
Conversion of Legacy Data to S1000D

EUROPEAN TECHNICAL DATA CONFERENCE
“PLCS – S1000D – ADL SCORM:
Three Specifications, One Future?”

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Pushpa Merchant

Information Management Consultants
PBM Associates, Inc.

West Creek, NJ 08092

<http://www.pbmassoc.com>

Topics

- Overview
- Background
- Conversion Challenges
- Other Conversion Issues
- Summary

Overview

- Conversion of US Department of Defense (DoD) technical manuals
- Supporting several Naval Aviation programs with the use of S1000D
 - Development of Business Rules
 - Use of the Functionality Matrix
- Developing the NAVAIR Standard IETM Viewer (NSIV)
- Working with conversion companies (Akimeka Technologies and Synesis7)

Background

- The legacy DoD technical manual
 - Paper, ETMs, IETMs
 - Chapters, sections, paragraphs
 - Work Packages – modular
 - Long established standards

Background (cont.)

- The S1000D technical publication
 - Paradigm shift
 - Content requirements – too vague, broad, or missing
 - S1000D – evolving over time

Conversion Challenges

- Development of the Data Module Requirements List (DMRL)
- Development of a Publication Module (PM)
- Business Rules
- “Chunking” into Data Modules
- Legacy references
- Shared supporting information
- Illustrations
- Currency of legacy data

Development of the Data Module Requirements List (DMRL)

- Create the DMRL prior to converting
 - Is critical to the correct breakdown and coding of DMs
- It is wrong to think that the DMRL will be generated after the legacy documents are converted
- Owners of the legacy documents should develop the DMRL
 - Do not leave to the conversion company

Development of a Publication Module (PM)

- Legacy programs (projects) need to determine the structure of the PM
 - System/subsystem breakdown
 - By information sets
 - Mirror the legacy technical manual
- S1000D allows for nested PMs
 - Will this be allowed?
 - If so, in what cases?
 - What are the business rules?

Business Rules

- It is imperative that the program's (project's) business rules are properly and completely defined and documented prior to beginning the conversion
- There are over 800 decision points in the specification which require a business rule
- Output of converted data will have an impact on your business rules (i.e., paper only, IETM only, or both)

Business Rules (cont.)

- Will the use of a specific viewer or publishing system impact business rules
- Examples of business rule considerations
 - Tagging requirements for Illustrated Parts Data (IPD) DMs
 - Tagging requirements for applicability
 - Tagging references to figures, tables, steps in other DMs
 - Tagging of QA steps
 - Special cases where the legacy structures cannot be duplicated in S1000D
 - Should “Warnings or Cautions” be allowed in descriptive DMs?

“Chunking” into Data Modules

- Legacy data (publication) must be analyzed to determine level of ‘chunking’ required to form data modules
- S1000D promotes granularity of data modules to be single component, single task (for procedural data)
- Subject matter expert needs to be involved in determining the granularity and to assign applicable SNS to data modules

“Chunking” into Data Modules (cont.)

- Spend time on ***Data analysis***; it is the key
 - Don't make conversion rules without looking at your data!
- Example:
 - Business Rule on one conversion project, create a DM at para0 level
 1. INTRODUCTION.
 2. This work package (WP) contains detailed procedures for the disassembly and assembly of the high–pressure turbine (HPT) module. The HPT module was removed from the engine in WP 021 00 and the assemblies are in HPT rotor forward holding fixture xxxxxxx and HPT module assembly holding fixture xxxxxxx.

Legacy References

- When a chapter or work package is split into multiple DMs, how are references to the chapter (e.g., “See Chapter 3”) converted?
 - Referencing the first DM may not take you to the correct set of information and there may not be any other references in that DM
 - Determining the proper reference may require a subject matter expert which can be a costly endeavor
 - Including references to ALL the DMs that previously made up Chapter 3 makes the end product not very useful making the end user decide which reference to pursue

Legacy References (cont.)

- References to a table from multiple locations in a chapter or work package that is now split into multiple DMs (e.g., “See Table 1”)
 - Placing the table in its own DM and adding a reference *<refdm>* in each of the DMs
 - Not very user friendly to have to launch a new DM to view the table; then return back to the DM to continue the task
 - Copy the table in each DM
 - Makes configuration management an issue when changes are made to the table

Legacy References (cont.)

- References to a figure from multiple locations in a chapter or work package that is now split into multiple DMs (e.g., “See Figure 1”)
 - Do you create a new DM for the figure and reference it via *<refdm>*?
 - What about callouts that may be on a figure that may not have any mention in some of the DMs?
- In these types of cases, is it best to re-author the legacy data to be more in context with the S1000D structure?
 - The cost impact may be too great

Shared Supporting Information

- What do you do with “setup” information in a work package, (i.e., Reference Material, Support Equipment, Tools Required, etc.)
 - This information was authored for the entire work package
 - Each task in the work package now has its own DM
 - Including the entire table or list in each DM means that there are non-applicable entries in the DM
 - A subject matter expert will be required to breakdown these tables and lists and to provide the appropriate entries in each DM

Illustrations

- Chapter 6.2.1 of S1000D states –

“Paper publications

The size of the publications is A4, A5 or A3L for use in Europe or optionally 5 inch by 8 inch, A-size, or B-size for use in the US.”

S1000D also says that projects can specify paper sizes

- Legacy technical manuals have foldouts as large as 54 inches
 - ❑ Do all foldouts need to be redrawn to meet the B-size (17 inch) requirement
 - ❑ Consider usability in electronic documents

Currency of Legacy Data

- Many legacy TMs have technical directives, service bulletins, and deficiency reports that have not been incorporated
 - Invest in a subject matter expert to incorporate these and update the legacy document
 - This will also create a new baseline for the publication

Other Conversion Issues

- In what shape and quality level are the legacy sources? The better the source the better the automation output and the less human evaluation and correction.
- What condition are the illustrations? If they are not good they may need to be redrawn.
- How are errors in the legacy content going to be addressed? What changes will be required or allowed? Who will make these determinations when an error is found?
- How will document changes be handled? For example, how will content with change bars be handled or how will loose change pages (inserted between book pages) be handled?

Summary

- Converting to the new specification is not unachievable as long as smart, cost-effective decisions are made
- Up front data analysis is the key to a successful conversion project
- Ensure that subject matter experts are available to resolve issues that arise during the conversion effort
- Be flexible