

OSD / AT&L / RTOC
“The Bridge Project”

S1000D-SCORM Application Programming Interface

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Agenda

1. What is RTOC and the Bridge Project?
2. Vision and Problem Statements
3. Year 1 and 2 RTOC Deliverables
4. The S1000D-SCORM API
5. ECP Web Service Demo
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Part 1

What is RTOC and the Bridge Project?



RTOC Essentials

- **What is RTOC?:** A program element in OSD/AT&L funding SYSCOM projects that reduce program ownership costs.
- **What is the Bridge Project?:** An RTOC-funded effort lead by ADL to bring enterprise learning content management and configuration to LCS and to the Navy (Bridge project is 25% of current FY 2010 budget – *the largest RTOC project*).
- **Who are the Bridge Project Participants?** Bridge Project is an effort including ADL, Naval entities, U.S. industry, S1000D spec body, and international partners including Italian industry, Swedish Defence and Norwegian Logistics Office.
- **Bridge Project Schedule:** Two year duration; year one ended 02/03/10; year two projected for 06/01/10.

Bridge Project Beginnings...

- Technical Development Strategy was developed over a 3-month period in Fall 2008
 - Project motivation
 - Project objectives
 - Tactical problem statements
 - Use cases
 - Functional requirements
 - Tasks and Deliverables
- Development strategy became the framework to follow
- Development strategy meeting funded by ADL, Norwegian DLO and Swedish FMV.



Key Bridge Project Tenets

- **Common digital data format:** all program technical data regardless of type formatted in the S1000D specification.
- **Common source database (CSDB):** all program technical data regardless of type managed and produced in a common location.
- **S1000D Bridge API:** program training content developers use tools integrated into CSDB.
- **ECP Application:** programs leverage a web service that identifies all technical data in a CSDB likely to be effected by an ECP.



Part 2

Vision and Problem Statements



Problem Statements

Technical data and human performance requirements are not consistently factored into product acquisition or product life cycle support

Technical data is managed and produced in a variety of formats, not linked together, and not simultaneously managed

Learning content development tools are not integrated into life-cycle-managed technical databases

Technical information managers cannot efficiently identify what product support content may be impacted by an engineering change proposal



