S1000D Users Forum 2010

"Application of S1000D within a state-of-the-art Integrated Logistic Support environment"

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Underwater Rocks of S1000D

Overcoming S1000D implementation roadblocks within your organization

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Our Experience in Implementing S1000D

- SiberLogic is the vendor of SiberSafe S1000D CSDB www.siberlogic.com/s1000d

- We provide requirements analysis, configuration, development and installation of CSDB software, personnel training, technical support

- Our SiberSafe CSDB toolset helps develop technical documentation for mechanical, electronic and software products in aerospace and defense projects

- Projects at Stanley/CGI, Northrop Grumman, General Dynamics, Raytheon, Lockheed Martin, US Army, SDI, IDSI, Lotus-Vista (China), Technotrans (Russia) etc.

- New documentation development in S1000D

- Conversion of legacy documentation into S1000D

Overcoming Roadblocks:
Requirements Analysis

- Poorly understood S1000D documentation development methodology
  - Training, pilot projects
- Poorly defined deliverables: PDF, IETM, XML
  - Upfront definition of the deliverables
- S1000D doesn't define the structure and contents of technical manuals
  - US Army Business Rules (USA), ГОСТ (Russia)
- Many decisions are left by S1000D up to individual projects:
  - Level of detail in BREX, use of Process Modules, Container Objects, Technical Repository
  - Use of the necessary minimum of S1000D features, avoid fascinating but rather optional features
- Undefined format for 3D and Animations/multimedia content
  - X3D, Flash
- Difficulties in consortium-base documentation development:
  - In defining the import/export requirements
  - In defining the business rules
  - In making joint project-level decisions (SNS, IC Codes etc)
  - In agreeing upon the quality criteria

Illustration: X3D object in the IETM Viewer

Figure 1. Sample 3D

Overcoming Roadblocks: Selection, Installation and Configuration of your S1000D toolset

- Incompatibility of the S1000D V3 and V4 versions
  - Conversion tools
- Dynamic evolution of the standard results into S1000D tools lagging behind
  - Use the well established parts of the standard
- Unclear tool selection criteria due to the poorly understood development methodology
  - Requirements analysis, pilot projects
- IETM – difficulties in separating the necessary and the optional features
  - IETM usage pattern analysis
- Limited access to the production facilities creates difficulties in the configuration and maintenance of the development and publishing toolset for the tool vendors.
  - Requirements analysis, minimal post-implementation tool configuration changes

Budget Estimates

- Lack of clarity in the required resource qualifications and their expected performance capacity
  - A pilot project with performance metrics

- Per-user IETM Viewer pricing turns into an unpredictable variable cost
  - Select an IETM Viewer that's not priced per end user

- Using the S1000D learning model versus interfacing with a non-S1000D LMS
  - Interface with a non-S1000D LMS until the dust settles over the S1000D learning model

Overcoming Roadblocks:
Staff Training

- S1000D complexity de-motivates the less technical users at the initial deployment stage
  - Deploy the standard and its related toolset within the most dynamic and open-minded part of the team first
- Hiring and replacing staff becomes difficult once the staff have been trained.
  - Specialize S1000 development tasks; Simplify individual S1000D production process steps, perhaps at the cost of a higher complexity of the overall process:
    - Classify authoring tasks into more and less complex ones
    - Assign the more complex tasks to the more advanced users

Overcoming Roadblocks:
Data Module Codification

- SNS's that come with the standard are designed for higher-level products, such as vehicles, radars or missiles
  - Use your own SNS for lower-level component projects
- It's not always clear how to organize a lower-level SNS
  - SNS depth and its level of detail
    - Estimate the desirable number of data modules per SNS node
    - Keep in mind the SNS-based search and navigation convenience
  - SNS classification principles: functional, structural or organizational classification?
- S1000D wasn't designed for software systems documentation
  - Difficulties in assigning unique DM codes to software user procedures as information codes lack the required diversity
   - Use the disassembly code as the workaround

**Table 51 System N1 - Fire protection systems - General**

System	Subsystem	Title	Definition
N1		Fire protection systems - General	
	-00	General	This element refers to systems (hardware/software) that provide a warning to the crew that a possible fire hazard exists. It includes the suppression/fire fighting and heat sensors required for this system.
	-10	Detecting	Refers to that part of the system which is used to sense the presence of excessive heat, smoke or fire.
	-20	Indicating	Refers to that part of the system which is used to indicate the presence of excessive heat, smoke or fire.
	-30	Extinguishing	Refers to that part of the system, either fixed or portable, which is used to extinguish fire.

