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S1000D Support for Training: *SCORM Overview, The Bridge Project and Learning Content Demos*

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Agenda



- ADL – MOU with S1 Council, Purpose
- Understand basic Sharable Content Object Reference Model (SCORM Specification)
 - Concepts
 - Terminology
 - Way Ahead
- Understand S1000D to SCORM Connection
- Bridge Project discussion: problem statements, tasks
- Bridge Project open source demos:
 - SCO Workbench, Transformation Toolkit, ECP Web Service

**ADL – S1000D Council
Memorandum of
Understanding**

Signed March, 2011

- **Main MOU Points:**

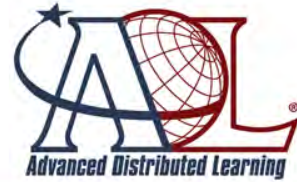
- Continued refinement of technical training support in S1000D.
- Continued harmonization of S1000D and SCORM that leads to data readiness and learning content management cost savings.

- **Current MOU-based Activities**

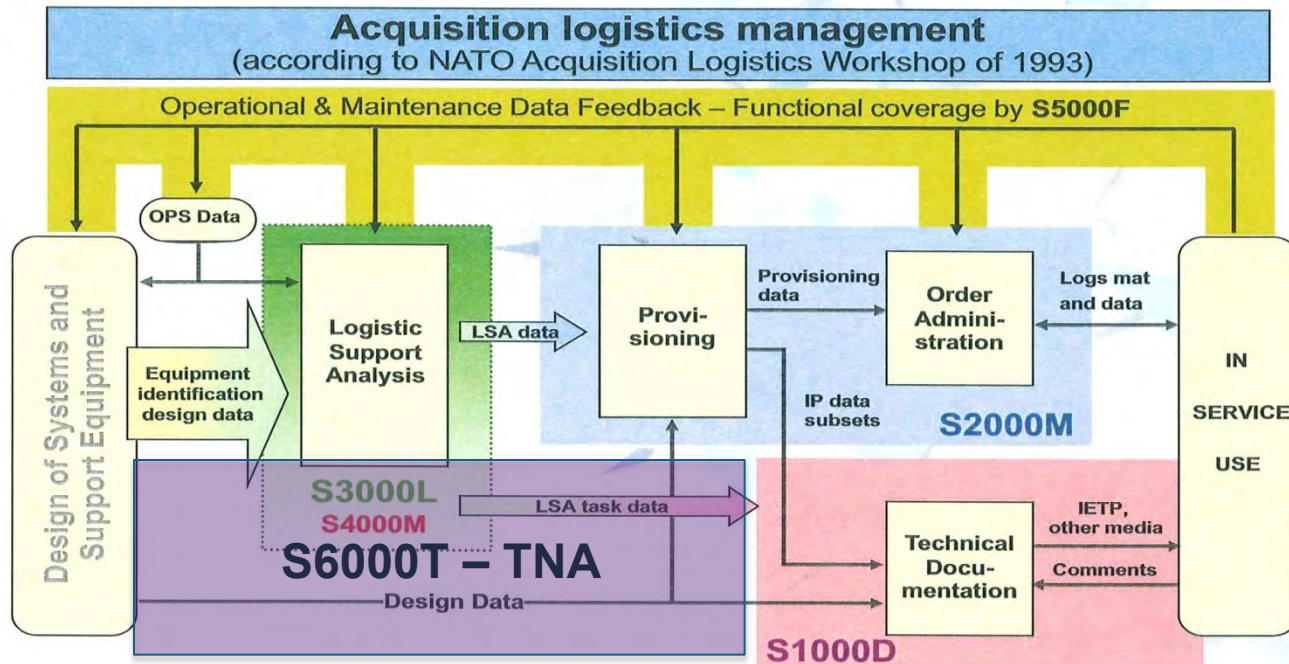
- **Bridge Project** – demonstrating shared markup, API and open source tool development packaged to improve life cycle management of technical training content.
- **Naval Postgraduate School Request for Proposal (Monterey, California)**
 - Acquisition research on impacts of using the ASD specs for defense acquisition management and integrated data environments. Create framework for S6000T (Manpower, personnel and training needs analysis mapped to systems acquisition). Proposal submitted. Decisions expected Sept 2011.



