Data Management in a Performance Based Logistics Environment

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Agenda

• What data are we talking about?
• Background
  – Changes in environment
  – Data management yesterday, today, and tomorrow
• GEIA/ANSI STD 859 and HDBK 859
  – Results to date
  – Related support to DM community of practice
• Example HDBK content
• Summary
# Types of Data

<table>
<thead>
<tr>
<th>Type</th>
<th>Usage</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
<td><strong>Collaboration</strong></td>
<td>Cost, schedule and performance data. Scientific data such as written notes and observation data. Engineering drawings and models, parts catalogues, software applications and documentation, operational and maintenance instructions, and training materials.</td>
</tr>
<tr>
<td><strong>Business</strong></td>
<td><strong>Collaboration</strong></td>
<td>Plans and schedules, financial information (budgets, bases of estimate, EVMS data…) inventory status, and human resource info.</td>
</tr>
<tr>
<td><strong>Operational</strong></td>
<td><strong>Transactional Records Exchange</strong></td>
<td>Orders, issues, receipts, bills of lading, and invoices.</td>
</tr>
</tbody>
</table>
Changing Environment

Business Relationships
- Vertical Integration
- Trust-Based Relationships

Design Responsibility
- DoD Design Bureaus
- Industry Design Teams

Standards Development & Implementation
- Military
- Commercial

Acquisition Cycle
- 1950
- 2000+
- 12 - 15 years
- 2 - 5 years

Computer Systems Development Cycle
- 18 - 24 Months

Weapon System Life Cycle
- 20 years
- 50+ years

Commercial Systems Life Cycle
- 10 - 15 years
- 2 - 5 Years

Logistics Support
- DLA, DoD Depots & IMAs
- Mix of Government and Contractor Logistics Support
- Transaction-based
- Performance-based
Transition to Industry Standards

**DoD Mandates**

- MIL-STD-973 Configuration Mgt
- MIL-STD-2549 CM Data Exchange
- DoD 5010.12-M Acq. & Mgt. Tech Data

**Contemporary Practices Based on Sound Principles**

- ANSI/EIA-649/A HDBK 61
- EIA 836
- GEIA/ANSI STD 859
- GEIA HDBK 859

- Broaden applicability: commercial and government
- Leverage the latest mgt. methods and technologies
- Continued “harmonization” with related initiatives, e.g., STEP, PDM, IDE, …
## Essential Changes: Data

<table>
<thead>
<tr>
<th></th>
<th>Was</th>
<th>Is</th>
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</thead>
<tbody>
<tr>
<td><strong>Delivery Medium</strong></td>
<td>• Paper</td>
<td>• Electronic</td>
</tr>
<tr>
<td><strong>What constitutes delivery</strong></td>
<td>• I mail it, you open it</td>
<td>• I post it on web site, we access it</td>
</tr>
<tr>
<td><strong>Standardization of deliverables</strong></td>
<td>• DIDs</td>
<td>• DIDs radically tailored or ignored entirely</td>
</tr>
<tr>
<td></td>
<td>• Use mandatory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Tailoring permitted, but made intentionally difficult</td>
<td></td>
</tr>
<tr>
<td><strong>Data environment</strong></td>
<td>• Slow</td>
<td>• Rapid to instantaneous</td>
</tr>
<tr>
<td></td>
<td>• Bulky, paper storage</td>
<td>• Compact electronic storage</td>
</tr>
<tr>
<td></td>
<td>• Fairly standard</td>
<td>• Non-standard</td>
</tr>
<tr>
<td></td>
<td>• Limited number of copies</td>
<td>• Essentially infinite number of copies</td>
</tr>
<tr>
<td></td>
<td>• Sometimes hard to find or obtain copy</td>
<td>• Still difficult to find</td>
</tr>
<tr>
<td><strong>Availability in future</strong></td>
<td>• Infinitely available and interoperable as long as copies not misplaced</td>
<td>Electronic formats subject to rapid technological obsolescence</td>
</tr>
</tbody>
</table>
Data Management Process (Yesterday)

Legend:
- Yellow: Government Activities
- Blue: Contractor Activities

- Sequential Process
- Had a dedicated and experienced Data Manager
- Assumed all contract required data is delivered
- Philosophy was “Buy Everything!”
- Only applied to some (contracted) data
Evolving Data Management Process (Today and Tomorrow)

Legend
- Government Activities
- Contractor Activities
- New Activities
- Joint Activities

Procurement Need

Acq Strategy
- Log Spt Strategy
- Data Strategy
- Concept of Operations

Data Requirements
- Functional Support Templates
- Risk Analysis

Functional Requirements Authentication Board

Contract Award, MOA signed, ...