Table 16 System B6 - Access - General

System	Subsystem	Title	Definition
B6		Access - General	
	-00	General	Refers to interior and exterior access points.
	-10	Doors	Refers to hinged or sliding covers for access points in a bulkhead. May be Watertight and/or Airtight.
	-20	Hatches	Refers to square or rectangular access point in the deck. May be Watertight and/or Airtight
	-30	Scuttles	Refers to round watertight openings and covers in a bulkhead.
	-40	Covers	Refers to something that protects hatches or scuttles. May be Watertight and/or Airtight.
	-50	Portable Plates	Refers to Removable Plates and/or Panels which are integral parts of the ships structure that are secured with bolts and/or screws to allow access for maintenance.
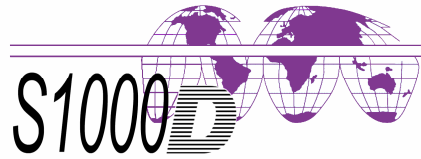
Using Disassembly Code for software systems DMCs
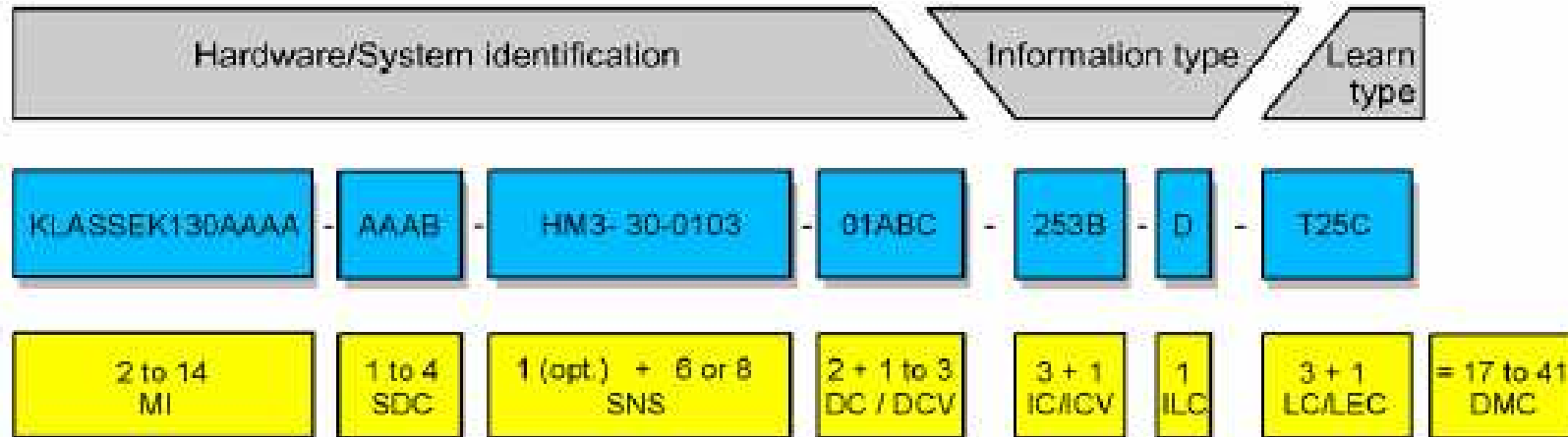
ICN-AE-A-040300-0-C0419-00001-A-003-01

Fig 1 Generic structure of the data module code

Conversion into S1000D

- Most S1000D projects start with some already documentation
    - Conversion into S1000D is required
- Manual conversion into S1000D comes with the high cost and low quality that are unacceptable for most projects
    - Automated conversion tools
- Information loss, duplication and distortion accompany the conversion process
    - Select conversion tools that minimize or eliminate information loss, duplication and distortion
- Lack of visual traceability from the source to the converted data create difficulties at the conversion quality assurance (QA) stage
    - Select conversion tools that maintain the traceability between the conversion inputs and outputs

Authoring in and translation into non-English languages

- **Incompatibility of the selected S1000D development tools with the selected language**
  - Requirements analysis, tool testing

- **Using non-English languages in the IETM Viewer's various features**
  - CGM rendering
  - Full text search

- **Publishing into PDF using a non-English printable layout with all the stationary elements properly translated.**

- **PDF publishing mechanism's compatibility with the selected language**
  - Select a publishing tool allowing you to easily customize the layout of the rendered PDF output.

