta-tagging standards.

2.1. Creation of a Learning Object

Software (called e-Cat) developed by KaiNao (and its predecessor companies) is used to create, catalogue and package the self contained reusable Learning Object. On installation on a Windows based PC, a macro is created which runs from within Microsoft Word. The use of this software is, therefore, relatively, user-friendly as little training time is required to extend the users knowledge of Word. In Word, objects (audio, video, animation, etc.) are considered to be embedded within the document so that, once saved, a single file with a ".doc" extension contains all materials. E-Cat works by decomposing the document, converting it to an html file and creating links to referenced (now separate) objects. This is exported in standardised formats and "zipped" as a single file with XML "manifest" information describing the objects contents and which can be used by the receiving application to unzip and use the materials.

2.2. Addition of Meta-tag information to the Learning Object

Metadata entry is initially done by the Learning Object author. It can be achieved either using a "Wizard" or completion of "tabbed" data entry forms. The quality of metadata reflects the abilities of the author in determining appropriate synonyms and correctly entering adequate descriptions for the key areas. The ability to search for, and retrieve, learning objects is totally dependent on the Quality Assurance of this process. Experience within the REPLIKA project has shown that user authored metadata is insufficient to provide "keyword" search information for later users.

2.3. Submission of a Learning Object to the Digital Repository

Once packaged as a single ZIP file, with SCORM/IMS compliance and XML manifest, submission to the repository was intended to be automatic, directly from the user using e-Cat. In practice, throughout most of the project duration, it was achieved by manual intervention of KaiNao technical staff on receipt of e-mail (or other) submission.

2.4. Searching for Learning Objects within the Digital Repository

Given the poor quality of meta-data, it was virtually impossible to find appropriate materials for reuse. This was also exacerbated by the paucity of materials in the Repository. Search and Retrieval was achieved by visual Browse of all available materials.

2.5. Use of Learning Objects within an appropriate delivery system

There was poor understanding, particularly among the Czech, Danish & Spanish partners, of the complementary nature of a delivery system and many believed that the Repository also fulfilled that role. As an exercise in achieving this, an object which had been created at Leeds Metropolitan University was packaged using e-Cat and imported into WebCT CE4. It was subsequently unzipped as a WebCT Content module with no difficulty.

3. Initial observations: potential start-point for Streamline

3.1. Metadata

There is a requirement for specialist knowledge with cataloguing and indexing expertise. This should supplement, at a very early stage, the initial user meta-tagging. This must be done before Repository submission and built into existing work-flows.

3.2. Use of e-Cat software

There is no apparent reason why this could not be deployed widely for creation of Reusable Digital Learning Objects. A training programme would be required.

3.3. Reusable Digital Learning Objects

The time is now ripe for internal debate within the university in order to develop a strategy for generation and storage of Digital Learning Objects. Key to this debate is an understanding of the relationship between a repository and a delivery platform (e.g. Blackboard Vista aka Leeds Met X-Stream) and a broad interpretation of the term.

3.4. Skills for Learning

This Leeds Met web based resource was well ahead in thinking when it was first developed. At that time, neither Repositories nor e-Learning delivery platforms were well developed. This resource should be reviewed in light of current thinking and technologies available.

3.5. Blackboard Vista aka Leeds Met X-Stream

Whilst this product has a very underdeveloped Repository structure, thought should now be brought to bear on the strata which might be appropriate for sharing and cascading of shared digital objects. What philosophical issues need to be debated in order to encourage staff to consider sharing materials? Learning Modules are a new feature of Vista and could be easily reused within and cross disciplines.

3.6. Multimedia Authoring

Until, and unless, Leeds Met develops a unit of specialist staff with multimedia authoring skills, the university is in danger having a repository of low quality materials (even if they are well catalogued and easily retrievable). Materials should be of high quality, interactive and engaging and address accessibility issues.

3.7. Common academic areas across the whole university

Most of the universities academic provision has common needs in areas such as PDP (Personal/Professional Development Planning), Research Methods, CPD (Continuous Professional Development), Independent Study Modules (aka Dissertation). This is ripe for a shared Repository.

Review of materials collected from Blackboard e-learning conference

Software vendors and sponsors provided an opportunity to evaluate new tools:

Media Site

This product enables recording of lectures for subsequent playback within a web environment. John Lynch is now evaluating this. There is no reason why we should not be considering recording key lectures and storing them for reuse.

Blackboard Scholar

This is a product within Blackboard which begins to do similar to de.li.cious, Digg and other social book-marking systems. This social book-marking could easily be interpreted as more flexible metatagging and should be explored (parallels with "folksonomies").

Learning Objects Inc

This organisation has an add-in to Blackboard called Campus Pack. Within it there are 5 units:

1. **Teams LX** enables group learning through Wiki sites. Staff can organize students into groups and assign each group to jointly author a dynamic website with multi-media content. Staff can view each group member's contributions and grade them accordingly.

2. **Journal LX** uses blogging as a learning tool. Students can gather information and reflect on course-related topics and assignments. Students can review and comment on their peers' postings, and staff can participate with students in the evolving dialogue.

3. **Podcast LX** integrates pod-casting into an online course environment without requiring additional infrastructure. It allows staff and students to instantly create and subscribe to audio feeds.

4. **Expo LX** uses Blogs and Wikis as community tools. Both students and staff can author content in the form of personalized blogs and websites. The personal sites can be shared within the campus community via Blackboard's portal system.

5. **Search LX** allows full-text searching across course content.

Blackboard Backpack

This product will allow students to download materials from Blackboard onto a laptop or PDA, work on them off-line, then re-synchronise and upload back to Blackboard. We might explore students downloading independent learning materials as Re-useable Learning Nuggets. It integrates well with Tablet PC usage. They can take notes on top of staff presentations. Also includes a way of managing and combining all course schedules, assignments, tasks, and organizational activities with student personal calendar into a single schedule.