Vision and Main Gap

Strategic Vision

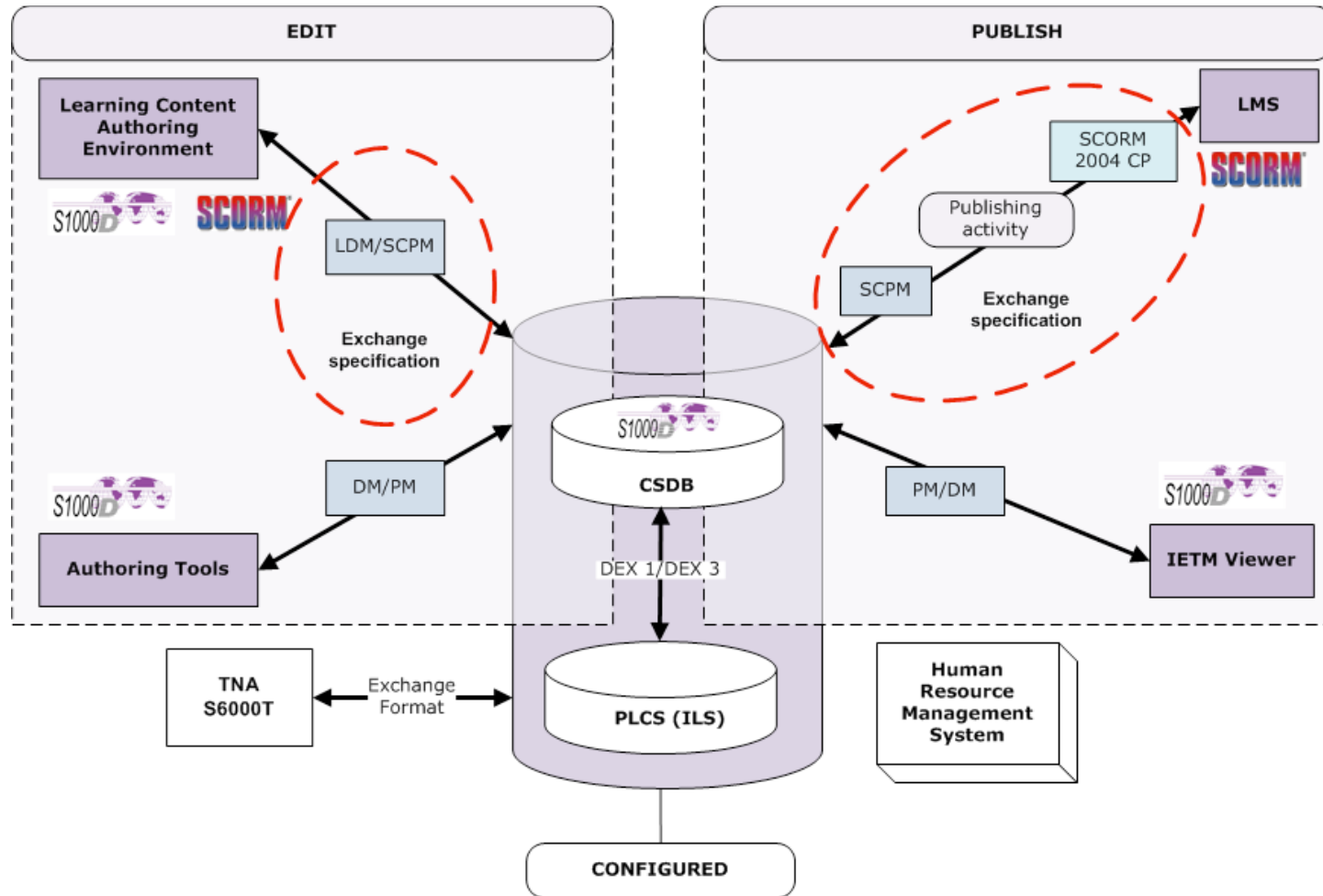
- Learning Data and Technical Publications Data are developed and maintained in a common source database and based on consistent Life Cycle Support information

