

SCORM-based eLearning

Role-based A&D Training Delivered Anywhere, Anytime

With the increasing complexity of Aerospace & Defense (A&D) equipment, training has become critical to the proper operation, maintenance and utilization of today's highly sophisticated equipment.

Yet in our rapidly-changing, increasingly global working environment, providing appropriate training—targeted to each specific user's role—can be a daunting task. Not only must the training be top-quality, but it also must be affordable and available anytime, anywhere.

One of the most cost-effective methods of delivering essential A&D training today is through SCORM—Sharable Content Object Reference Model—an industry-proven eLearning initiative.

In recent years, compliance with SCORM has become mandatory for many A&D industries that deliver equipment to government agencies. SCORM ensures that training and training materials are produced and delivered in a consistent and standardized format, and are effectively applied in any SCORM-compliant Learning Management System.

What does a SCORM-compliant training program look like, and how can it help deliver the training that your organization needs? This brief paper answers these fundamental questions, and offers a brief overview of an industry-proven, SCORM-compliant eLearning solution.

What is SCORM?

SCORM—Sharable Content Object Reference Model—is a collection of standards and specifications related to the way eLearning tools are created and delivered. SCORM ensures that all web-based eLearning content is interoperable, accessible and reusable. Today, SCORM is not only supported by the Advanced Distributed Learning (ADL) Initiative from the U.S. Secretary of Defense, but its compliance is now mandatory for eLearning deliveries to the U.S. and most European government agencies.

[SCORM standards and specifications are available at: www.adlnet.gov/downloads/index.aspx]

In 1997, the ADL initiative was created with the goal of using evolving learning techniques and emerging information technologies to modernize education and training in the U.S. Department of Defense. Working with defense and civilian agencies, ADL helped define common standards in providing learning that can be both tailored to the needs of each individual user, and delivered anytime, anywhere. ADL established an environment to support the needs of all learning system users, including developers, students, instructors, and managers. ADL continues to work with government agencies, civilian agencies, and standards organizations to further these goals.

Challenges Implementing a SCORM-compliant Process

Since compliance with SCORM is mandated in many A&D industry segments, suppliers are now searching for compatible solutions. In order to achieve compliance—with the minimal investment in time and cost, it's important to avoid common pitfalls in implementing a SCORM eLearning system.

For example, today most training data is pulled directly from technical publications, such as Interactive Electronic Training Manuals, or IETMs. An effective SCORM eLearning solution must be able to quickly and easily locate the descriptive and procedural data found in these technical publications—in real time, via the Internet. The challenge here is that this archived technical data is subject to change with each engineering design change. Plus, maintenance techniques will change, driven by field service reports that indicate revised or more effective service methods. That means, as the technical publications change, so must the eLearning training. In addition, there is a growing need to create and include interactive graphics in eLearning documents. These are just a few of the many issues that A&D companies must consider before implementing a solution.

Why Point Solutions are Unworkable

To meet SCORM requirements, organizations must deploy a specialized XML solution. In doing so, companies often take a 'point solution' approach. With this method, companies often select different solutions to fulfill a variety of capability requirements that meet both their own requirements and the multiple parameters mandated by SCORM. However, with this strategy, companies assume the burden of integrating and maintaining multiple point solutions over time. This approach not only is fraught with risk, but it increases total cost of ownership because each time a vendor revises their solution,

the overall integration 'breaks'. The resulting incompatibility among point solutions prevents users from accepting any new capabilities, and increases the cost of accepting these new capabilities. Moreover, training costs related to system use are also higher because each point application has a different user interface—none of which are designed to work together—which means users must learn multiple interfaces.

Even after a point solution is architected and deployed, it is often incomplete and lacks automation. Organizations are left with having to define the process of accessing and reusing the information between technical publications and training, as well as the process of creating supporting graphics and illustrations specific to product configurations. Change management integration is also necessary to automatically trigger text updates when publications change.

SCORM-compliant Solution from PTC

PTC understands the challenges of selecting and deploying a SCORM-compliant eLearning solution in an S1000D environment. Rather than forcing customers to wrestle with a point solution approach, PTC instead offers a single system—single vendor approach to eLearning that delivers greater value while significantly reducing total cost of ownership and risk.

