

Learning Technology Standards & Specifications:

Making Sense of Alphabet Soup

Tom King
Chief Consultant
Mobilemind.net



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Example – Content & LMS Communication Standards

Demo-SCORM Shareable Content Object (SCO) or AICC Assignable Unit (AU)



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My Qualifications on Learning Technology Standards




Tom King
Chief Consultant
<http://mobilemind.net/>

- M.A. Instructional Design
- CBT/Elearning developer
- AICC Participant since 1992
- ADL Technical Work Group since SCORM 1.0 (2000)
- Co-author of base document for IEEE LTSC 1484.11.2 (ECMAScript API)
- Originator & Project lead for PENS (Package Exchange Notification Services)

“I feel your pain.”


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Example – Content & LMS Communication Standards



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Today's Take-Away's: Elearning Technology Standards



- Standards You Should Know and Use Now (and why)
- Ways Adobe Products Support Elearning Standards
- A Few Standards to Watch

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Technology Standards Relevant to Elearning

- **AICC**
 - CMI-001 CMI (LAN, HACP, API)
 - CMI-010 PENS
- **ADL**
 - SCORM 1.2, SCORM 2004
 - CORDRA
- **IEEE LTSC**
 - 1484.11.x – CMI Data Model, ECMAScript API, CMI Data XML Binding
 - 1484.12.x – LOM Data Model, LOM XML Binding
- **IEEE / SISO**
 - DIS, HLA (IEEE 1516)
- **S1000D**

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Standards.

- Examples

Content and LMS Interoperability Standards

- AICC CMI-001 and SCORM 2004
- These standards focus on
 - A Data model to represent student progress within a lesson (or AU or SCO)
 - A Data model to represent a course structure (collection of lessons AU's/SCOs)
 - A run-time environment (services/API) to enable lessons to communicate the data model elements
- SCORM adds descriptive metadata at asset, SCO & course level

AICC is still working on that, though it too will be LOM-based

Why use technology standards for learning?

Who benefits from standards?

- Creators of Custom Content
- Content Titles Publishers
- Enterprises
- Government (and taxpayers)

What are the key standards to use now?

- ADL SCORM 2004 (3rd Edition - released last week)
- Advanced Distributed Learning Shareable Content Object Reference Model
- Three key facets:
 - Metadata for assets, SCO's (See CAM- Content Aggregation Model)
 - Course Packaging **with** Simple Sequencing & Navigation (SeqNav)
 - Data Communication (RTE- Run time Environment)
- Stable. DoD purchasing directives require it. Moving to ISO
- <http://www.adlnet.gov>

What are the benefits of standards?

- Create a market for buyers and sellers
- Offer alternatives now & in the future
- Simplify integration
- Focus competition
- Reduce costs

What are the key standards to use now?

- AICC CMI-001 version 4
- CMI=Computer Managed Instruction
- Originally LAN-based
- Preferred protocol is HACP (aka, "Appendix B")
- Hypertext AICC Communication Protocol
- Key Strengths:
 - Stability (LAN 1993, web 1997)
 - Widely supported
 - HACP easily implemented w/ or w/out browser, avoids scripting issues
- <http://aicc.org>
- See *Publications*, see *Certified Products*

Recommendation for LMS-Content Interoperability

- SCORM 2004 3rd Edition (released October 2006)
- AICC HACP Binding

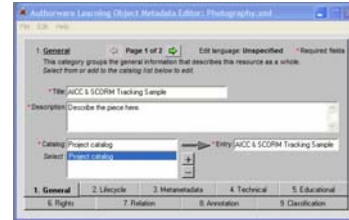
- Which is better? It depends on:
- Clientele/Environment/Requirements
 - DoD Purchasing Directive specifies SCORM, many other agencies prefer it too
 - LMS and Content in different domains? AICC may be better
 - Content Host (eg running in a browser)- SCORM requires DOM and Javascript
 - Criticality of metadata & openness of content
 - Developer, organizational, or IT/enterprise preference
 - Major LMS products support both, but some will not

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LOM Example – Authorware Learning Object Metadata

- Demo



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Standards You Should Use Now

- AICC CMI-001 (CMI/LMS Content Interoperability)
or
- SCORM 2004
- IEEE LOM (Learning Object Metadata)
- AICC PENS (Package Exchange Notification Services)

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How are *learning* standards relevant to Adobe products?

