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

DoD Maintenance Symposium

Greg Kilchenstein
Senior Analyst
OADUSD (MR&MP)

13 November 2007

Session Objectives

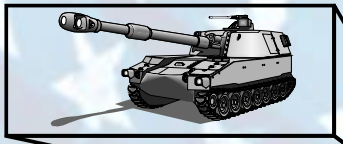
Describe the purpose of IUID within maintenance processes in order to achieve the OSD goal of optimized readiness.

Session presenters will:

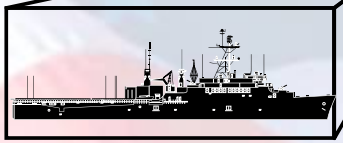
- *Discuss the impetus for IUID implementation*
- *Identify and describe the relevant policies and events for implementing IUID into the DoD maintenance environment.*
- *Discuss the "art of the possible" using IUID-enabled SIM*
- *Discuss the military services implementation strategies, successes, and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

The DoD Maintenance Enterprise

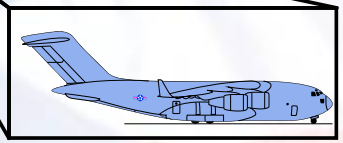
~ 330,000 Vehicles



~800 Strategic Missiles



~ 280 Ships



~ 14,000 Aircraft/Helicopters

+ Communications/Electronics Equipment
+ Support Equipment
+ Other Systems

National Defense Inventory is valued at ~$345B

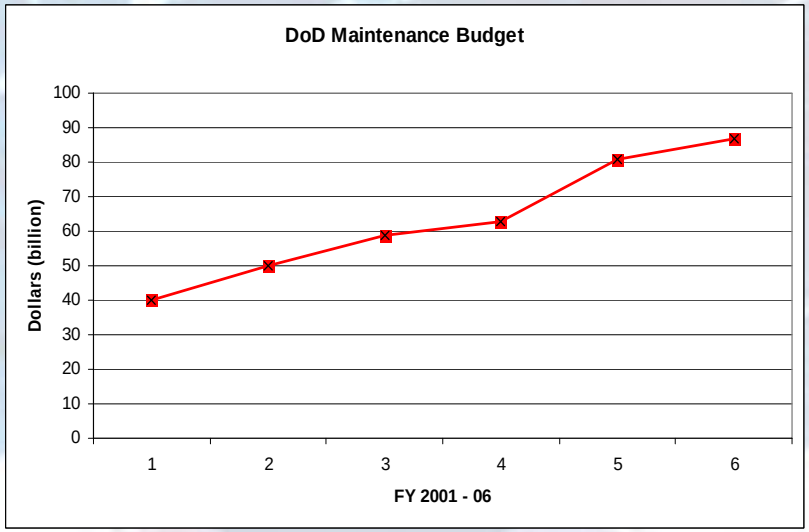
Maintained by:
- ***654,000 DoD personnel***
- ***Private sector companies***

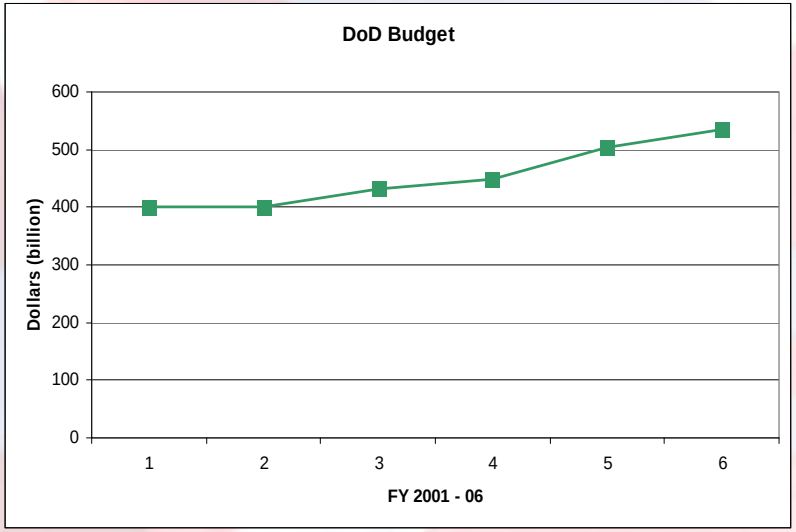
Maintenance cost:
~ $81 billion per year

> 100M Candidate UID Parts

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

Acquisition

Sustainment is
65 - 80%
of the Life Cycle Cost

Maintenance Needs to Transform!

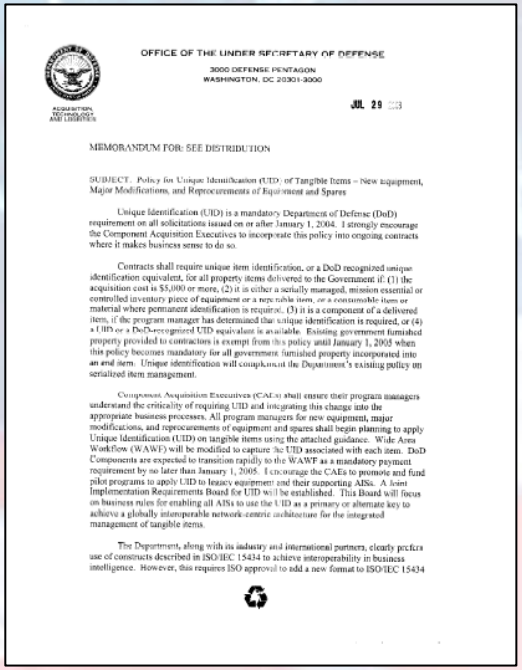
OSD Strategy:

- **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



OFFICE OF THE UNDER SECRETARY OF DEFENSE
3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

JUL 29

MEMORANDUM FOR: SEE DISTRIBUTION

SUBJECT: Policy for Unique Identification (UID) of Tangible Items – New Equipment, Major Modifications, and Reprocurements of Equipment and Spares

Unique Identification (UID) is a mandatory Department of Defense (DoD) requirement on all solicitations issued on or after January 1, 2004. I strongly encourage the Component Acquisition Executives to incorporate this policy into ongoing contracts where it makes business sense to do so.

