GOVERNMENT ELECTRONICS AND INFORMATION TECHNOLOGY ASSOCIATION
A Sector of the Electronic Industries Alliance

Introduction to GEIA-STD-0007 Logistics Product Data

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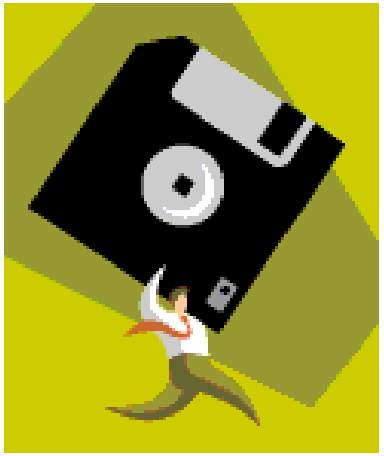
Oct 2006

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

	Number Of Responses	Number With Logistics Data Delivery Rqmts	Number Using LMI Spec	Number Using LSAR Standard	Number Using LSAR System For Data Delivery
ACAT I	23	19	13	5	19
ACAT II	14	10	4	4	6
TOTAL	37	29	17	9	25

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**

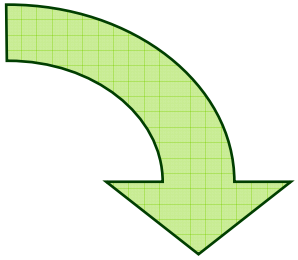
- **Working within the Framework of the Government Electronics and Information Technology Association (GEIA)**
  - **GEIA-STD-0007, Logistics Product Data**
  - **GEIA-HB-0007, Handbook and Guide for Logistics Product Data**
  - **Effectively Replacing MIL-STD-1388-2B, LSAR Data Exchange**

The "BIG Picture"

