Implementing Item Unique Identification (IUID) Into Maintenance and Materiel Readiness Processes

DoD Maintenance Symposium

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Session Objectives

Describe the purpose of IUID within maintenance processes in order to achieve the OSD goal of optimized readiness.

Session presenters will:

- Discuss the impetus for IUID implementation
- Identify and describe the relevant policies and events for implementing IUID into the DoD maintenance environment.
- Discuss the “art of the possible” using IUID-enabled SIM
- Discuss the military services implementation strategies, successes, and associated challenges
The DoD Maintenance Enterprise

- ~330,000 Vehicles
- ~800 Strategic Missiles
- ~280 Ships
- ~14,000 Aircraft/Helicopters
- + Communications/Electronics Equipment
- + Support Equipment
- + Other Systems

Maintained by:
- 654,000 DoD personnel
- Private sector companies

Maintenance cost:
- ~$81 billion per year

National Defense Inventory is valued at ~$345B

Source: LMI analysis of DoD data
DoD Maintenance Cost Trends

Maintenance costs are escalating!

• $40 billion in FY-01 to $87 billion in FY-06

• 25% increase in maintenance budget from FY-01 to FY-08 (constant FY 08 dollars)

Maintenance is increasing as a percentage of the total DoD budget!

• 14% in FY-03 to 16% in FY-06

Source: LMI analysis of DoD data
Materiel Readiness Life Cycle Framework

Sustainment is 65 - 80% of the Life Cycle Cost
OSD Strategy:

- Promote End-to-End (E2E) Materiel Readiness Value Chain Perspective across DoD
  - Balance Safety, Reliability, Maintenance and Supply Distribution activities to achieve optimal materiel readiness at best cost.
  - Optimize “TIME-ON-WING” and “TURN AROUND TIME”

- Total Life Cycle System Management (TLCSM)
  - Sustain Optimal Materiel Condition & Reliability
  - Sustain Optimal Support Cost & Cycle Time

I + T = M
**IUID is the Trigger**

**USD(AT&L) Policy Memo**

**29 July, 2003**

- New tangible items
  - Begin NLT 1 Jan 2004
  - commercial purchases
  - Begin NLT 1 Jan 2005
  - depot manufactured items

**USD(AT&L) Policy Memo**

**23 December, 2004**

- Legacy items in inventory
  - IOC Jul 2005
  - pilot depots
  - Complete NLT Sep 2007
  - all existing serialized items
  - Complete all items NLT Dec 2010
UID is strategically critical to:

- Always know what property the DoD owns
  - Definitively know what it is

- Always be able to account for it
  - Know where it is
  - Know who has custody of it
  - Know who is accountable for it
  - Know how it has been used & maintained
    - Know what it cost
    - Know its current value

And use this information to:

- Enable capability-based readiness
- Support planning, forecasting, and budgeting
- Identify gaps in capabilities
- Improve reliability and warranty management
- Streamline logistics processes
- Reduce cycle time
SIM as a Requirement

Based on DoD Directive 4151.18 stating the use of SIM (para 3.2.5)

Dec 2006, DODI 4151.19 *Serialized Item Management (SIM) for
Materiel Maintenance is issued*

→ 1.1. **Identify** populations of select items (parts, components, and end items).

→ 1.2. **Mark** all items in each population with a unique item identifier (UII).

→ 1.3. **Generate, collect, and analyze** maintenance, logistics, and usage data about each specific item.
IUID-enabled Serialized Item Management (SIM)

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• Essentially SIM is the ability to characterize uniquely identified items by their specific and unique attributes for the purposes of improving/optimizing materiel readiness.

• Attributes can be any quantifiable measure of performance, time, space, composition, environment, pedigree, cost, or any other definable data such as historical, contractual, and ownership information associations.
Design

Procurement

Manufacturing

Maintenance

Other relevant logistics functions

ATTRIBUTES

Readiness, Reliability, Safety

SIM

TLCSM

RCM

CBM

Materiel Readiness

Ownership

Cost
Revised Implementation Pathway

DO SOMETHING WITH THE DATA!

- Select Items to be Marked
- Decide Where to Mark and Marking Technology
- Document Engineering Decisions
- Transact Data

- IUID-SIM Plan
  - Requirements
  - Responsibilities
  - Business Rules

- Resources

- Mark Items

- Develop Marking Capability

- AIS integration and the provision for analytic resources

- Do Something with the Mark

- UID Registry
- Service/DLA AISs
Machine Readable Code (MRC)

Item Unique Identification (IUID)

Strategic Asset Visibility & Accountability

Serialized item Management (SIM)

Reliability Centered Maintenance (RCM), Condition Based Maintenance (CBM), Total Life Cycle System Management (TLCSM), automated materiel handling processes, etc.

First-order implementation

Second-order implementation

Third-order implementation

Fourth-order “optimization”
Machine Readable Code (MRC) → Item Unique Identification (IUID) → Strategic Asset Visibility & Accountability → Serialized item Management (SIM) → Reliability Centered Maintenance (RCM), Condition Based Maintenance (CBM), Total Life Cycle System Management (TLCSM), automated materiel handling processes, etc.

- Error free
- Valuation (with UID Registry)
- Location
- Attributes

Fourth-order “optimization”
Results of IUID-enabled SIM

- DoD weapon system sustainment managers will have dramatically improved insight into the cause-and-effect relationship between resources and readiness.

- Capitalizing on this insight, weapon system support decisions will both be more informed and take less time.

- Data-driven continuous process improvement (CPI) initiatives will be institutionalized, enabling the effective management of materiel reliability, materiel repair/replacement cycle time, and materiel sustainment cost performance-to-plan.

- Overall material readiness will be higher, and overall weapon system life-cycle cost will be lower.

- Fully automated maintenance management (unburdens the maintainer, increases productivity)
How can IUID-SIM work in “End-to-End” processes?

- Describes the operational functions and processes of an “end-state” vision for a fully IUID-enabled automated maintenance environment from a users perspective.

- Provides an implementation bridge for the advancement of new information processes between depot, field-level, weapon system, engineering, and item management systems for improved materiel readiness.

- Provides guidance for effective implementation planning.
SIM Implementation

6.2. Military Departments and Defense Agencies will identify populations of select uniquely identified items to track and manage within their maintenance SIM programs. Selection of these populations shall be based on the magnitude of potential benefits to DoD maintenance operations.

SIM programs will be designed and operated to optimize end item availability while minimizing support costs by:

- Providing rapid access to comprehensive and accurate information.
- Eliminating manually-supported paperwork, reducing job times, enhancing maintenance task and personnel scheduling, and optimize repair inventory.
- Reducing maintenance requirements through better configuration management and item/select population life-cycle history information.
- Facilitating tracking of specific item performance to support reliability analysis, warranty claims, and repair performance evaluation.