Training Analysis in System Acquisition

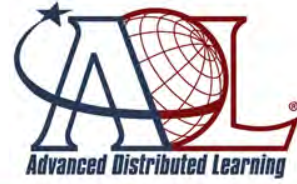


Acquisition Logistics Main Business Processes





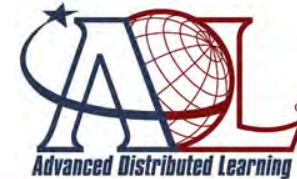
Advanced Distributed Learning Initiative (ADL)



- Founded in 1997: standardize and modernize training delivery for U.S. Department of Defense (DoD)
 - Develop and implement learning technologies for DoD and the federal government
 - Collaborate with government, industry, and academia to promote international specifications and standards for designing and delivering learning content
 - Operate under the direction of the DoD Office of the Under Secretary of Defense for Personnel and Readiness (OUSD P&R)



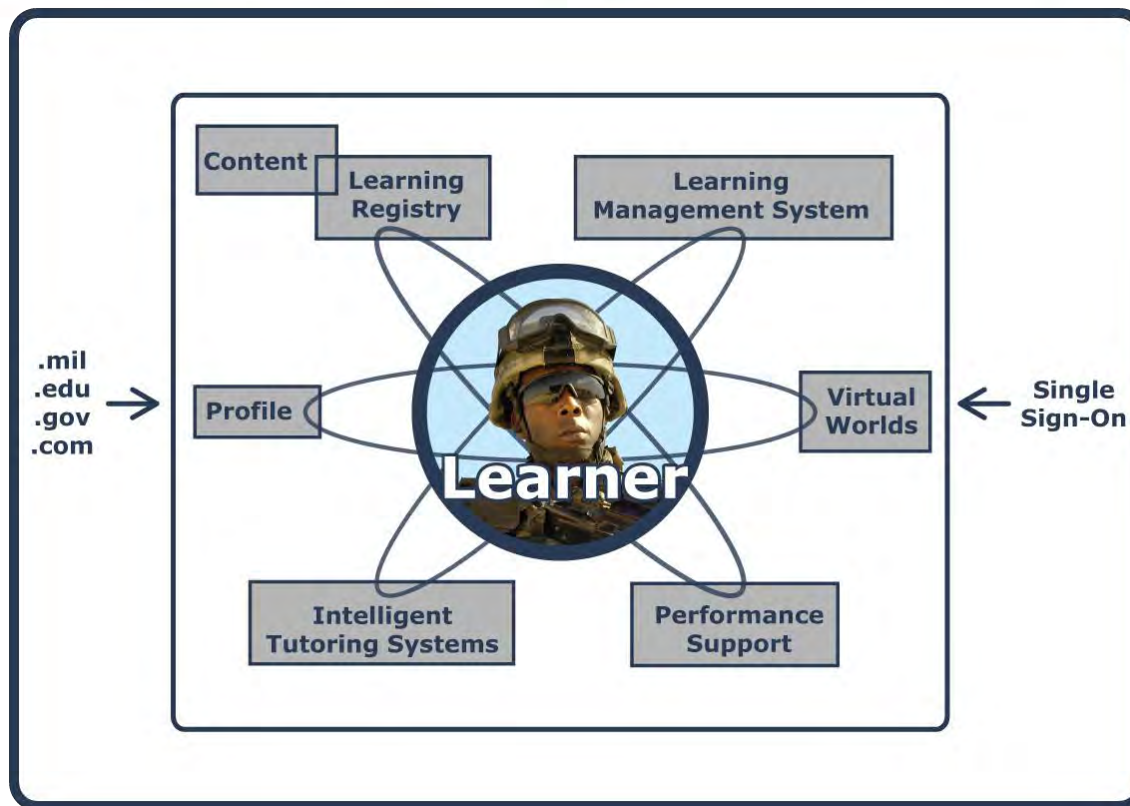
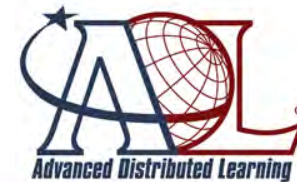
High Level Requirements



- **The “ilities”**
 - Accessibility
 - Interoperability
 - Durability
 - Reusability
- Enable Personal Learning Assistant (PLA)
- Address legacy architecture gaps



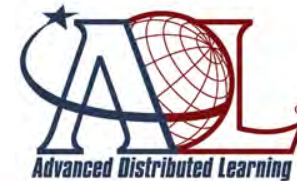
ADL Vision - Past & Future



Provide access to the highest quality education and training,
tailored to individual needs,
delivered cost effectively, anywhere and anytime.