DoD Framework

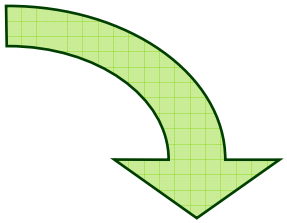
Supportability Analysis

AP239 Activities



GEIA-STD-0007

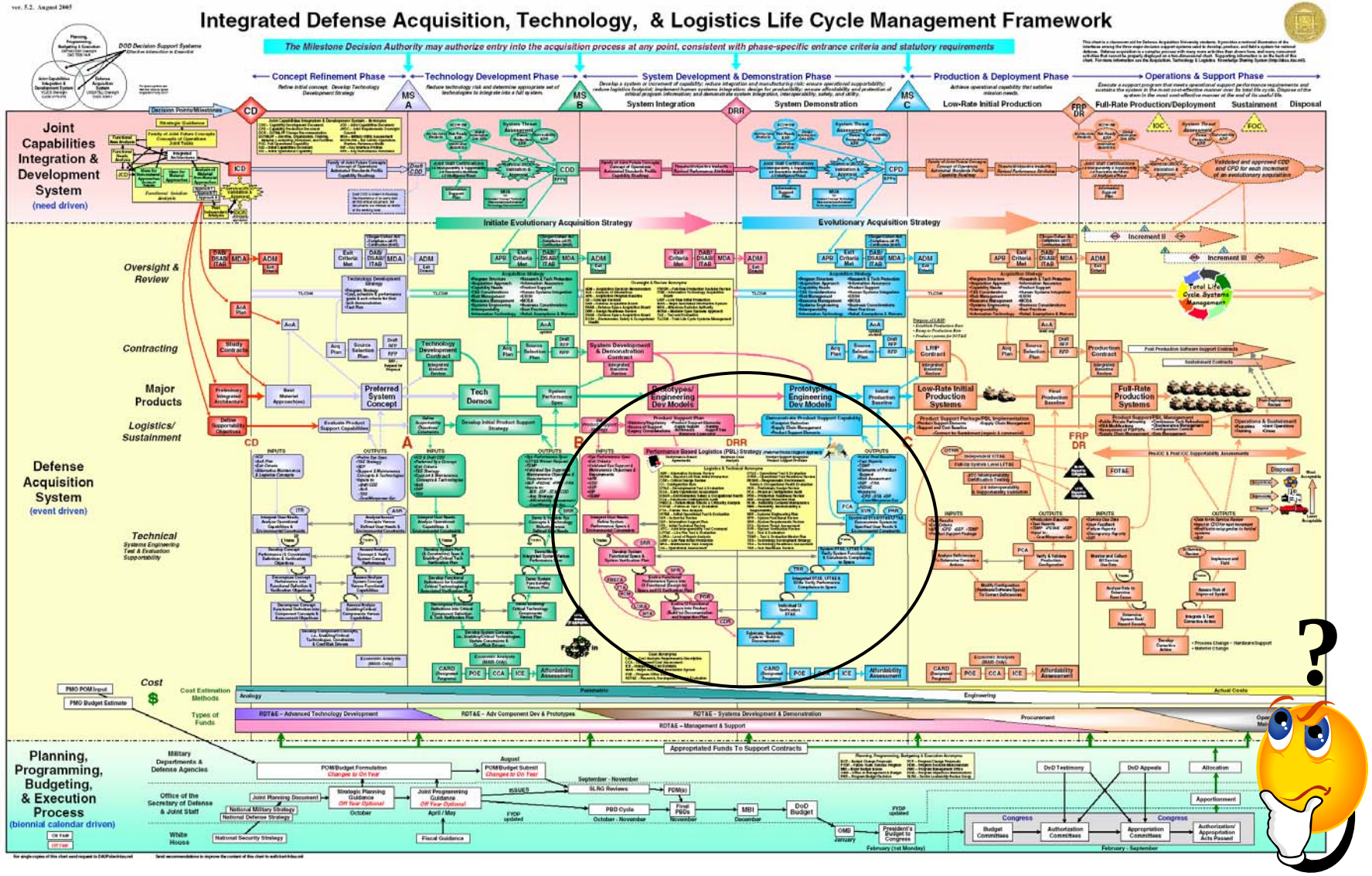
Logistics Product Data