The PTC solution for eLearning not only ensures compliance with SCORM, but also automates the process of reusing the S1000D Descriptive, Procedural and Crew Data Modules through tight coupling with the S1000D CSDB (Common Source Database). The result: lower cost for creating and maintaining training and technical publications.

The Power to Create, Collaborate, Control, Configure and Communicate.

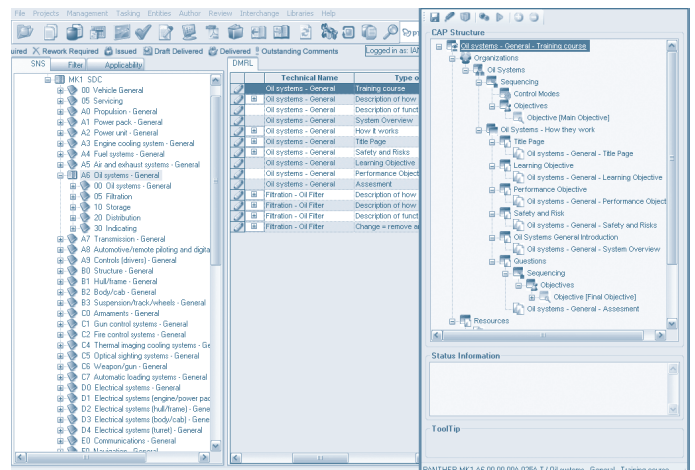
The PTC solution for an eLearning process delivers all the necessary capabilities to achieve SCORM compliance, including:

- eLearning content creation
- Collaboration in the development of content
- Processes controlling the content and configurations
- Communication of content across the value chain

PTC SCORM-Compliant eLearning Features

Create Capabilities:

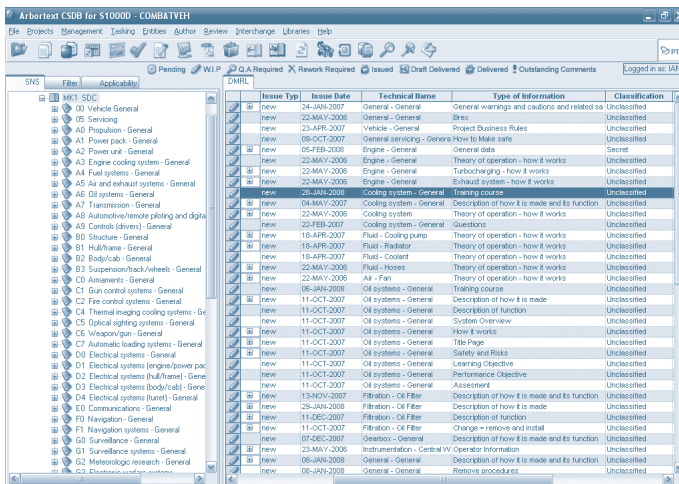
- Create, assemble, manage and deploy SCORM-compliant eLearning packages directly from the S1000D CSDB.
- Repurpose and reuse S1000D Descriptive, Procedural and Crew Data Modules—totally or in part—as SCORM-compliant training, at the click of the mouse, through direct interaction with the CSDB.
- Author illustrations and interactive graphics by leveraging rich CAD data and embedding it in documents; create illustrations and graphics in S1000D-compliant formats (CGM and other types).
- Insert specific training elements, such as questions that automatically invoke the required Learning Management System (LMS) interaction when deployed.
- Easily build a multi-level, graphical course structure using the course builder application.



Above: Arbortext software from PTC features a graphical course structure that enables users to trigger production of individual training assets within the CSDB. Alternatively, existing assets can be simply dragged from the CSDB and dropped onto the relevant node of the course.

Collaborate, Control and Configuration Capabilities:

- Filter your eLearning content, so it reflects just the information for specific systems or equipment configurations.
- Maintain complete version control at both the course (manifest) level and at the training asset level.
- Apply a robust, controlled method of content production to ensure consistency and integrity within the training asset production processes.
- Implement and manage project-specific coding schemes – using the underlying CSDB and the application of Standard Numbering Systems (SNS) – to ensure maximum reuse of existing assets.