A Little History - SCORM[®]



- De facto global learning standard
- Initiated in 1997
- Packaging Content
- Describing Content w/ Metadata
- Run-Time Environment
- Sequencing & Navigation



Sharable Content Object Reference Model (SCORM)

- Exchange courses between Learning Management Systems
- Reuse content pieces across different courses
- **Track a learner's progress through computer-based instruction**
- Sequenced content tailored to the learner



Basic SCORM Building Block: Asset



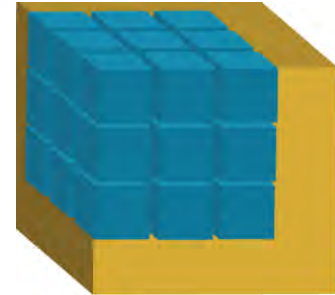
- Electronic representations of media such as text, images, sound, or any other piece of **data a web client can deliver (simply...an asset is an electronic file)**.
 - A data module would be an asset.
- The most basic building block of content
- Can be reused in many different contexts and applications



Sharable Content Object (SCO)



- SCO: one or more collected assets that become an independent, defined piece of instructional material
- The smallest logical unit of information you can deliver to your learners via an LMS
 - In technical terms, a SCO is defined as the only piece of information that uses the SCORM Application Programming Interface (API) for communication with an LMS.

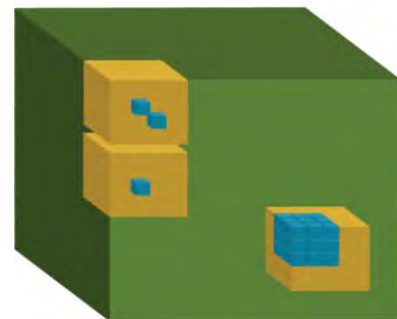
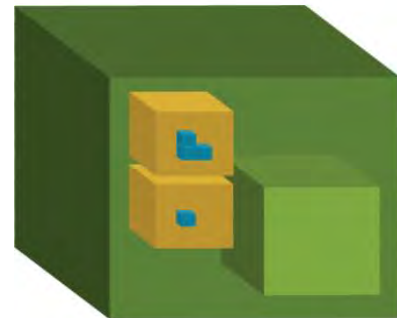
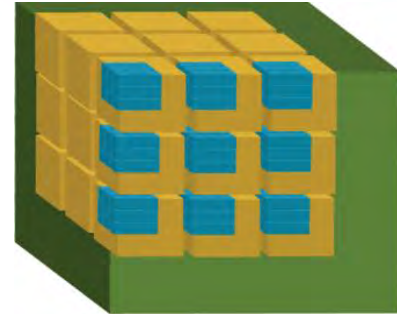




Aggregation

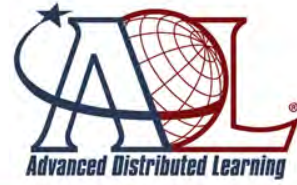


- Referenced collection of related content into SCOs
- Used to group related content for sequencing so that it can be delivered to learners in the manner you prescribe