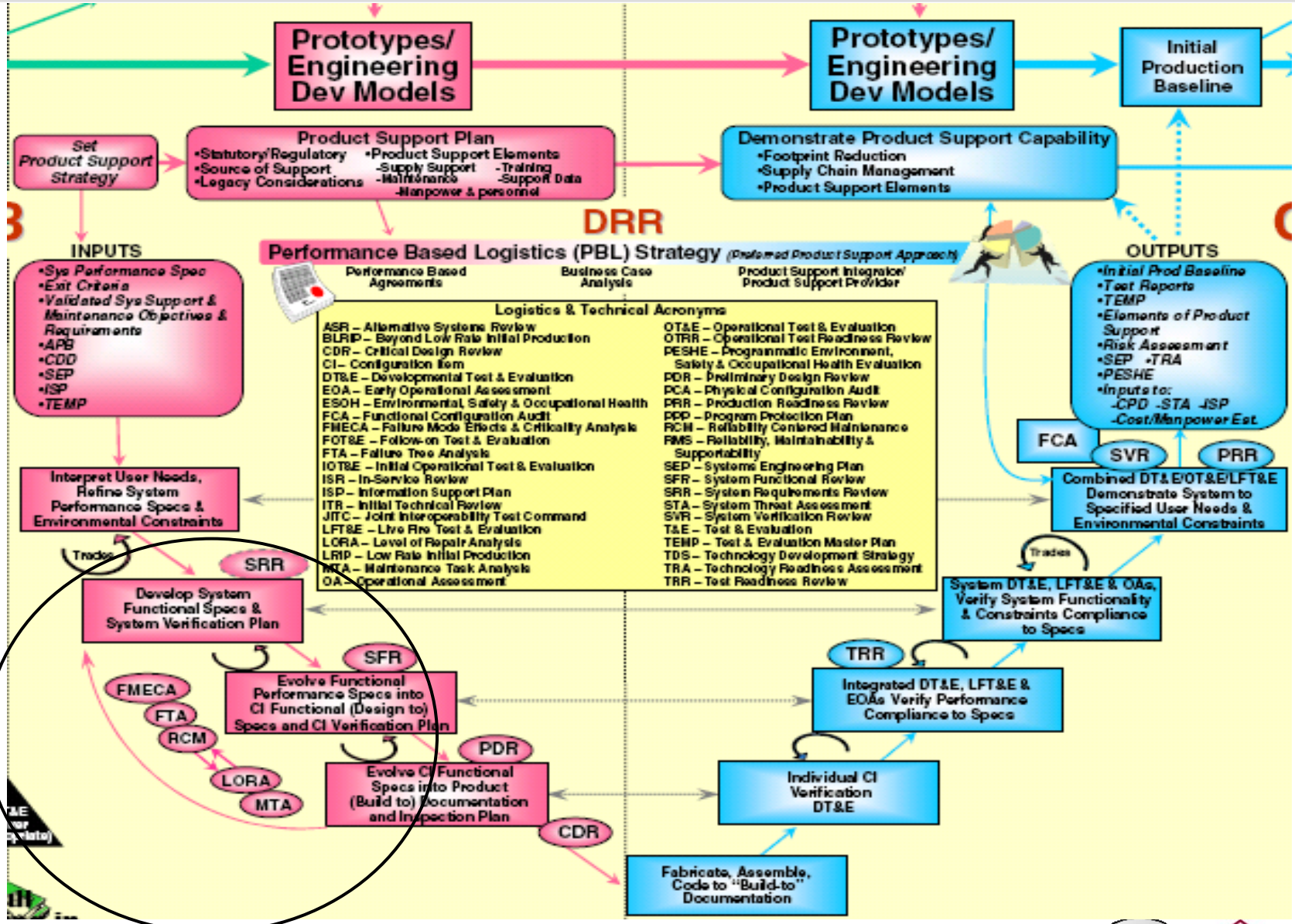
System Support

IETM
Training
Provisioning
Parts Lists
Etc…

DOD Life Cycle Management Framework



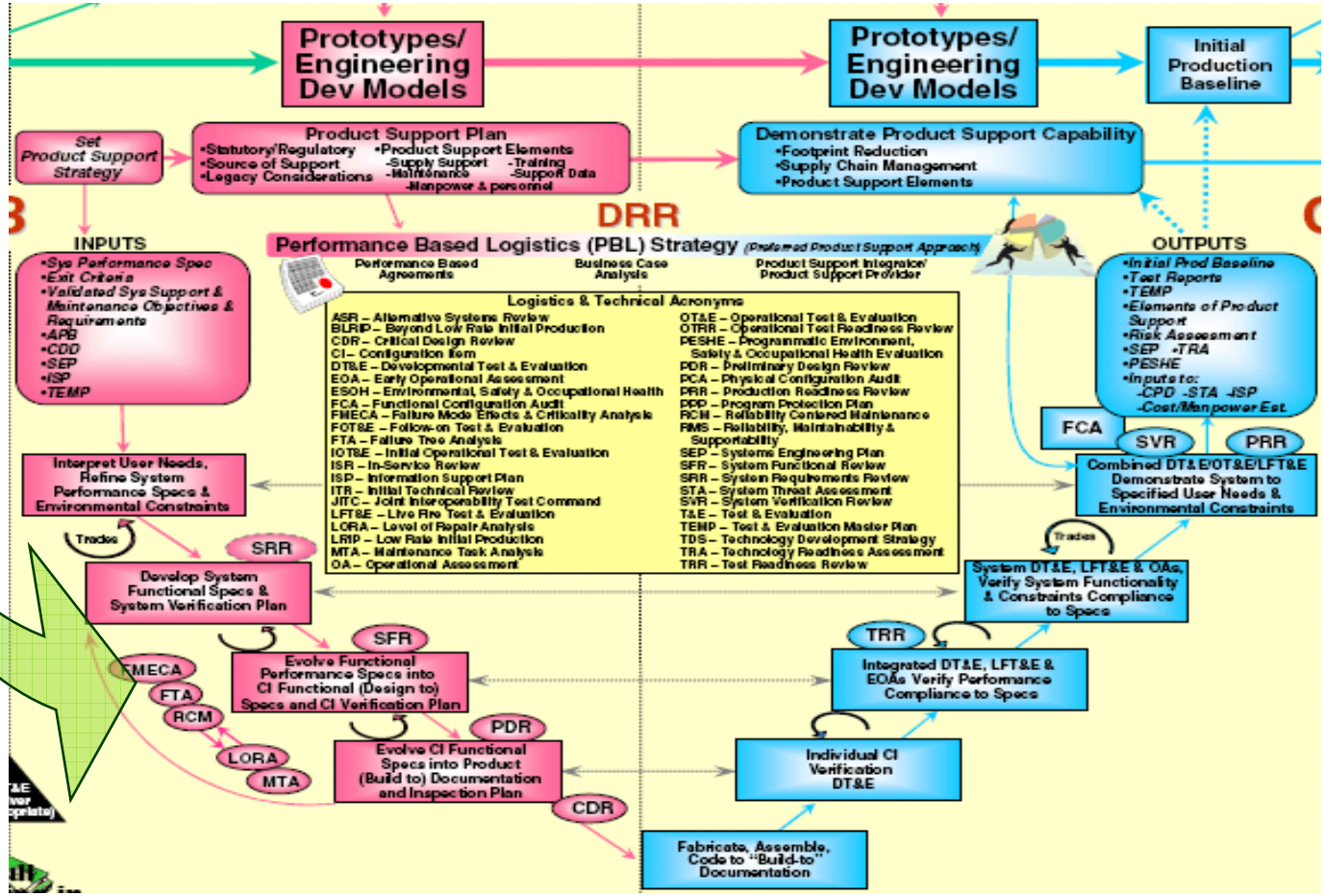
