Introduction to GEIA-STD-0007
Logistics Product Data

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Outline

- Introduction – Why GEIA-STD-0007?
- Content
- Supportability Analysis
  Relationships
- Supportability Products/
  Contracting
- Relationship to AP239
- Summary/Schedule
Acquisition Reform

- OSD Mandate For Change
  - Dr. Perry’s Guidance June 1994

- DOD Will Rely on Commercial Products and Processes

- MIL-STD-1388 STDs Cancelled – 1996

- Ten Years Since MIL-STD-1388-2B was Eliminated
  - What are program offices using?
# LSAR Utilization Survey

Survey Results Of Army Major Weapon Systems

<table>
<thead>
<tr>
<th></th>
<th>Number Of Responses</th>
<th>Number With Logistics Data Delivery Rqmts</th>
<th>Number Using LMI Spec</th>
<th>Number Using LSAR Standard</th>
<th>Number Using LSAR System For Data Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACAT I</strong></td>
<td>23</td>
<td>19</td>
<td>13</td>
<td>5</td>
<td>19</td>
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<tr>
<td><strong>ACAT II</strong></td>
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<td>4</td>
<td>4</td>
<td>6</td>
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<td><strong>TOTAL</strong></td>
<td>37</td>
<td>29</td>
<td>17</td>
<td>9</td>
<td>25</td>
</tr>
</tbody>
</table>

Note: 25 of 29 (86%) Contractors Provided data in 1388/LSAR format!
Where are we Going?

- Fact: Re-establishing MIL-STD-1388, Will NOT happen!

- Direction → Industry Standards

- Utilizing the Defense Acquisition Life Cycle Framework
  - Effectively Replacing MIL-STD-1388-1A LSA Processes

- Working within the Framework of the Government Electronics and Information Technology Association (GEIA)
  - GEIA-STD-0007, Logistics Product Data
  - GEIA-HB-0007, Handbook and Guide for Logistics Product Data
  - Effectively Replacing MIL-STD-1388-2B, LSAR Data Exchange
The “BIG Picture”

- DoD Framework
  - Supportability Analysis
  - AP239 Activities
- GEIA-STD-0007
  - Logistics Product Data
- System Support
  - IETM
  - Training
  - Provisioning
  - Parts Lists
  - Etc…

October 2006
DOD Life Cycle Management Framework

Integrated Defense Acquisition, Technology, & Logistics Life Cycle Management Framework

October 2006
• Define Logistics Product Data Generated During Design of a System, End Item, or Product

• Define Data Exchange Mechanisms
Exchange Mechanisms

- **Central Exchange**
  Federated database, must establish exchange agreements with each “Partner”.

- **Point to Point**
  Simple exchange, must establish exchange agreements and Protocols with each Partner

- **Closely Tied**
  Related exchange, typically similar data and structure
GEIA-STD-0007 Content

- Functional Area Entities/Attributes
  - Cross Functional Requirements
  - Operations and Maintenance
  - Reliability Requirements and Analysis
  - Task Analysis
  - Skill and Training
  - Support Equipment
  - Unit Under Test
  - Facility
  - Transportability
  - Provisioning and Cataloging Requirements

- Data Types Dictionary
- XML Schema for Logistics Product Data
  - Update/Change Process
- XML Schemas for Transaction Sets
  - Provisioning & Style Sheet
  - Packaging & Style Sheet
  - Task Analysis
- LCN, ALC, UOC Assignment Guidance
The probability that, when used under stated conditions in an ideal support environment, a system will operate satisfactorily at any time. This differs from Inherent Availability only in its inclusion of consideration for preventive action. $A_a$ excludes supply downtime and administrative downtime. The measurement bases for MTBM and $M$ must be consistent when calculating $A_a$. $A_a$ may be expressed by the following formula:

$$A_a = \frac{MTBM}{MTBM + M}$$

where

$$MTBM = \left(1 - \frac{1}{MTBF} + \frac{1}{MTBM-ND} + \frac{1}{MTBPM}\right) - 1$$

$$M = N \sum_{i=1}^{\infty} (ET_i)(TF_i)$$

$$M = \frac{N}{\sum_{i=1}^{\infty} TF_i}$$

$M = \text{Mean active maintenance downtime (where corrective and preventive actions are considered)}$, $ET_i = \text{Elapsed time for task } i$, $TF_i = \text{Task frequency for task } i$, $N = \text{Total number of tasks performed}$

Note: The measurement bases for MTBF, MTBM-ND, and MTBPM must be consistent when calculating the MTBM parameter.