Main Gap

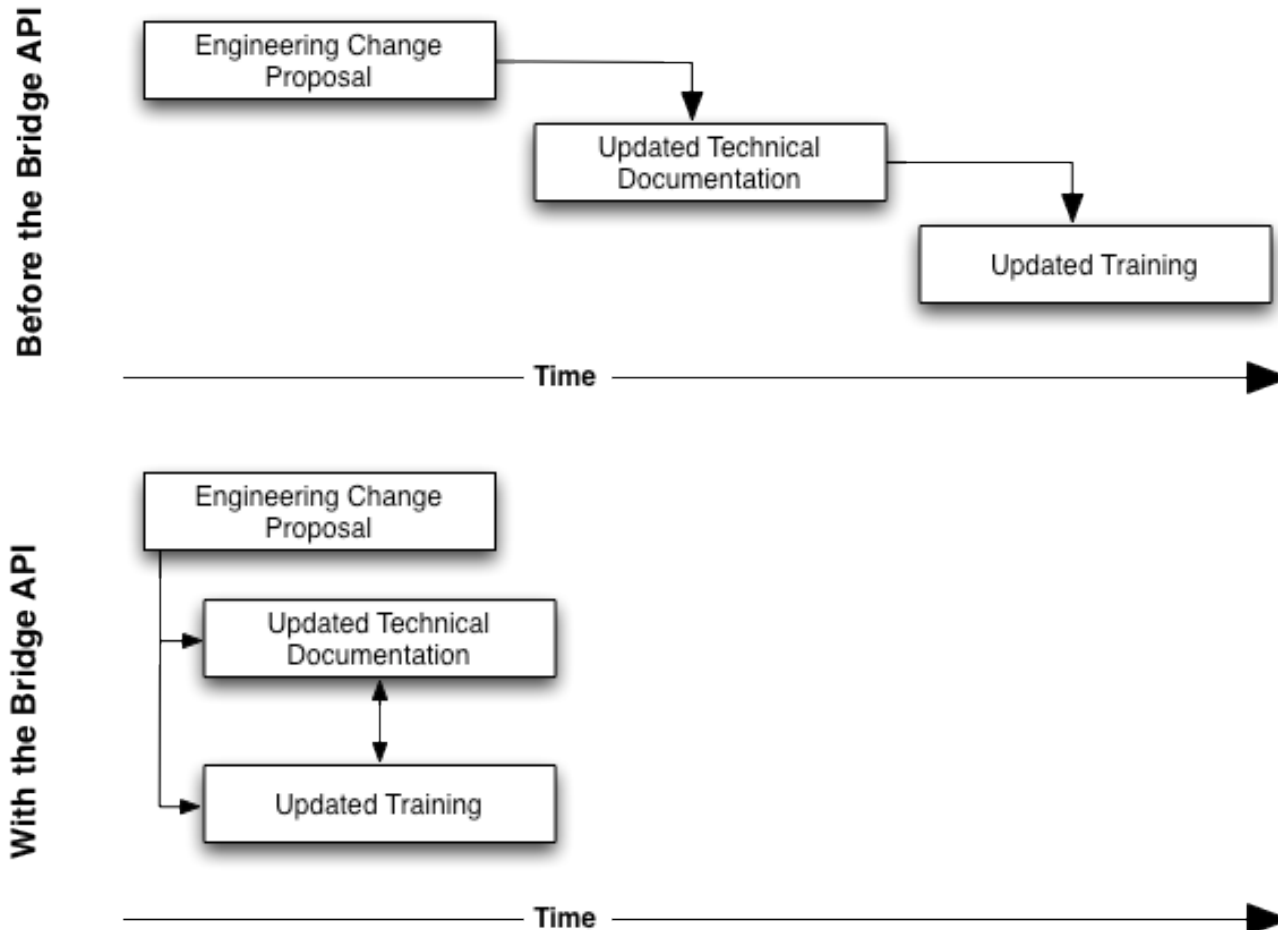
- Lack of communications between SCORM learning content development environments & the technical common source databases



Conceptual View of Gap



Equal Change Notifications



Part 3

Year 1 and 2 RTOC Deliverables

Year 1 Deliverables (Feb 3, 2010)

1. Draft API Bridge Spec with demo.
2. Littoral Combat Ship Mission Module (Q-20) tech and training conversion to S1000D v4.
3. Engineering Change Proposal notification web service.
4. Analysis of interoperability gaps in Navy product data exchange processes.
5. Cost benefit analysis



Year 2 Deliverables (Summer 2011)

- Completed API Bridge spec.
- Implemented SCORM processing in Navy CSDB (AIM, Venus.net, InMedius, SDL).
- Full implementation of ECP web service
- CONOPS for producing technical training content in Navy CSDB.
- Document - Training Needs Analysis in Systems Acquisition
- Independent review of CBA
- Select migration of Navy courseware to CSDB.



Part 4

The S1000D-SCORM API Bridge

S1000D-SCORM API Bridge Project

Integrates any learning content development tool with any authoritative source database using an API data exchange specification

Provides ability to rapidly adjust learning content in response to changing operational environment

Optimizes the development process for content reuse

Facilitates integration of technical learning content into life cycle support

Market and Industry Review

- Review of current standards
 - OASIS Content Management Interoperability Specification (CMIS)
- Vendor participation
 - Content@
 - Isselnord
 - Corena
 - Navy Authoring Instructional Materials (AIM)



Use Cases & Functional Requirements

Use Case	API Method(s)
Authenticate with CSDB	Connect, Disconnect
Query CSDB	Search
Create CSDB Object	AddCSDBObject, AddDM, CreateDMForDMC
Create New Issue of CSDB Object	CreateNewIssueForCSDBObject
Modify CSDB Object	CheckOut, CheckIn
Delete CSDB Object	DeleteCSDBObjectInstance
...	...