DOD Life Cycle Management Framework



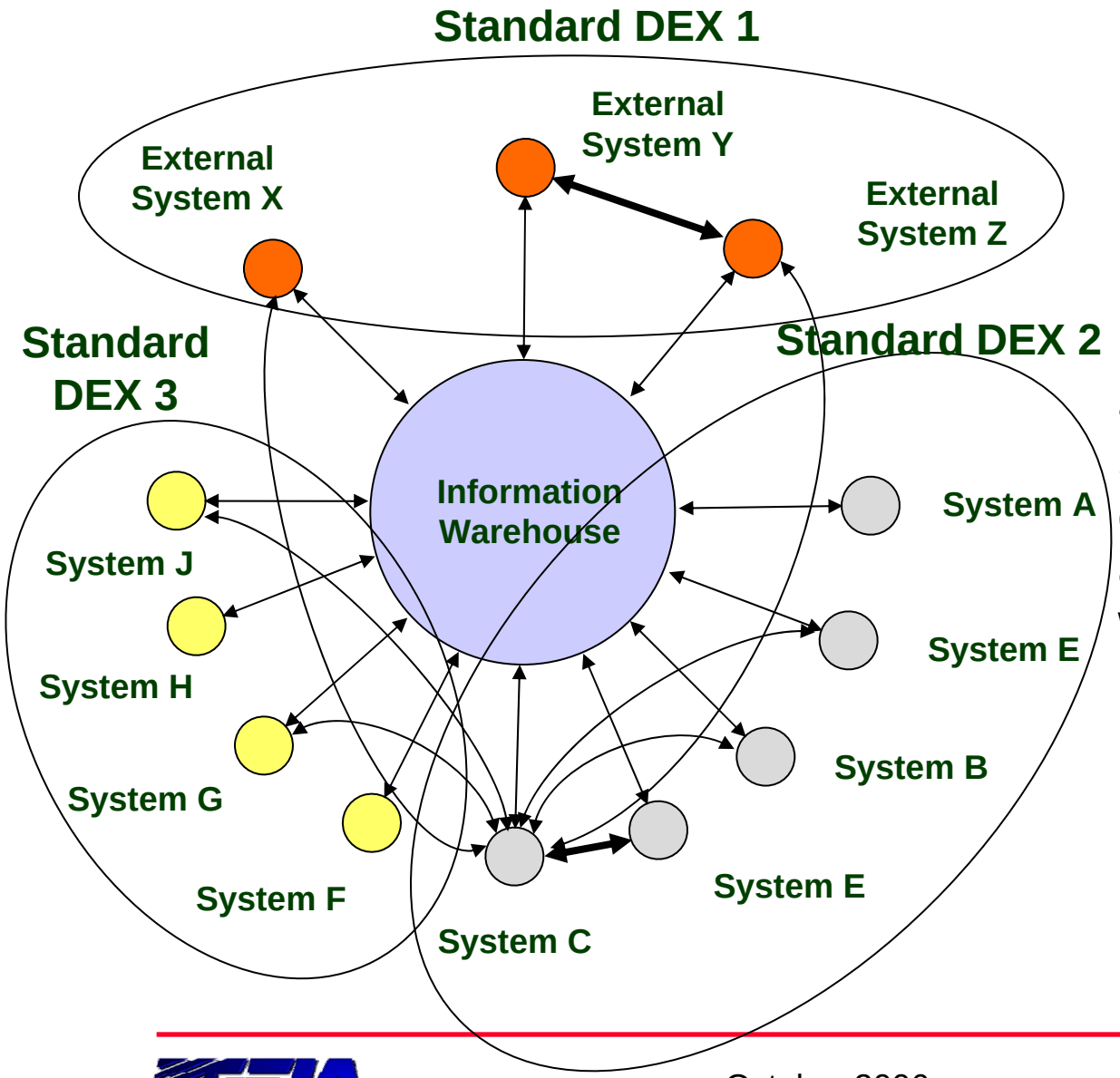
GEIA-STD-0007

- **Define Logistics Product Data Generated During Design of a System, End Item, or Product**

- **Define Data Exchange Mechanisms**



Exchange Mechanisms



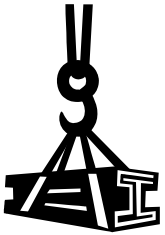
- **Central Exchange**
  Federated database, must establish exchange agreements with each "Partner".

