Executive Summary

The evidence base

The requirements document has been produced on the basis of

- telephone interviews with 18 content publishers;

- face-to-face interviews with 7 VLE suppliers;

- a *Technical Discussion and Rationale*, analysing some of the issues involved in the implementation of current specifications.

General requirement for the project

A content packaging profile is required because:

- there is a multiplicity of content standards currently available, creating confusion over which standards to use;

- standards are often inconsistently or incompletely implemented;

- current standards have generally not been developed with schools in mind and may therefore not provide functionality required in the classroom.

This confused technical environment has created a detrimental effect on the market:

- some publishers find that they have to package their content in different ways for different VLEs, involving unnecessary expense;

- more commonly, publishers avoid advanced functionality which might play inconsistently in different platforms;

- publishers for whom advanced functionality is intrinsic to their products are effectively excluded from the market in VLE-compatible content;

- the flight from advanced functionality prevents the development of innovative activity-led content and tools for the creation of rich, user-generated content;

- the lack of content packaging standards which allow interactive content to be disaggregated and remixed prevents the flexible use of learning software in the classroom and removes any business case for VLE suppliers to develop advanced classroom management functionality;

- confusion over the classification and tagging of content creates barriers to the development of effective search and distribution systems;

- the lack of plug-and-play interoperability places extra demands on schools and Local Authorities themselves to manage the integration of different products.

In broad terms, a content packaging profile designed to address these issues therefore needs:

- to produce a single profile which unifies and clarifies alternative specifications in a manner that can support a future conformance and kite-marking regime;

- to ensure that the profile is sufficiently simple to maximise adoption;

- to ensure that the profile delivers a level of integration that supports compelling digital pedagogies.

There is a tension between the second and third of these objectives. This tension can be resolved by regarding the outcome of this project as the first in a multi-step process. The first version of the profile should be relatively simple to implement, building momentum for adoption while at the same time creating a foundation for the introduction of more advanced functionality in future versions.

Key requirements for the first version profile

There are 56 specific requirements which fall into the following broad categories.

Ensure that standard content runs reliably on VLEs
Where technical difficulties have been identified, the profile needs to clarify the use of commonly used specifications to ensure reliable, plug-and-play interoperability.

Clarify the classification of content to support efficient search and discovery
The profile needs to clarify the use of metadata, ensuring that content is tagged consistently and can be discovered easily.

Establish effective runtime exchange of basic data
The profile needs to allow the exchange of basic data between VLEs and plug-in learning content. In particular, it should allow:

- the saving of state (so that an activity started in class can be finished for homework without losing any work);

- the reporting of scores to a common mark book.

Create a robust disaggregation model
The profile needs to provide a clear disaggregation model, so that, where publisher permissions have been given, content can be broken apart into individual activities, allowing flexible use of content in the classroom;

Protect publishers' copyright and branding
The profile needs to ensure that publishers' legitimate interests in their intellectual property are respected. This includes the appropriate display of copyright notices, the branding of content and, under the disaggregation model above, ensuring that content cannot be broken apart beyond a level permitted by rights holders.

Requirements for future versions

In the interests of achieving a first version profile that is pragmatic and relatively easy to implement, there are several more advanced requirements which have been left out of the first version profile, but which should be revisited in future versions.

Interoperable re-aggregation of content

Having established a robust disaggregation model in the first version profile, there is strong demand from both publishers and VLE suppliers for specifications to support tools for the remixing of content by teachers and other intermediaries.

Appropriate DRM solution

Most suppliers believe that an appropriate, non-intrusive mechanism for the transparent authorisation of content is required to support the full implementation of a model for the distribution of disaggregated content. It is desirable that there should be an early convergence of existing single sign-on solutions with emerging VLE functionality.

Incorporation of Common Cartridge and Question and Test

IMS Question and Test Interoperability (QTI) provides a key component of the Common Cartridge packaging specification. While publishers have limited interest in QTI for distributing their own content, it is likely to have an important part to play in the creation of user-generated quizzes, particularly following the launch of Microsoft's Semblio, a CC authoring system. Even leaving QTI to one side, the convergence of SCORM and Common Cartridge would itself represent a highly desirable rationalisation of the standards environment.

Returning student product to the VLE

IMS Content Packaging and SCORM have been developed primarily for use in HE and corporate training environments, with the result that creative and social pedagogies are not strongly supported. The ability for creative learning tools to return student product to the VLE for marking, sharing or posting to an e-portfolio would support the development of innovative applications and challenge the misconception amongst some teachers that content interoperability standards are predisposed towards "instructionalist" pedagogies.

Support for multi-player and collaborative activities

SCORM has been criticised as a technology which supports only a single, self-paced learner. Relatively straightforward extensions to the specifications would allow for the creation of multi-player, social activities.

Support for out-of-browser applications

While some VLE providers are wary of venturing out of the browser, there is interest amongst the publishing and tools development communities for standards that would support the management of out-of-browser content.

Crispin Weston
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