<table>
<thead>
<tr>
<th>ELEMENT TYPE</th>
<th>TYPE</th>
<th>MAX LENGTH</th>
<th>DEFINITION</th>
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</thead>
<tbody>
<tr>
<td>achieved availability Type</td>
<td>decimal</td>
<td>9</td>
<td>The probability that, when used under stated conditions in an ideal support environment, a system will operate satisfactorily at any time. This differs from Inherent Availability only in its inclusion of consideration for preventive action. $A_a$ excludes supply downtime and administrative downtime. The measurement bases for MTBM and $M$ must be consistent when calculating $A_a$. $A_a$ may be expressed by the following formula: $A_a = \frac{MTBM}{MTBM + M}$, where $MTBM = \left(1 - \frac{1}{MTBF} + \frac{1}{MTBM-ND} + \frac{1}{MTBPM}\right) - 1$, $M = N \sum_{i=1}^{\infty} (ET_i)(TF_i)$, $M = \frac{N}{\sum_{i=1}^{\infty} TF_i}$, $M = \text{Mean active maintenance downtime (where corrective and preventive actions are considered)}$, $ET_i = \text{Elapsed time for task } i$, $TF_i = \text{Task frequency for task } i$, $N = \text{Total number of tasks performed}$, Note: The measurement bases for MTBF, MTBM-ND, and MTBPM must be consistent when calculating the MTBM parameter.</td>
</tr>
</tbody>
</table>
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GEIA-HB-0007 (The Handbook!)
GEIA-HB-0007 Outline

- Overview of how (e.g. what analysis) and when Logistics Product Data is generated during the development process (AP239 and DOD Lifecycle Models)

- Description of the Logistics Product Data Entities and Attributes (When Required, Sources, Indenture Level Relationships, Primary Use)

- Contracting for Logistics Product Data

- Appendices
  - Sample Relational Tables
  - Test Data Set
  - LCN, ALC and UOC Guidance to Include Relationship to S1000D SNS
  - Data Cross Reference List (0007, DEF STAN 00 60, MIL-STD-1388-2B)

- Publish Dec 06
Supportability Analysis Process

Concept Refinement Phase/Generate Support Solution

DOD Life Cycle Framework Analyses

- Perform Use Study
- Perform Comparative Analysis
- Identify Standardization Opportunities
- Functional Requirements Analysis
- Define Supportability Factors

AP239, Product Life Cycle Support Activities

- Define Support Context
  - Life & Usage Profile
  - Available Resources
- Establish Requirements
  - Elicit Stakeholder Needs
  - Define Support Requirements

GEIA-STD-0007

- X Entities – Cross Functional Requirements
- A Entities – Operations & Maintenance Requirements
Supportability Analysis Process

Technology Development Phase/Generate Support Solution

DOD Life Cycle Framework Analyses

- Update Comparative Analysis
- Identify Standardization Requirements
- Define Functional Requirements
- Conduct Tradeoff Analysis
- Conduct Sensitivity Analysis
- Conduct Limited Task Analysis

AP239, Product Life Cycle Support Activities

- Define Support Solution
  - Establish Support Drivers
  - Task Analysis - Potential Tasks
  - Predict Support Performance & Resource Use

GEIA-STD-0007

- X Entities – Cross Functional Requirements
- B Entities – Reliability Requirements & Analysis
- C Entities – Task Analysis
Supportability Analysis Process

System Development & Demonstration Phase/Generate Support Solution

DOD Life Cycle Framework Analyses

- Define Functional Requirements
- FMECA
- Failure Tree Analysis
- RCM
- Task Analysis
- LORA
- Supportability Testing

AP239, Product Life Cycle Support Activities

- Predict Support Performance & Resource Use
- Task Analysis
- Define Support Solution
  - Support Policy
  - Support Plan
  - Task Procedures
  - Assemble Solution
- Assess Support Performance

GEIA-STD-0007

- X Entities – Cross Functional Requirements
- B Entities – Reliability Requirements & Analysis
- C Entities – Task Analysis
- E Entities – Support Equipment
- U Entities – Unit Under Test
- F Entities – Facilities
- G Entities – Skills & Training
- H Entities – Provisioning & Cataloging
Supportability Analysis Process

Production & Deployment Phase/Commission Support Solution

DOD Life Cycle Framework Analyses

- Supportability Testing
- Provisioning
- Provisioning Screening (Cataloging)
- Early Fielding Analysis

AP239, Product Life Cycle Support Activities

- Assess Support Performance
- Define Support Solution
- Provisioning

GEIA-STD-0007

- X Entities – Cross Functional Requirements
- H Entities – Provisioning & Cataloging
- All Other Entities Affected by Testing
Supportability Analysis Process

Operation & Support Phase/Provide Support

DOD Life Cycle Framework Analyses

- Materiel Fielding Analysis
- Post Production Support Analysis

AP239, Product Life Cycle Support Activities

- Analyze Support Feedback
- Collect Data and Provide Feedback

GEIA-STD-0007

- All Entities Affected by Data Collection and Feedback
The “BIG Picture”

DoD Framework

Supportability Analysis

AP239 Activities

GEIA-STD-0007

Logistics Product Data

System Support

IETM
Training Provisioning Parts Lists Etc…
Logistics Product Data Uses

- **Maintenance Planning**
  - Maintenance Plan
  - Maintenance Allocation Chart
  - Preventive Maintenance Checks & Services
  - Maintenance Procedures for IETMs (Task Analysis XML Schema)

- **Support and Test Equipment**
  - Support Equipment Recommendation Data
  - Calibration Maintenance Requirements Summary
  - TMDE Registration