⊟content⟩ **Content**

⊟description⟩ ⊟figure⟩

⊟title⟩**CGM** ⟨title⟩

Chinese fonts became incorrect symbols when the CGM file was converted to JPG.
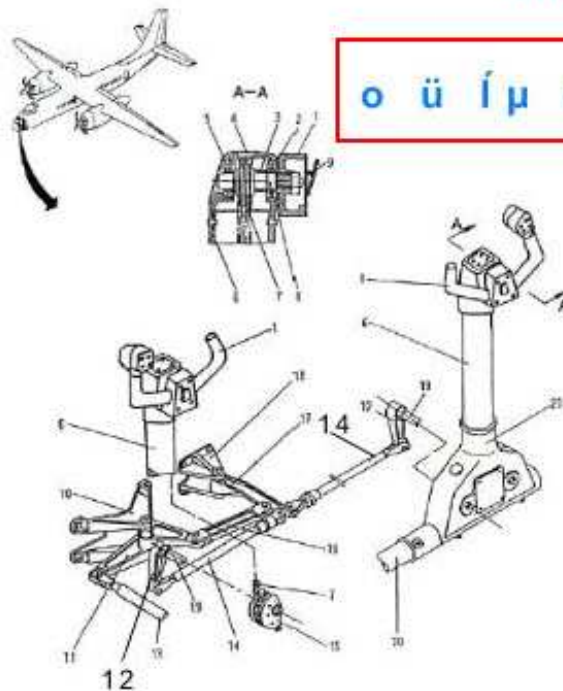
o ü Í µ : „

图 002 副翼操纵机构

1 驾驶盘，2 止挡环，3 衬套，4 压盖，5 驾驶柱头组转件，6 驾驶柱
管子，7 双横臂前叉子铰，8 枢轴，9 盖板，10 支架，11 双臂摇臂，
12 活臂，13 拉杆，14 滚床拉杆，15 扇形盒组件，16 拉杆，17 活臂，
18 支架，19 轴，20 枢轴，21 驾驶柱下前铰件。

⊟graphic⟩

⟨/graphic⟩ ⟨/figure⟩ ⟨/description⟩ ⟨/content⟩ ⟨/dmodule⟩

⟨⟩ ▢ ▢ ● dmodule / content / description / figure

S1000D Documentation Development and Engineering Change Synchronization

- Technical Manual (TM) structure isn't defined by the standard: TM types, their chapters/sections and well as their target audience
  - Agree with your client upon the TM structure ahead of time
- The output format of some of the data module types isn't defined in the standard (maintenance allocation chart, fault report)
  - Avoid using exotic data module types
- S1000D output format significantly differs from your traditional documentation format or from other national or industrial standards
  - Select publishing tools that will allow you to customize the output format
- Interfacing with LSA, CAD, Feature Tracking, Product Management, ERP systems
  - Analyze your existing process; if it doesn't involve such interfacing already, it may not be necessary going forward

Quality Assurance and Delivery

- CGM as the main 2D graphics format – poor tool selection, existing illustrations are likely to be in a different format, difficulties with the delivery and quality assurance of CGM illustrations
    - Select CSDB/IETM tools that do not require CGM software for author's and end user's workstations
- S1000D doesn't define a mechanism to gather the feedback from the IETM end users
    - Export and consolidation of IETM annotations

Expand All | Collapse All

□ ⬙ Project S1000DLIGHTING
  ▣ System D00

Project S1000DLIGHTING ← System D00 ← Assemble, install and connect procedures - Lighting - DMC-S1000DLIGHTING-AAA-D00-00-00-00AA-700A-A

Description | Theory of Ops | Troubleshooting | Mainten...nce | | Operations | Front

Observed fault - Lights
Assemble, install and connect procedures - L
Manual test - Lights
Remove and install a new item - Lighting

Insert annotation

Show all annotations

4. Attach the front light fitting on the top of the handlebar.

  a. Apply the protective strip around the handlebar.

  b. Pull the clamp open and put it around the protective strip with the light connector at the top.

  c. Install the washer on the screw.

  d. Use the correct screwdriver from the Specialist toolset and tighten the screw into the hole at the bottom of the clamp. This safeties the clamp to the handlebar.

5. Attach the rear light fitting to the rear triangle of the bike frame.

  a. Apply the protective strip around one of the two rear triangle up-tubes.

  b. Pull the clamp open and put it around the protective strip. Make sure the light connector points rearwards.

  c. Install the washer on the screw.

  d. Use the correct screwdriver from the Specialist toolset and tighten the screw into the hole at the bottom of the clamp. This safeties the clamp to the tube.

6. Attach the light with the white glass to the front connector.

Conclusion

- Run a pilot project before a large-scale S1000D deployment

- Analyze your existing documentation development process and map it onto S1000D

- Have your staff trained by S1000D standard/toolset experts prior to the project launch

I would like to thank SiberLogic's architect Ilia Masliev for his help in preparing this presentation

- Questions/answers

Thank You!