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

- **Closely Tied**
  Related exchange, typically similar data and structure

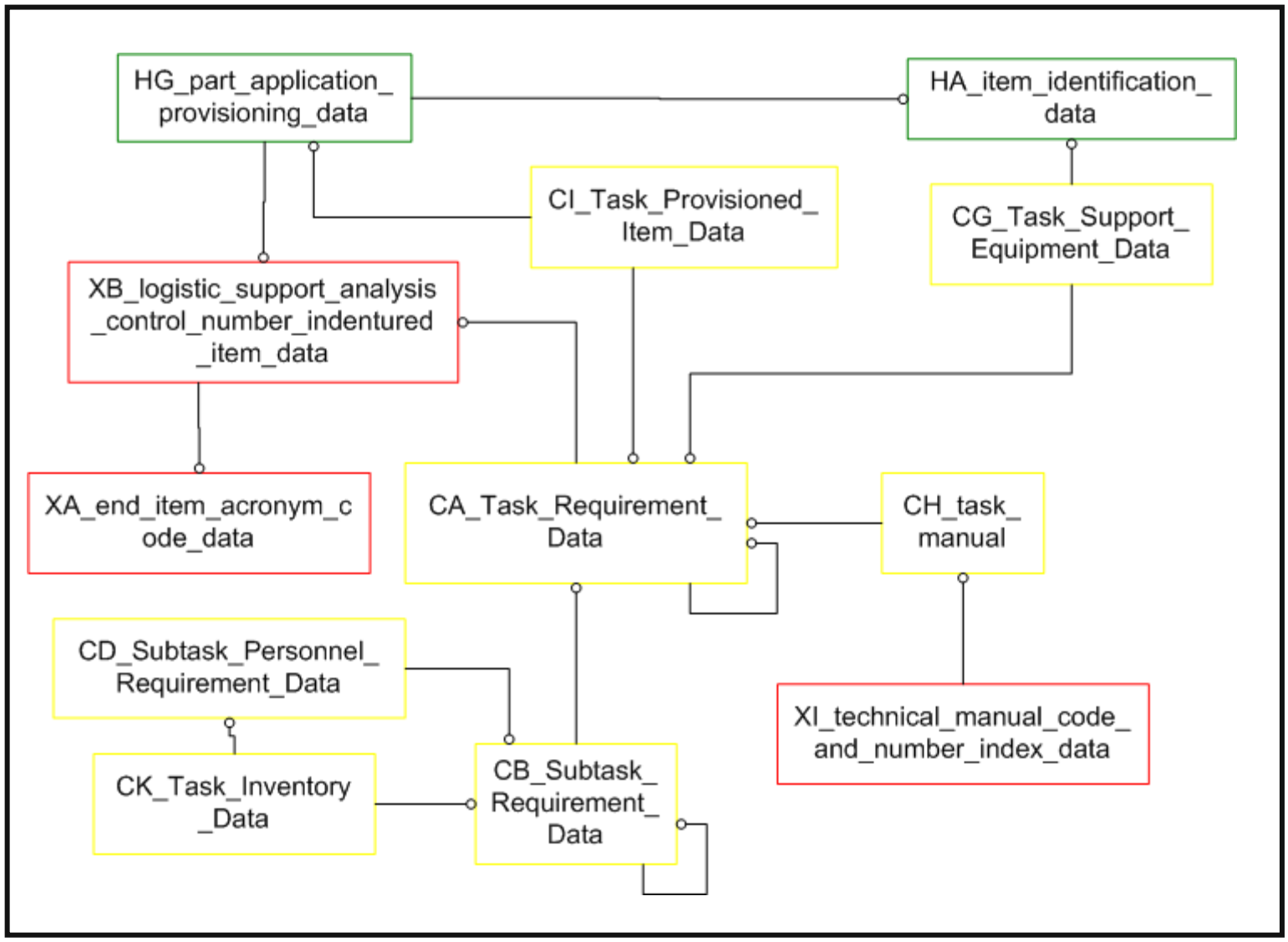
GEIA-STD-0007 Content

- 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






GEIA-STD-0007 Data Model Example



GEIA-STD-0007 Data Element Dictionary Example

ELEMENT TYPE	TYPE	MAX LENGTH	DEFINITION
achieved _availability _Type	decimal (0-2)N[.(0-6)N]	9	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 $MTBM = \left(\frac{1}{MTBF} + \frac{1}{MTBM\text{-}ND} + \frac{1}{MTBPM}\right)^{-1}$ $M = \frac{\sum_{i=1}^{N} (ETi)(TFi)}{\sum_{i=1}^{N} TFi}$ M = Mean active maintenance downtime (where corrective and preventive actions are considered) ETi = Elapsed time for task i TFi = Task frequency for task i N = Total number of tasks performed Note: The measurement bases for MTBF, MTBM-ND, and MTBPM must be consistent when calculating the MTBM parameter.