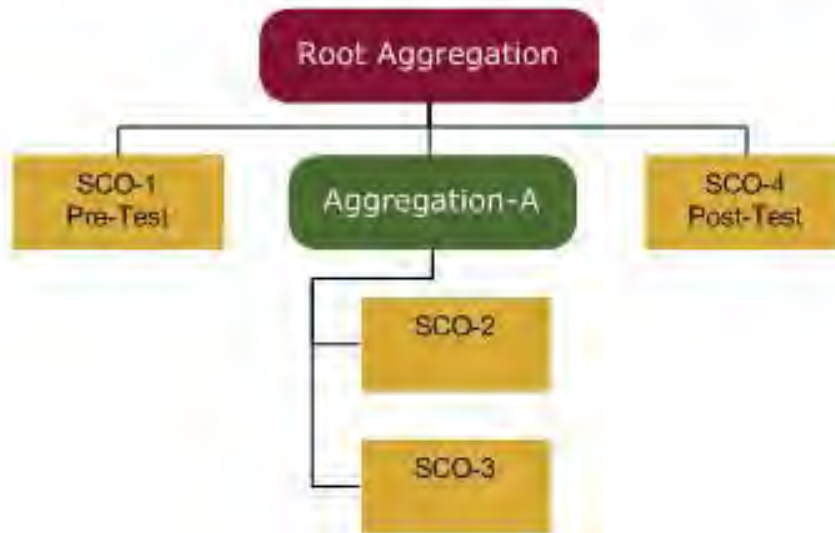


Sequencing



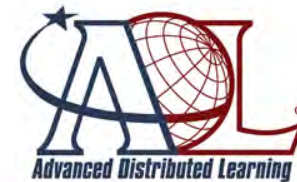
- Ability to prescribe the way learners receive content in an interoperable manner

TEMPLATE 7: Pre- and Post-Test Sequencing (2)