- Standards-capable products
 - Just about everything (including: Acrobat, Acrobat Connect, Authorware, Captivate, ColdFusion, Dreamweaver, Flash, Photoshop)
- Product Extensions to support *learning* standards (Adobe &/or 3rd party)
 - Authorware
 - Dreamweaver
 - Flash
- Integrated support for learning standards
 - Authorware
 - Acrobat Presenter
 - Captivate 2

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LOM – Learning Object Metadata *IEEE 1484.12*

- Metadata- data about data
- Think “card catalog” entry
- Builds on *Dublin Core* (see “DCMI” or <http://dublincore.org>)
- Structured for learning objects
- Underlying metadata format for SCORM (*and* AICC LOM Profile)
- Rigorous use dramatically enhances reusability & maintainability
- See <http://ieeeltsc.org>

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Demo – Metadata, Manifests & Communication



- A peek at manifest and metadata XML
- Adobe Presenter (*the product formerly known as Breeze Presenter*)
- Adobe Captivate 2

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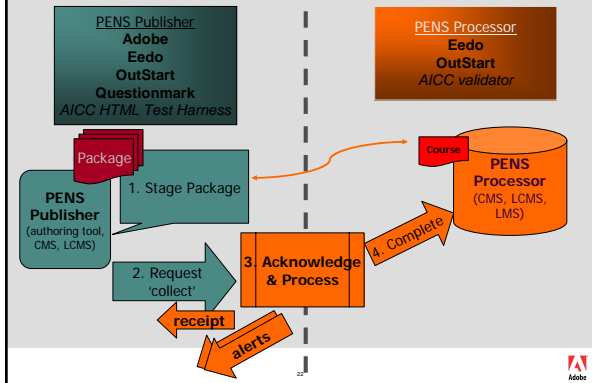
Package Exchange Notification – What is it?

- “A better way to get content to an LMS.”
- Guiding Principles for PENS
 - Focus on learning & training uses
 - Simplify deployment for authors (AICC and SCORM ...)
 - Use established & understood technology
 - Easy for vendors on all sides to implement & interoperate
 - Enable evolution & extension
 - Fast track with AICC, move on to IEEE
 - Separate concept (model) from binding (transport)

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The PENS Plugfest



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PENS is an Official AICC Spec

- AGR011 - CBT Package Exchange Notification
 - <http://aicc.org/pages/download-docs-index.htm#AGR>
- CMI010 - Package Exchange Notification Services
 - <http://aicc.org/pages/download-docs-index.htm#cmi010>

Both approved in June of 2005
- AICC Packaging format is ready for ballot - was approved in September 2006

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User Interface and “Actionable” Information

The screenshot shows the 'Test harness to generate PENS collect command' form. It includes fields for 'target system URL', 'pms-version', 'package-type', 'package-type-version', 'package-format', 'package-id-scheme', 'package-id', 'package-url', 'package-url-ssl', 'package-url-account', 'package-url-password', 'package-url-expiry', 'class', 'system-user-id', 'system-password', 'coverage', and 'alerts'. There are 'Send command' and 'Generate URL' buttons at the bottom.

PENS 1.0 free Test Harness: http://aicc.org/pages/pens_sample.html
now includes PHP server code for validating PENS commands

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Commercial Implementations



<http://pens.lms-testing.com/>




Captivate 2 – PENS Demo

Live Demo



The screenshot shows the 'Publish' dialog box in Captivate 2. It includes a 'Publish' section with 'Project Path' and 'Send' options. There is a 'Publish' button and a 'Learn more about additional...' link. The 'Publish' section is expanded to show 'FTP options' with fields for 'Project Path', 'Server', 'Directory', 'User name', 'Password', 'File type', 'Ignore username and password', 'Output Options' (Do files, Full screen, Send PENS guidelines), and 'Flash version'. There is also a 'Learn more about additional...' link.

Next Steps for PENS

- "Compelling Event" at Trade Show
 - Increase visibility to elearning community
 - Drive preparation & interoperability between vendors
- Improve self-test tools
- Clarify staging issues
 - Consider direct transfer of packages (no staging)
- Repeat the Plugfest
- Recommendations:
 - *Defer other bindings/Web Services*
 - *Use case / whitepapers on value/ROI*
 - *Think outside the (form) box for UI*
- Evaluate migration of spec to IEEE
- Other?

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Questions?


Tom King

- <http://mobilemind.net>
- tking@mobilemind.net

Standards Info


- <http://www.adlnet.gov>
- <http://aicc.org>
- <http://ieeeltsc.org>
- <http://www.sisostds.org>

*A 10 point footnote can go here, if necessary




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Standards to Watch

- S1000D <http://www.s1000d.org>
 - Electronic document architecture from European Aerospace & Defence
 - SGML heritage, Now XML-based
 - Focus driven by logistics, maintenance and *applicability*
 - Examples: Here is the manual for your second battleship
 - Users: US Internal Revenue Service, Dept. of Defense, UK Type 45 Frigate
- ADL CORDRA <http://cordra.net/>
 - Content Object Repository Discovery and Registration/Resolution Architecture
 - A means to register content in repositories and link repositories
 - Complimentary to SCORM (place to store and/or find SCOs & courses)
- SISO – SCORM Simulation Work Group <http://www.sisostds.org/>
 - How can multi-user networked simulations work in a SCORM environment?

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