Data Disposal

Data “warehousing” and archiving

Data Development

Delivery

Review

Acceptance

User Retention

Access

Web query

Continuous review and acceptance?
Components of the New Data Management

**Principles**
- Basic tenets and values
- General

**Practices**
- Implementation specifics
- Some will always be organization-specific

Professionalizing the Workforce Through Training

**GEIA - 859**

**HDBK 859**

Templates
Purpose and Scope of Std 859

- **Purpose**
  - Provide a contemporary, principles-level, guide to requirements for acquisition and management of data across the product life-cycle
  - Enable sharing of data among trading partners
    … in a performance-based environment

- **Scope**
  - Common principles
  - Related enablers
  - (Some) key practices
## DM Principles of Standard 859

<table>
<thead>
<tr>
<th>Area</th>
<th>Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Focus and Scope</td>
<td>Define the organizationally relevant scope of data management</td>
</tr>
<tr>
<td>2 Customer Support</td>
<td>Plan for, acquire, and provide data responsive to customer requirements.</td>
</tr>
<tr>
<td>3 Business Context</td>
<td>Develop DM processes to fit the context and business environment in which they will be performed.</td>
</tr>
<tr>
<td>4 Identification</td>
<td>Identify data products and views so that their requirements and attributes can be controlled.</td>
</tr>
<tr>
<td>5 Change Management</td>
<td>Control data, repositories, data products, data views, and metadata using approved change control processes.</td>
</tr>
<tr>
<td>6 Data Rights</td>
<td>Establish and maintain an identification process for intellectual property, proprietary, and competition-sensitive data.</td>
</tr>
<tr>
<td>7 Data Retention</td>
<td>Retain data commensurate with value to the organization.</td>
</tr>
<tr>
<td>8 Process Improvement</td>
<td>Continuously improve data management.</td>
</tr>
<tr>
<td>9 DM/KM Connection</td>
<td>Effectively integrate data management with knowledge management.</td>
</tr>
</tbody>
</table>
Develop Data Management processes to fit the context and business environment in which they will be performed.
Enabler 3.1: Determine the complete set of requirements that the DM solution must address

- General requirements
- Data capabilities
- Data processes
- Intended use of the data
- Related business objectives
- Technology issues
- External constraints
Purpose and Scope of HDBK 859

Provides the first level of ‘how’
- examples and samples
- approaches
- tools
- methods
- mini-case studies
- ...to illustrate how to implement DM in accordance with the principles (compliant with the standard)
## Example Elements of Data Strategy

<table>
<thead>
<tr>
<th>Question</th>
<th>Information</th>
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</table>
| What is the appropriate placement model for the enterprise DM functions? | Centralized—all DM responsibilities are within one organization  
Decentralized—DM responsibilities are distributed throughout the organization  
Hybrid—one organization has most of the DM responsibilities, but leverages other enterprise assets (for example other organizations provide CM or records management resources) |
| What data are needed and by whom?                                       | Evaluate program life cycle  
Identify the documentation that defines program requirements  
Review documentation and develop list of required data products  
Determine who (organizations, functions, or systems) will use the data, what decisions or functions are supported by the data, and how and when they will use various types of data |
### Example Elements of Data Strategy, cont.

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| Which views of data will be required?                                    | Identify the content and format for each data product  
Identify duplicate data products or opportunities to combine data products  
Consolidate requirements for similar data products  
Develop complete list of data products to be created for the program |
| When will the data be required?                                         | Identify the users for each data product required  
Establish whether multiple deliveries are required  
Determine delivery dates and identify updates or reversions  
Prepare a list of data products with users and delivery dates |
| What are the delivery mechanisms?                                       | Evaluate data product requirements  
Identify data product sources or providers  
Identify external and internal data providers  
Verify that requirements for data identification are defined and communicated  
Develop a list of data products with all sources identified |
| What organization design and staffing changes are needed?               | Determine if a change in the way DM is staffed requires specific training and certification for data management personnel. |
## Questions to Help Ensure Completeness of Requirements

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<tr>
<td>Who determines the quality of the data?</td>
<td>Customer, manufacturing, engineering</td>
</tr>
<tr>
<td>How are the data to be acquired?</td>
<td>In-house, contracted for, computer accessed</td>
</tr>
<tr>
<td>How are the data to be stored?</td>
<td>File cabinets, servers, microfilm</td>
</tr>
<tr>
<td>How will the data be protected?</td>
<td>Vaults, computing access control, restricted buildings, duplicate copies at different site</td>
</tr>
<tr>
<td>Who needs access to the data?</td>
<td>Foreign nationals, finance, release group</td>
</tr>
<tr>
<td>What view of the data do they need?</td>
<td>Parts catalog for customer, detail drawings for manufacturing, ad hoc reports for management</td>
</tr>
<tr>
<td>How are the data to be used?</td>
<td>Certification, functional test, build</td>
</tr>
<tr>
<td>How are the data to be delivered?</td>
<td>Electronically, paper, on-demand reports, overnight updates of the systems</td>
</tr>
<tr>
<td>How are the data to be disposed of?</td>
<td>Shredding, burning, deletion of files, garbage can</td>
</tr>
</tbody>
</table>
Aligning DM with Contemporary View of Innovation—
“Chain Link” Model of Continuous Improvement

Summary

- **New environment**
  - Technology
  - Business – trust-based, performance-based

- **Needed a fresh way to think about DM**
  - New recipes, improved methods

- **Principles for the “new” DM in GEIA/ANSI STD 859, methods in GEIA/ANSI HDBK 859**

- **Example HDBK 859 content**