Content Package

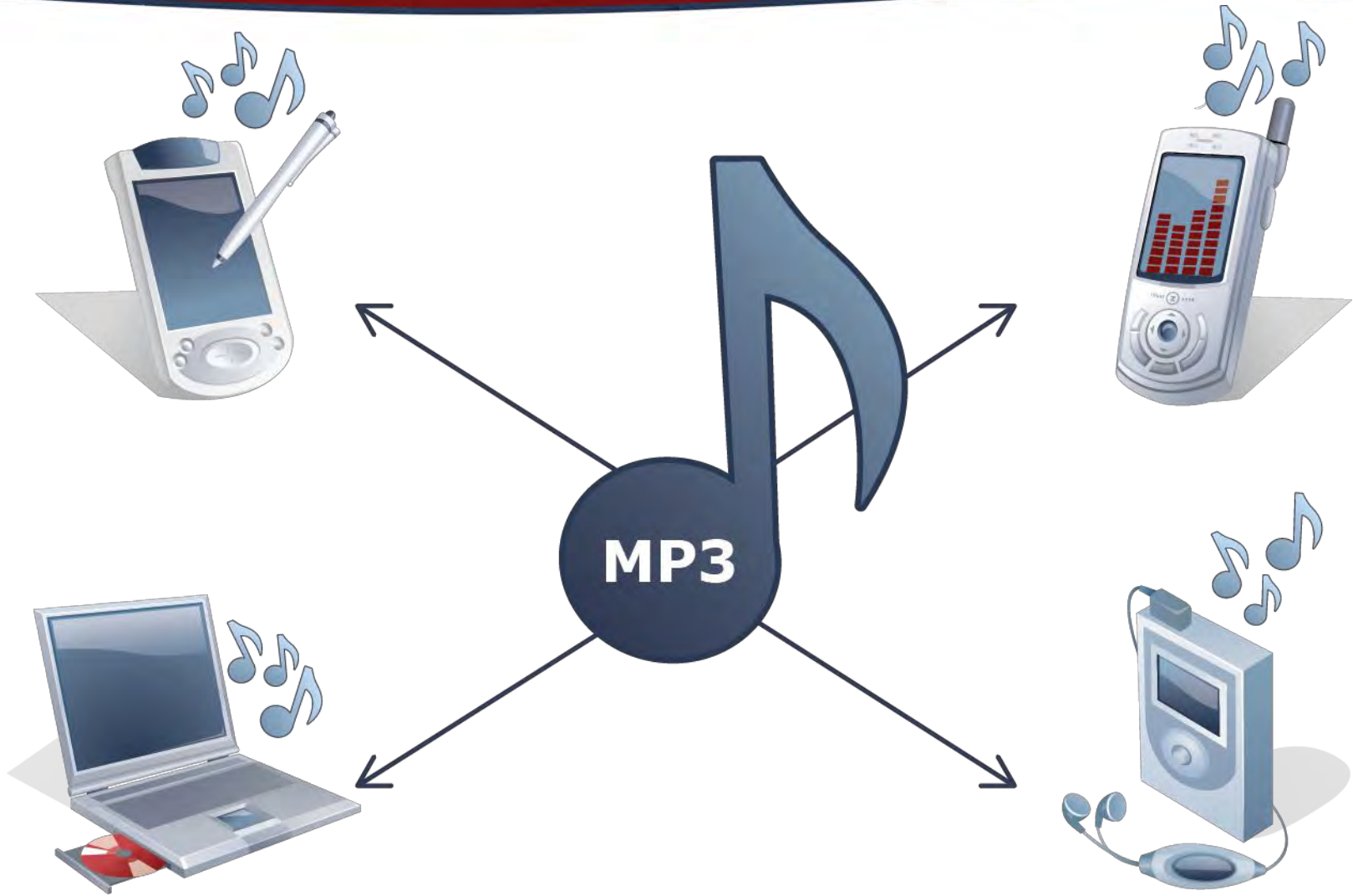


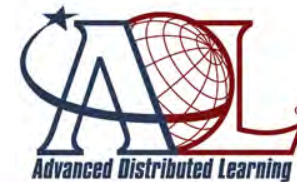
- A standardized, interoperable way to upload content to a SCORM-conformant LMS





Legacy Analogy





- For information on ADL and SCORM:
 - **Web site** - www.adlnet.gov
 - **YouTube** –
<http://www.youtube.com/user/ADLInitiative>
 - **Twitter** - @ADL_Initiative
 - **LinkedIn** – <http://linkd.in/c0iegQ>



S1000D to SCORM Connection:

Why Use S1000D for Technical Training Content?



SCORM Standardization Facts



- No asset (file) naming convention
 - No equivalent “DMC”
 - SCORM is used for *any content*
- No XML markup for content
 - Content is used in any format of choice
- No defined way to “chunk” information
 - No business rules to define what is “re-usable”

These facts are “*intentional*”



Facts about Technical Learning Content



- Technical learning content is based on “authoritative sources” (technical publications, eng drawings)
- Technical learning content must be “maintained” as the product and the technical data change
- Technical learning content is out date quickly if links to authoritative sources are not “maintained”
- Costs go up when “all related technical content” are not maintained by a common specification



Why Use S1000D for Technical Training Content?

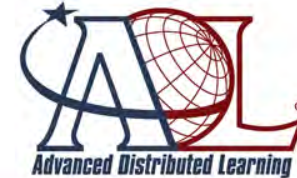


- Technical training must be configured to systems and technical data
- DMC file naming rules promotes content management for technical learning
- IndentAndStatus provides system-specific meta data

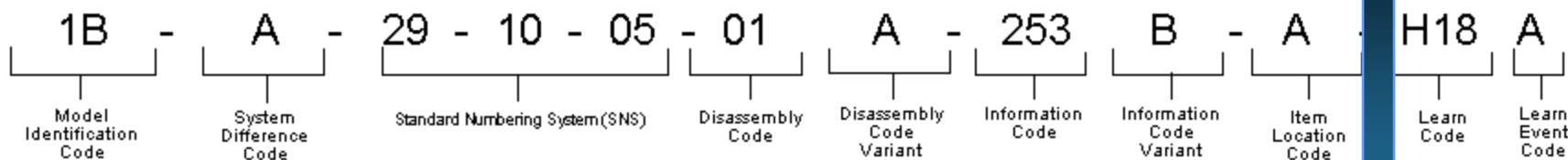
***Let S1000D be the regulating format for
technical learning content
AND
authoritative source technical publications***



S1000D and the Learning Data Module (LDM) Code



- Apply a “Learn Code” and “Learn Event Code” at the end of the data module code
 - “Learn Code” describes the “instructional purpose” of the training content.
 - “Learn Event Code” describes the branch of the LDM used



- DMC keeps authoritative source and training content “synchronized” in the CSDB.