- **Supply Support**
  - Provisioning Technical Documentation Lists (Long Lead, Post Conference, Common, Bulk Items, etc.) (Provisioning XML Schema & Style Sheet)
  - Design Change Notice Information
  - Cataloging/Screening/Parts Breakout
  - Indentured Parts List (for IETMs)
Logistics Product Data Uses (Continued)

- Manpower, Personnel & Training
  - Qualitative & Quantitative Personnel Requirements Information
  - Manpower Authorization Criteria
  - Task Inventory/Training Task List
  - New/Modified Skill/Training Requirements
  - Identification of Training Devices

- Packaging, Handling, Storage, and Transportation
  - Packaging and Preservation Data (Packaging XML Schema and Style Sheet)
  - Transportability Requirements

- Facilities
  - New/Modified Facilities Requirements
  - Maintenance Tasks Requiring New/Modified Facilities

- Reliability and Maintainability
  - Reliability Centered Maintenance Results
  - FMECA Results
Contracting for Logistics Product Data

- Identify the Data Uses and Analyses Needed for Logistics Product Data
- Document Required Data on the Attribute Selection Sheet
- Identify the Appropriate XML Schema for Data Transfer
  - Logistics Product Data
  - Provisioning
  - Packaging
  - Task Analysis
- Use MIL-PRF-49506, Logistics Management Information, DID-ALSS-81529 Citing:
  - Appropriate GEIA-STD-0007 XML Schema
  - Attribute Selection Sheet
Standards Content

GEIA-927

- Multi-Domain Entity Model
  - Lexical
  - Graphical
- Multi-Domain Entity Mapping Tables
- Entity/Attribute Dictionary

GEIA-STD-0007

- Logistics Product Data Implementation Model
- Data Element Dictionary
- Data Delivery Reqts

ISO 10303, AP239

- IDEF0 Activity Model – PLCS Process Model
- Entity/Attribute Model for PLCS
  - Lexical
  - Graphical
- Data Exchange Sets
  - Capability Modules
  - Entity Templates
  - Reference Data Library
AP239 DEXs are Developed based upon Business DEXs.

GEIA-STD-0007 Represents DoD Business DEX.

LOGSA Objective: Work with the Organization for the Advancement of Structured Information Standards (OASIS) to Incorporate GEIA-STD-0007 Logistics Data into the Appropriate DEX’s (1-5) and Create New DEXs where Gaps exist. (1-2 year Timeframe).

Must Retain Ability for DOD to Contract for Delivery of Structured Logistics Product Data.
GEIA-STD-0007 Spiral Development

- S1000D Data Requirements (IETM)
- S2000M Data Requirements (Provisioning)
- S3000L Data Requirements (LSA/LSAR)
- Def-Stan-0060 Data Requirements (UK LSA/LSAR)
- Documents
  - Drawings
  - Illustrations
- Level of Repair Analysis Data
- Improved Task/Subtask Referencing
Re-Establishes Industry/DOD Exchange of LSAR Data

Balloting Completed Sep 06 – Resolving Comments

Publish – Oct/Nov 06

Develop/Participate in ISO PLCS DEXs – ongoing

Develop, Ballot & Publish GEIA-HB-0007 – Dec 06
Contact Information

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  - 256-955-9928

- GEIA-927 & GEIA-HB-927
  - www.geia.org

- GEIA-STD-0007 (Ballot Version)
  - Balloted
  - Publish – Oct/Nov 06

- GEIA-HB-0007
  - Draft Completed
  - Publish – Dec 06
Backup Slides

Backup Slides
International Standards Efforts

Organization for the Advancement of Structured Information Standards (OASIS)

- International Consortium promoting development of international e-business standards
- Driving Development of AP239 PLCS Data Exchange Sets (DEX’s)
  - DEX1, Product Breakdown for Support
  - DEX2, Fault States
  - DEX3, Task Specification
  - DEX5, Maintenance Plan
  - DEX7, Operational Feedback
  - DEX8, Product as Individual
  - DEX4/9, Work Package Definition and Report
  - Others
- LOGSA is Voting Member
AeroSpace Defense Association (ASD) Sponsored Effort

Companies Committed Resources for Development of Spec
- Boeing
- Dassault Aviation
- EADS/Airbus
- BAE
- Saab Aero

Minimal Government participation (Industry Driven)
- UK MoD
- USA LOGSA

Content will follow a Task focused approach (FMECA, RCM, Task Analysis, etc.)

Data Requirements will be defined later (early 07)
- DEX’s (AP239 Approach)
- GEIA-STD-0007 data model?

One Year Effort – 1 Jun 06 Start

Quarterly reviews
- Sep – SE
- Dec – FR
- Mar – GE
- Jun – US

S4000A (Specific Analysis: RCM, LORA, etc.) TBD.

Complimentary to S1000D (Tech Pubs) and S2000M (Provisioning)
A Reference Model that integrates across domains, facilitates the normalization of information. Each functional domain must only validate with 1 reference model and they become harmonized with all other domains.