Issue Type	Issue Date	Technical Name	Type of Information	Classification
new	24-JAN-2007	General - General	General warnings and cautions and related ca	Unclassified
new	22-MAY-2006	General - General	Exec	Unclassified
new	23-APR-2007	Vehicles - General	Project Business Rules	Unclassified
new	08-OCT-2007	General engineering - General	How to Make safe	Unclassified
new	05-FEB-2008	Engine - General	General data	Secret
new	22-MAY-2006	Engine - General	Theory of operation - how it works	Unclassified
new	22-MAY-2006	Engine - General	Turbocharging - how it works	Unclassified
new	22-MAY-2006	Engine - General	Exhaust system - how it works	Unclassified
new	26-JAN-2008	Cooling system - General	Training course	Unclassified
new	08-MAY-2007	Cooling system - General	Description of how it is made and its function	Unclassified
new	22-MAY-2006	Cooling system - General	Theory of operation - how it works	Unclassified
new	22-FEB-2007	Cooling system - General	Questions	Unclassified
new	18-APR-2007	Fluid - Cooling pump	Theory of operation - how it works	Unclassified
new	18-APR-2007	Fluid - Radiator	Theory of operation - how it works	Unclassified
new	18-APR-2007	Fluid - Coolant	Theory of operation - how it works	Unclassified
new	22-MAY-2006	Fluid - Hoses	Theory of operation - how it works	Unclassified
new	22-MAY-2006	Air - Fan	Theory of operation - how it works	Unclassified
new	06-JAN-2008	Oil systems - General	Training course	Unclassified
new	11-OCT-2007	Oil systems - General	Description of how it is made	Unclassified
new	11-OCT-2007	Oil systems - General	System Overview	Unclassified
new	11-OCT-2007	Oil systems - General	How it works	Unclassified
new	11-OCT-2007	Oil systems - General	Title Page	Unclassified
new	11-OCT-2007	Oil systems - General	Safety and Risks	Unclassified
new	11-OCT-2007	Oil systems - General	Learning Objective	Unclassified
new	11-OCT-2007	Oil systems - General	Assessment	Unclassified
new	11-OCT-2007	Oil systems - General	Leakage/Leakdown	Unclassified
new	26-JAN-2008	Filtration - Oil Filter	Description of how it is made and its function	Unclassified
new	11-OCT-2007	Filtration - Oil Filter	Description of function	Unclassified
new	11-OCT-2007	Filtration - Oil Filter	Change - remove and install	Unclassified
new	07-DEC-2007	Gearsbox - General	Description of how it is made and its function	Unclassified
new	23-MAY-2006	Instrumentation - Central V	Operator Information	Unclassified
new	06-JAN-2008	General - General	Description of how it is made and its function	Unclassified
new	06-JAN-2008	General - General	Remove procedures	Unclassified

Above: The Arbortext Learning Content Manager for S1000D merges S1000D content management principles with SCORM re-usability and rich media concepts to deliver a fully integrated technical and learning content management solution for the Aerospace and Defense sector.

Communicate Capabilities:

- Preview assets and SCO (Sharable Content Objects) at any time to see how they will be presented to the end-user, and to examine the LMS interaction.
- Export your SCORM-compliant content packages – when you're ready to publish or deploy – from the CSDB for delivery as a ZIP file that contains everything necessary to run the course in any compliant, run-time environment.

Summary

Compliance with SCORM is fast becoming a mandate for companies in the A&D industry worldwide. Many top A&D organizations have found a solution with PTC, the only Product Lifecycle Management vendor providing out-of-the-box, turnkey solutions for SCORM-compliant eLearning in an S1000D environment.

Tight integration within our S1000D solution provides users with an effective eLearning training solution that is highly sustainable over time due to our robust content management that makes it easy to locate and reuse S1000D Data Modules and Data Module fragments in eLearning content. Through this single system-single vendor approach, PTC delivers lower overall total cost of ownership.

By offering a complete solution for eLearning, complemented by a comprehensive set of service offerings, PTC is well positioned to help A&D organizations overcome the typical hurdles experienced in implementing SCORM-compliant eLearning solutions. The result: you derive maximum value from your training investment.



To learn more about how Arbortext can help your company create and deliver high-quality product information, please visit our website at: <http://www.single-sourcing.com/>

Note: Forward-looking information subject to change without notice.

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