Comparing SCORM to S1000D



Function	S1000D	SCORM 2004
Aggregation	S1000D - PubModule, scormContentPackage, SCO DM	IMS Manifest
Sequencing	S1000D - Process Data Module	IMS Simple Sequencing
Granularization and Reuse	S1000D - Data Modules	Sharable Content Objects
Meta Data	S1000D - <idStatus>, <pmStatus>, <scormContentPackageStatus>	Learning Object Metadata (Institute for Electronics and Electrical Engineers, LOM)
Content	S1000D- Learning Data Modules	No reference to content and format
Reporting and Interfacing	S1000D- Data and communication protocol not specified	IEEE ECMA Script API for Content-to-Runtime Services Communication



S1000D THE BRIDGE PROJECT *SCORM*

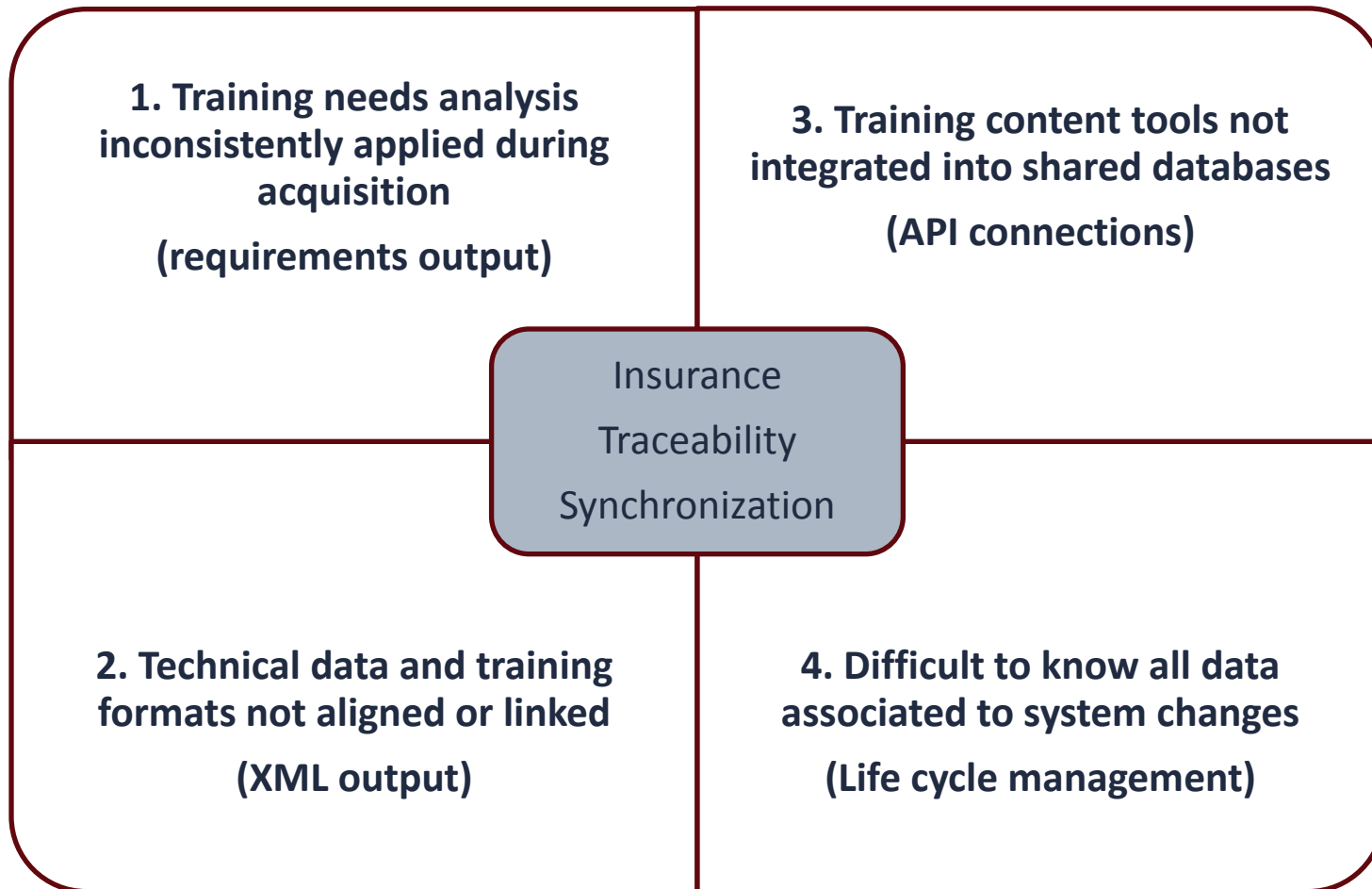
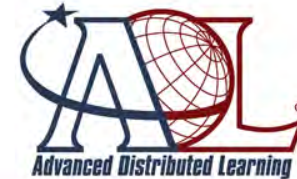
Objectives, Problem Statements, Vision Statement, Tasks

