S1000D in an Integrated Data Environment

How S1000D Fits into Product and Service Lifecycle Management

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Acquisition logistics management
(according to NATO Acquisition Logistics Workshop of 1993)

Operational & Maintenance Data Feedback – Functional coverage by S5000F

Design of Systems and Support Equipment

Equipment Identification and Design Data

Logistic Support Analysis

OPS Data

Provisioning

Order Administration

Logs, maintenance and data

IN SERVICE USE

S3000L S4000M

S5000T (MPT?)

S1003X

S1000D

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The ASD Perception of ILS Standards
Source: Juergen Geudtner (EADS) / Carl-Johan Villen (SAAB)

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Integrated Data Environment Definitions

- **OEM – IDE** is the collection of product design data “positioned” for “down-stream data users” to retrieve, modify and reuse the information.

  Where software applications will allow, **seamless data flow up and downstream** (maximizing reuse) is the desired end result.

- **End User - IDE** is the collection of maintenance and operation documentation used during the lifecycle of the product. The content is developed for individual product level support (tail number or serial number) and used for varying purposes (i.e. maintenance and mission planning, reliability reports, warranty compliance, manpower planning, training, etc.).
Closed-Loop Product and Service Lifecycle Management

Product Lifecycle Management:
- Training
- Logistics Support Analysis
- Design of Systems and Support Equipment
- Requirements
- Provisioning & Parts Ordering
- Service Planning
- Technical Information
- Service Optimization
- Equipment Performance Analysis
- Issue Analysis & Corrective Actions
- Product Optimization
- Service Record Management
- Upgrades & Overhauls
- Service Management
- Product Support
- Warranty Management
- Service Program & Contract Management

Service Lifecycle Management:
- Service Information Delivery
- Service Optimization
- Service Performance Analysis
- Service Planning
- Technical Information
- Provisioning & Parts Ordering
- Scheduled Maintenance
- Training
- Logistics Support Analysis
- Design of Systems and Support Equipment
- Requirements
S1000D in an Integrated Data Environment

- Design of Systems and Support Equipment
- Logistic Support
- Equipment Planning
- Operational & Maintenance Data Feedback

- Technical Information
- Product Support Services
- Scheduled Maintenance
- Product Performance

- Requirement Analysis
- Issue Analysis
- Support Performance
- Issue Analysis

- Service Optimization
- Service Maintenance
- Service Information
- Service Planning

- Provisioning & Parts Ordering
- Scheduled Maintenance
- Product Lifecycle Management
- Service Lifecycle Management

- Service Record Management
- Service Management
- Service Management
- Service Management

- Warranty Management
- Product Support Services
- Equipment Planning
- Operational & Maintenance Data Feedback
OEM Integrated Data Environment Attributes

- Design, Engineering and Manufacturing information supports downstream use for:
  - Levels of repair for the product
  - Parts provision (spares) requirements based on reliability
  - Maintainability calculations
  - Maintenance repair data requirements (tech data)
  - Scheduled maintenance requirements
  - Training and performance needs

- Field Maintenance information received for upstream use:
  - PBL calculations & Maintainability/Reliability “Sanity” check
  - System/End Product Enhancements (Engineering Changes/Mods/End Customer Configuration Changes)
  - Spare Parts Usage/Projections
End User Integrated Data Environment Attributes

- **Features include integrated software that improves:**
  - Platform availability
  - Maintenance data collection (history)
  - Supporting technical data (electronic or page based)
  - Current equipment configuration “As Maintained” vs. the “As Built”

- **Capabilities**
  - Maintenance based on current platform configuration from Maintenance Management System (MMS)
  - Work order processing
  - Failure tracking and analysis integrated with customer’s MMS
  - Feedback that provides Conditioned Based Maintenance (CBM) development making use of the results from RCM and FMECA analysis
Integrated Data Environment (In the field)

- Smart Equipment
- Operational Data (What happened during the operation?)
- Diagnostic Info
- Maintenance History
- Equipment Configuration
- Equip. Config
- Data Entry Point
- Annotations
- Review Job Assignment
- Update Work Order
- Maintenance Shop Assignment
- Monitor Maintenance
- Upstream Reporting and Feedback
- Maintenance Data Display Device
- Maintenance Shop
- Maintenance Data Library
- Maintenance Data History
- IT Infrastructure
- Maintenance Management System
- Maintenance Assignment Center
- Maintenance Debrief
- Operator Debrief
- Visual Indications
- Operator
- Maintainer
- Denny Raitz / Wayne Gafford
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What is missing to achieve IDE capabilities?

- Standard Requirements for the design and infrastructure
  - MBE and eBOM access and integration with support functions

- Standard data exchange:
  - What data is needed by whom including feedback?
  - Semantic consistencies between like data fields in differing systems

- Standard Metrics “Pick List” for Contracting:
  - PBL or Warranty

- For IDE to work, “buy-in”
  - Enforceable OSD and SYSCOM policies
  - Clear requirements
  - Qualified and responsive industry capabilities
  - Maturation of all “S” Series Specifications with demonstrated integration.
Closed-Loop Product and Service Lifecycle Management

S1000D in an Integrated Data Environment

What Can Assist In PLM/SLM Capabilities?
INTERCHANGE STANDARDS, GUIDANCE and POLICY!
Summary

- S1000D is one component (system documentation support) in an integrated data environment.

- Differing but complimentary IDEs:
  - OEM
  - End Users
    - Both must be in sync!

- Product vs Service Life Cycle Management

- The need for interchange standards, guidance and policy for successful IDEs
Comments!