GEIA-STD-0007 XML Schema Example

```
<?xml version="1.0" encoding="UTF-8" ?>
<!-- xmlns:geia is needed by xpath in key/keyref as xpath does not work with default namespace  -->
_ <xs:schema
      xmlns:geia="http://www.geia_STD_0007.com/2006/schema"
      xmlns:lsartypes="http://www.geia_STD_0007.com/2006/types"
      xmlns:xs="http://www.w3.org/2001/XMLSchema"
      targetNamespace="http://www.geia_STD_0007.com/2006/schema"
      elementFormDefault="qualified" attributeFormDefault="unqualified">
      <xs:import
         namespace="http://www.geia_STD_0007.com/2006/types"
         schemaLocation="GEIA_STD_0007_Types.xsd" />
 _ <xs:complexType name="XA_end_item_acronym_code_data_type">
   _ <xs:all>
       <xs:element name="end_item_acronym_code"
          type="lsartypes:end_item_acronym_code_Type" />
       <xs:element name="logistic_support_analysis_control_number_structure"
          type="lsartypes:logistic_support_analysis_control_number_structure_Type" minOccurs="0" />
       <xs:element name="administrative_lead_time"
          type="lsartypes:administrative_lead_time_Type" minOccurs="0" />
       <xs:element name="contract_team_delay_time"
          type="lsartypes:contact_team_delay_time_Type" minOccurs="0" />
       <xs:element name="contract_number"
          type="lsartypes:contract_number_Type" minOccurs="0" />
       <xs:element name="cost_per_reorder_action“
          type="lsartypes:cost_per_reorder_action_Type" minOccurs="0" />
```

GEIA-HB-0007 Handbook

- **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

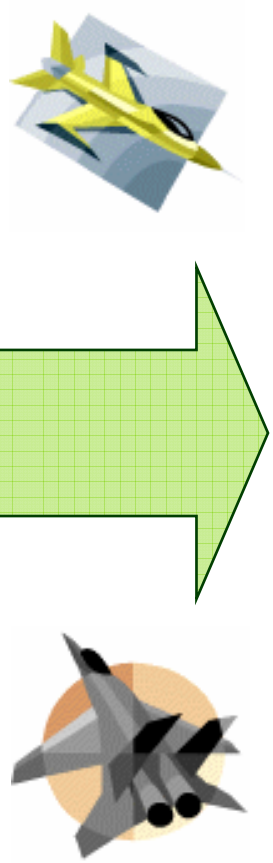
Concept Refinement Phase/Generate Support Solution

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

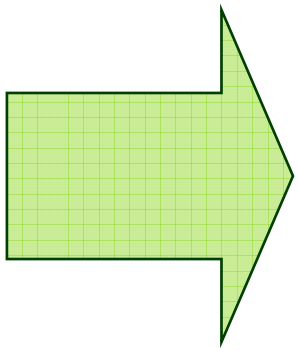
Technology Development Phase/Generate Support Solution

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

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

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

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

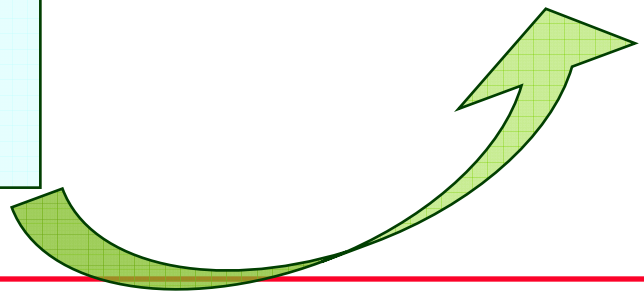
- Multi-Domain Entity Model
  - Lexical
  - Graphical
- Multi-Domain Entity Mapping Tables
- Entity/Attribute Dictionary