(ADL Insights Announcement about Bridge Project distributed June 6:

http://ymlp.com/zK5nbq_)

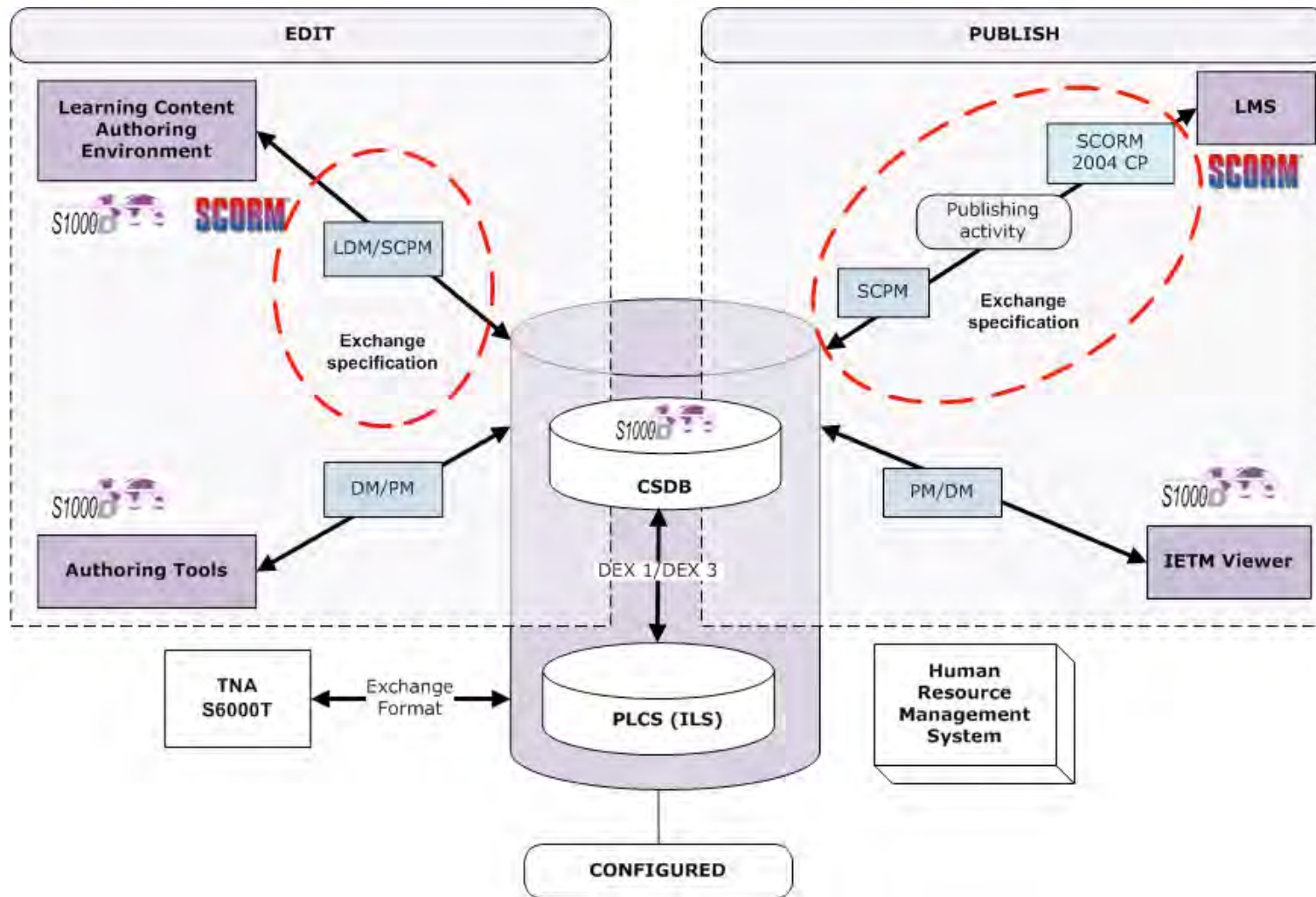
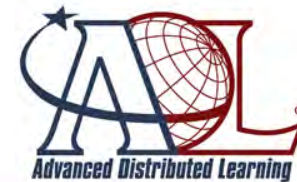