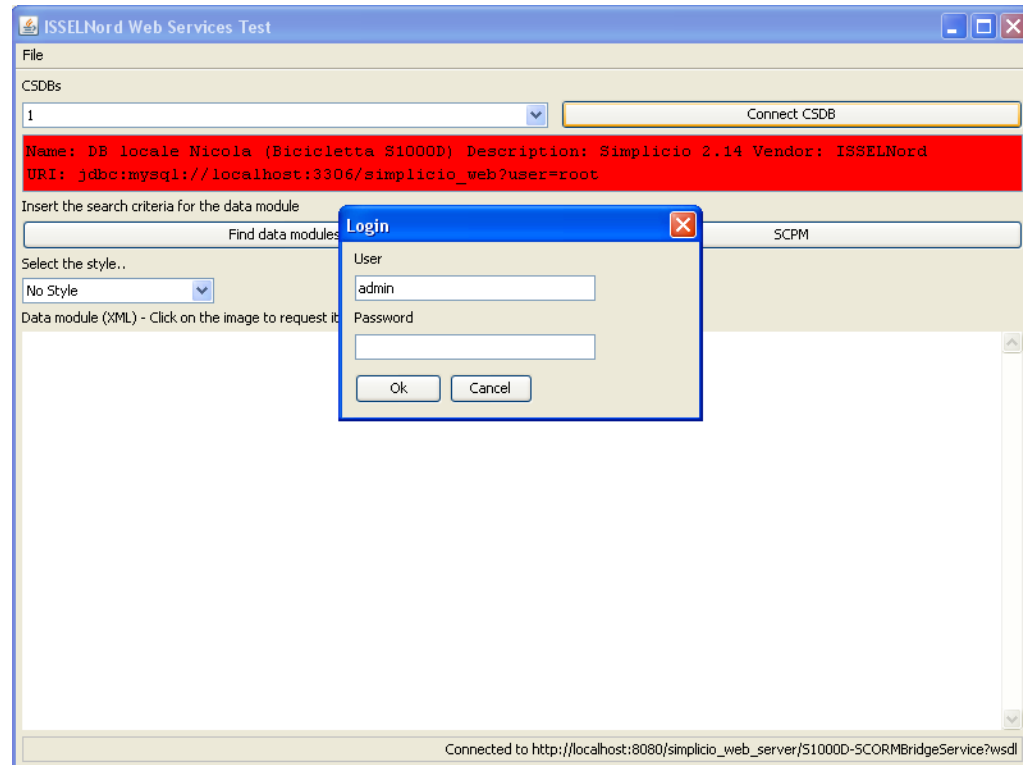
Functional Requirements Examples and Demo

- Centered on use of various Web Service operations
- Preliminary prototypes – basic premise is validity of Web Service vs. Functionality
- 3 Client Prototype Applications
- 3 Common Source Database Server Implementations
- Testing environment during development of API
- Demonstrate interoperable service calls