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

GEIA-STD-0007

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

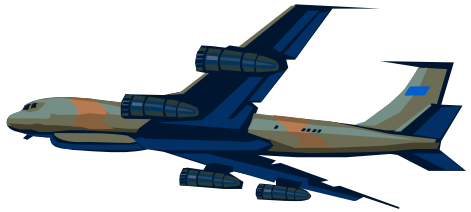


GEIA-STD-0007 & DEXs

- **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



GEIA-STD-0007 Summary

- 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

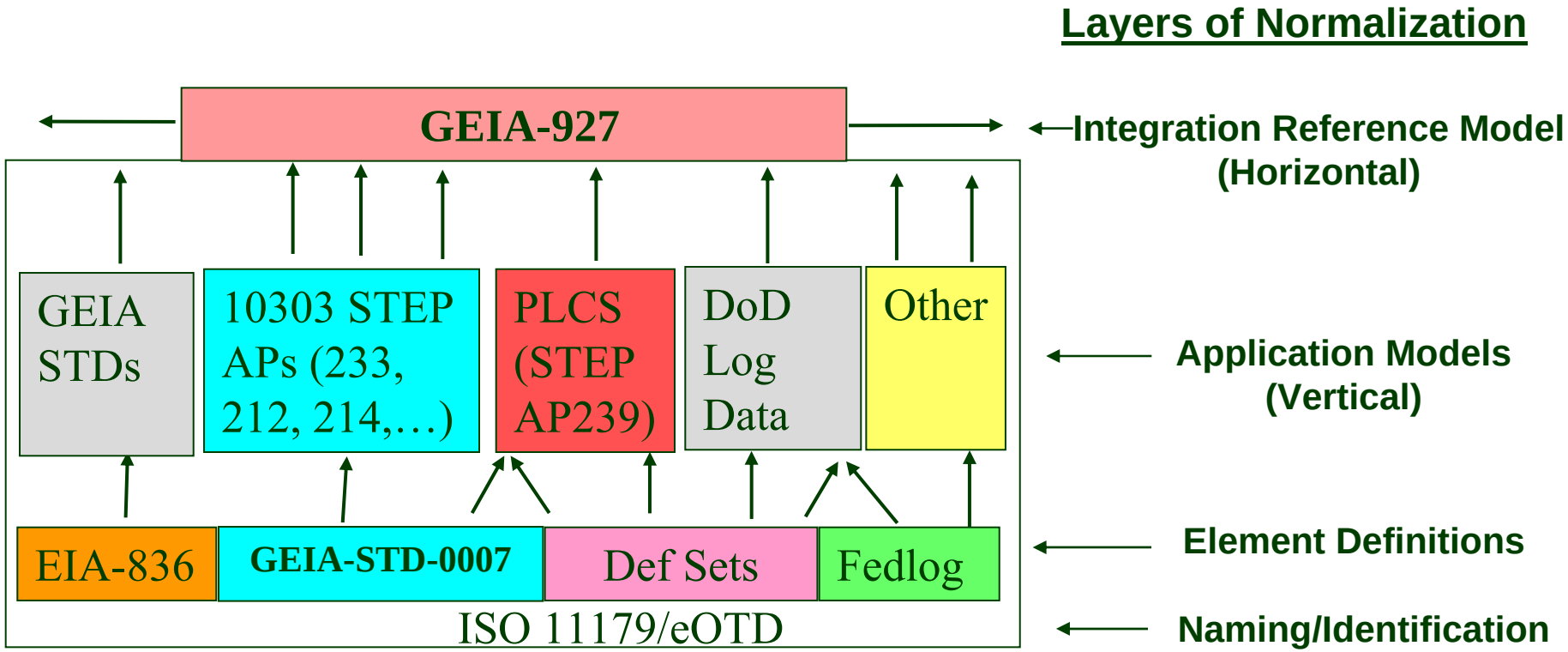
International Standards Efforts

- **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

ASD S3000L
Application Handbook for the LSA of Defence Products

- 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)

Data Standards and Relationships



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.