



# Tales from the Front Lines:

Integrating and customizing COTS tools to  
meet all of your requirements

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# Introduction

Now that you know who I am, I would like each member of the audience to stand up and introduce themselves.

# Actual Introduction

- Over the past couple of years, we have been working with customers through various stages of S1000D implementation:
  - Analysis
  - Business Rules development
  - Implementation
  - Conversion
- We wanted to share some of the lessons we had learned with the S1000D community.

# What's the strategy?

- Putting in the work upfront to thoroughly assess how S1000D is implemented pays dividends later.
- S1000D system implementation is broken up into three distinct phases:
  - **Inception**
  - **Implementation**
  - **Rollout**



# Inception

- The Inception phase of an S1000D system consists of the following steps:
  - Requirements Gathering
  - Business Rule Development
  - Tool Selection
  - Training\*

# Requirements Gathering

- Identify all the requirements for your specific program:
  - Content requirements
    - Types of content required. e.g.
      - Repair data,
      - Troubleshooting data
      - Parts data
    - Advanced diagnostic capabilities?
    - How will any existing content work with S1000D?
  - Functional Requirements
    - How is content published?
    - What existing systems need to remain in use?

# Business Rule Development

- Business Rules can be broken down into three categories:
  - Program Rules
  - Authoring Rules
  - Information Sets
- **Authoring rules** – Rules on usage of specific elements and attributes. These rules are codified in the BREX and Applicability data modules.
- **Program rules** - General S1000D rules that are not necessarily enforceable in a CSDB.
- **Information sets** - rules and guidelines for Data Module coding.

# Business Rule Development (cont.)

## – Program Rules:

- Determine for all data module types if/how they will be used:
  - Ex: Fault Isolation vs. Process DM
- Decision for general S1000D issues:
  - Linking
  - Graphic types
  - Applicability
- Incorporating higher level set of business rules
- Incorporating other related standards
  - SCORM
  - S2000M
  - Etc.

## – Authoring Rules:

- Detailed element/attribute usage



# Business Rule Development (cont.)

- Information Sets
  - Identify which information sets are applicable
  - Define data module coding strategy
  - Define list of program information codes
    - Consistency is key
- Applicability
  - Define applicability parameters:
    - Product Attributes
    - Condition Types
- Timeframe
  - Business rule can be developed against an aggressive schedule.

# Tool Selection

How do you choose the right set of tools for you?

- Use S1000D functionality matrix.
  - Add your own requirements as needed.
- Evaluate tools based on the functionality matrix and business rules.
- Essential tool to identify potential technical “gotchas”.
  - 80/20 Rule
- Make sure tool(s) support selected version of S1000D.

# Functionality Matrix

Functionality	Complexity – Page	Complexity – IETP	Requirement	All information sets	Crew / operator	Description and operation	Maintenance procedures	Fault isolation	Non-destructive testing	Corrosion control	Storage	Wiring diagrams	Illustrated parts data	Maintenance planning	Mass and balance	Recovery	Equipment	Weapon loading	Cargo loading	Stores loading	Role change	BDAR	Illust'd tool & support equip.	Service bulletins	Material data
<b>Access</b>																									
Login	2	2		A																					
Suspend and restart	1	1		A																					
Exit	1	1		A																					
<b>Annotation</b>																									
Action complete indicator (checkbox)	1	1																							
Global data annotation	2	2		A																					
Local data annotation	2	2		A																					
Personal annotation	1	1		A																					
Redlining text	3	3		A																					
Redlining graphics	3	3		A																					

# Implementation

- Configuration of base tool(s)
- Identify “Gaps”
  - Determine the delta between your overall requirements and the capabilities of tool(s).
- Develop Strategy:
  - Create a technical strategy on how to address missing functionality.
  - Identify short and long term needs.
- Go!



# Rollout

- Testing
- Ramp up authoring staff
  - Training
    - S1000D Usage
    - Authoring rules / style
  - Consider phased rollout
- Begin authoring
  - Incorporate your lessons learned as you go

# Lessons Learned

# Lessons Learned

- Take it easy! Roll out an S1000D environment incrementally.
  - Provides simplified learning experience
  - Focus on set of DMs being rolled out.
- Process DM Complexity
  - Process DMs are virtually a programming language.
  - Defining a clear strategy as for how to use Process DMs is imperative.
  - Develop a “coding standard” for process DMs.

# Lessons Learned

- Applicability
  - Do not use product serial numbers in applicability statements.
  - Keeping applicability data in sync:
    - Product cross-reference table (PCT) DMs typically contain “as built” information.
    - Integrating the PCT with “as-maintained” information is critical.
      - Can be accessed from MRO / maintenance systems.



# Lessons learned

- BREX Validation
  - Is validation of data against BREX required?
    - Validate as post-process after authoring?
    - or-
    - Validate business rules during authoring?
  - BREX can only validate authoring rules.
    - Program rules are enforceable via a “whip”.

# Lessons Learned

- Information codes:
  - Two means of addressing:
    - Implicit - One information code describes all related “operations”.
      - i.e., 120 describes all preparations
    - Explicit – Create information codes for all operations.
      - Use Information Code Variant to delineate various types of “operations”.
        - i.e., 120A describes “Preparation for Maintenance”  
120B describes “Preparation for Draining”, etc..

QUESTIONS?

# Thank You

Come see us in the vendor area!