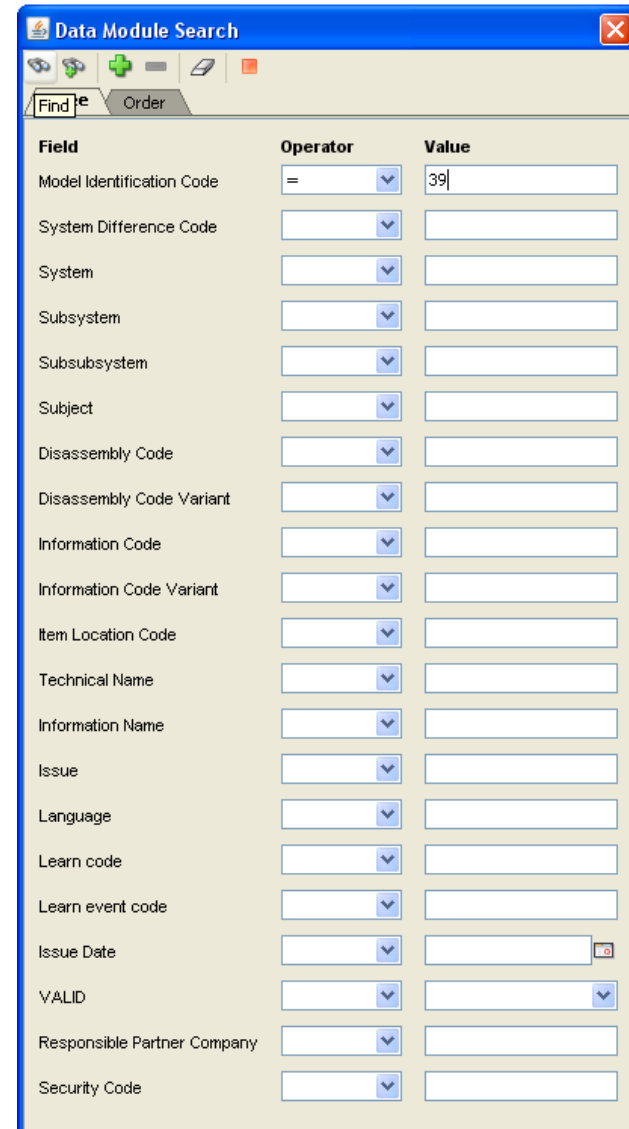
Connecting to a CSDB

- Determine what CSDBs are available on a server (***GetCSDBs***)
- Solicit for more information about a given CSDB (***GetCSDBInfo***)
- Once identified, connect to a given CSDB (***Connect***)



Finding Data Modules

- Advanced searching interface to assist in finding a given Data Module (DM)
- Allow user to perform a specific search for DMs by structured identifier (***SearchByObjectIdentifier***)
- Service could be used to identify DMs affected by a lifecycle change (e.g., equipment update)



The screenshot shows a window titled "Data Module Search" with a search interface. The interface includes a "Find" tab and an "Order" tab. Below the tabs is a table with three columns: "Field", "Operator", and "Value". The "Field" column lists various data module identifiers, the "Operator" column contains dropdown menus for logical operators, and the "Value" column contains text input fields. The first row is pre-filled with "Model Identification Code", "=", and "39".

Field	Operator	Value
Model Identification Code	=	39
System Difference Code		
System		
Subsystem		
Subsystem		
Subject		
Disassembly Code		
Disassembly Code Variant		
Information Code		
Information Code Variant		
Item Location Code		
Technical Name		
Information Name		
Issue		
Language		
Learn code		
Learn event code		
Issue Date		
VALID		
Responsible Partner Company		
Security Code		

Content Retrieved

The screenshot displays three overlapping windows of the 'ISSELNord Web Services Test' application. The foreground window shows the following configuration:

- File:** (empty)
- CSDBs:** 1
- Name:** DB locale Nicola (Bicicletta S1000D) Description: S1000D Vendor: ISSELNord
- URI:** jdbc:mysql://localhost:3306/simplicio_web?user=root
- Search Criteria:** (empty)
- Find data modules:** (button)
- SCPM:** (button)
- Select the style..:** 4_0.xsl
- Data module (XML) - Click on the image to request it to the server:** (button)

The retrieved content, titled **1 - HELICOPTER JACKING**, includes a technical diagram of a helicopter with a jacking system. The diagram labels the following components:

- ADAPTOR
- RAM
- HYDRAULIC JACK
- RELEASE VALVE KNOB
- HANDLES

Below the diagram is the reference code: ICN-39-A-071000-G-A0126-00503-A-01-1.