Problem Statements





Identified Gaps

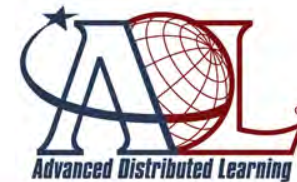




Bridge Project: Core Open Source Tools



- **S1000D Bridge Application Programming Interface (API)**
 - Enables training development tools access to CSDBs.
- **S1000D Learning Content Editor: AIM and SCO Workbench**
 - Enables courseware planning and organization; learning data module creation
- **S1000D Transformation Toolkit**
 - Converts S1000D LDMs/DMs to SCORM, mobile & PDF
- **S1000D Bridge DM Life Cycle Management Service**
 - Identifies all LDMs/DMs in a CSDB linked to a system change proposal



S1000D THE BRIDGE PROJECT *SCORM*

S1000D Bridge API



Bridge API



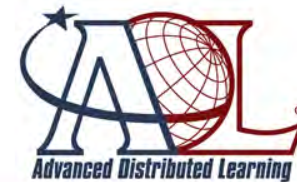
- Specified web service-based communication protocol
 - Expose a set of standard communication protocols for interface with a CSDB Mgmt System
 - Any application needing access to S1000D data – our focus has been learning content authoring tools
- First draft of specification completed
- Pursuing submission to OASIS



Bridge API



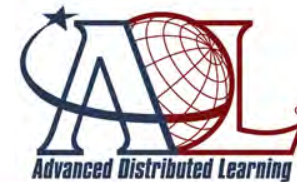
- Common general purpose “functions”
 - Connecting, disconnecting, searching, retrieving
- Testing environments
 - Open Source - SCOWorkbench
 - Government - **Navy’s Authoring Instructional Materials**
 - Industry - Contenta & Corena
- Bridge API *not part of S1000D spec.*
- **Status** – Draft complete. In internal review.



S1000D THE BRIDGE PROJECT *SCORM*

Life Cycle-based Demonstrations:

Authoring
Publishing
Maintaining



S1000D THE BRIDGE PROJECT *SCORM*

Authoring: SCO Workbench



Authoring SCO Workbench



- SCO Workbench – Tool for developing SCORM content (open source - <http://www.openscorm.org/wiki/>)
 - Building support for S1000D authoring
 - Courseware training plans
 - Courseware content
 - Courseware assessments



S1000D THE BRIDGE PROJECT *SCORM*

Publishing:
S1000D Transformation Toolkit



S1000D Transformation Toolkit



- Open source S1000D Transformation Toolkit
- Current transformation support
 - S1000D SCPM to SCORM 2004 3rd Edition Content Packages (in HTML)
 - S1000D to Mobile Platform (Android, Iphone, iPad)
 - S1000D SCPM to PDF (Future)
 - Java-based toolkit
 - Documentation
- **Status** – code and documentation available on SourceForge (<http://s1000d-scorm.sourceforge.net>)
- **Status** – Mobile S1000D Bike Course available at <https://s1000dbikemobile.appspot.com>



Maintaining:

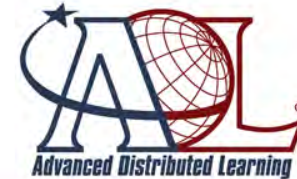
S1000D Bridge DM Life Cycle
Management Service



S1000D Bridge DM Life Cycle Management Service



- Used to locate all DMs associated with a design change
- Uses DMRL to create system tree view
 - Uses SNS for each node
- Ability to select any node for targeted DM query
- Location:
<http://sourceforge.net/projects/s1000dscorm-lcs/>



Thank you!

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