The interface also displays the following text:

WORTHINESS (FIT FOR PURPOSE)

GENERAL

This chapter provides the airworthiness limitations applicable to the AV. The airworthiness limitations are approved by EASA and cannot be changed. The airworthiness limitations include the following contents:

- The retirement lives
- The mandatory inspections
- The certifications requirements

RETIREMENT LIVES

These parts must be mandatorily retired from service when the indicated retirement life is reached. This also applies to all those non-serialized standard parts with connect the identified assembly component

Connected to http://localhost:8080/simplicio_web_server/S1000D-SCORMBridgeService?wsdl

Retrieving Associated Content

- Listing of DMs matching search criteria
- Once identified, retrieve S1000D Data for a given structured identifier (*GetContentForCSDBObject*)

MODELIC	SDC	CHAPNUM	SECTION	SUBJECT	SUBJECT	DISCODE	DISCODEV	INCODE	INCODEV	ITEMLOC	LEARNCODE	LEARNEVENTCODE	LANGUAGE	ISSUE
39	A	00	0	0	00	00	A	024	A	A			it	001
39	A	00	0	0	00	00	A	046	A	T			sv	001
39	A	00	0	3	00	00	A	046	A	T			sv	001
39	A	00	1	1	00	00	A	046	A	T			sv	001
39	A	00	1	2	00	00	A	046	A	T			sv	001
39	A	00	2	0	00	00	A	046	A	T			sv	001
39	A	00	3	0	00	00	A	022	A	T			sv	001
39	A	00	4	0	00	00	A	046	A	T			sv	001
39	A	00	4	1	00	00	A	046	A	T			sv	001
39	A	04	0	0	00	00	A	046	A	T			sv	001
39	A	05	0	0	00	00	A	046	A	T			sv	001
39	A	06	1	0	00	00	A	046	A	T			sv	001
39	A	06	2	0	00	00	A	046	A	T			sv	001
39	A	06	4	0	00	00	A	046	A	T			sv	001
39	A	07	1	0	00	00	A	046	A	T			sv	001
39	A	07	3	0	00	00	A	046	A	T			sv	001
39	A	08	2	0	00	00	A	046	A	T			sv	001
39	A	08	3	0	00	00	A	046	A	T			sv	001
39	A	08	4	0	00	00	A	046	A	T			sv	001
39	A	09	1	0	00	00	A	046	A	T			sv	001
39	A	10	1	0	00	00	A	046	A	T			sv	001
39	A	12	0	0	00	00	A	046	A	T			sv	001

Current Status

Accomplishments

- Web Service Definition Language (WSDL)
- SOAP Binding
- Specification
- Beta demonstration
- Engineering Change Proposal Scenario

Ongoing Activities

- Security, Attachments, Fault Handling
- Finalize WSDL and Specification
- Open Toolkit – Convert S1000D to SCORM



Part 5

ECP Web Service Demo

ECP Web Service - Demo

- **What** – ECP web service identifies all data modules in a CSDB subject to a review according to a proposed system design change.
- **Why** – To close one of the largest scheduling gaps in Navy training: when to update courseware.
- **How** – leverages API to search different CSDBs

ECP Web Service Demo

For more information, contact Wayne Gafford (Wayne.gafford@adlnet.gov)

Part 6

Why It All Matters



Why The Bridge Project Matters...

- Bridging Integrated Logistics Support (ILS) to the lifecycle management of technical learning content will enable the training community to:
 - Acquire, manage and produce integrated training and technical information in vendor neutral formats
 - Reduce life cycle maintenance costs
 - Produce content that is system-accurate
 - Ensure learning content developers are notified of changes before they are deployed





Thank you!
Questions or Comments?

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