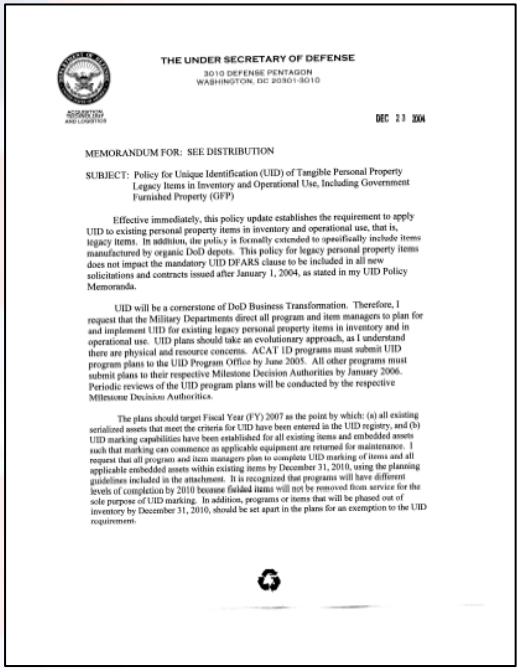
Contracts shall require unique item identification, or a DoD recognized unique identification equivalent, for all property items delivered to the Government if: (1) the acquisition cost is $5,000 or more, (2) it is either a serially managed, mission essential or controlled inventory piece of equipment or a reparable item, or a consumable item or material where permanent identification is required, (3) it is a component of a delivered item, if the program manager has determined that unique identification is required, or (4) a UID or a DoD-recognized UID equivalent is available. Existing government furnished property provided to contractors is exempt from this policy until January 1, 2005 when this policy becomes mandatory for all government furnished property incorporated into an end item. Unique identification will complement the Department's existing policy on serialized item management.

Component Acquisition Executives (CAEs) shall ensure their program managers understand the criticality of requiring UID and integrating this change into the appropriate business processes. All program managers for new equipment, major modifications, and reprocurements of equipment and spares shall begin planning to apply Unique Identification (UID) on tangible items using the attached guidance. Wide Area Workflow (WAWF) will be modified to capture the UID associated with each item. DoD Components are expected to transition rapidly to the WAWF as a mandatory payment requirement by no later than January 1, 2005. I encourage the CAEs to promote and fund pilot programs to apply UID to legacy equipment and their supporting AISs. A Joint Implementation Requirements Board for UID will be established. This Board will focus on business rules for enabling all AISs to use the UID as a primary or alternate key to achieve a globally interoperable network-centric architecture for the integrated management of tangible items.

The Department, along with its industry and international partners, clearly prefers use of constructs described in ISO/IEC 15434 to achieve interoperability in business intelligence. However, this requires ISO approval to add a new format to ISO/IEC 15434

- **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



THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

DEC 23 2004

MEMORANDUM FOR: SEE DISTRIBUTION

SUBJECT: Policy for Unique Identification (UID) of Tangible Personal Property Legacy Items in Inventory and Operational Use, Including Government Furnished Property (GFP)

Effective immediately, this policy update establishes the requirement to apply UID to existing personal property items in inventory and operational use, that is, legacy items. In addition, the policy is formally extended to specifically include items manufactured by organic DoD depots. This policy for legacy personal property items does not impact the mandatory UID DFARS clause to be included in all new solicitations and contracts issued after January 1, 2004, as stated in my UID Policy Memoranda.

UID will be a cornerstone of DoD Business Transformation. Therefore, I request that the Military Departments direct all program and item managers to plan for and implement UID for existing legacy personal property items in inventory and in operational use. UID plans should take an evolutionary approach, as I understand there are physical and resource concerns. ACAT ID programs must submit UID program plans to the UID Program Office by June 2005. All other programs must submit plans to their respective Milestone Decision Authorities by January 2006. Periodic reviews of the UID program plans will be conducted by the respective Milestone Decision Authorities.

The plans should target Fiscal Year (FY) 2007 as the point by which: (a) all existing serialized assets that meet the criteria for UID have been entered in the UID registry, and (b) UID marking capabilities have been established for all existing items and embedded assets such that marking can commence as applicable equipment are returned for maintenance. I request that all program and item managers plan to complete UID marking of items and all applicable embedded assets within existing items by December 31, 2010, using the planning guidelines included in the attachment. It is recognized that programs will have different levels of completion by 2010 because fielded items will not be removed from service for the sole purpose of UID marking. In addition, programs or items that will be phased out of inventory by December 31, 2010, should be set apart in the plans for an exemption to the UID requirement.

- **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 a DoD Strategic Imperative

IUID 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**

UID PROGRAM

SIM

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)

DoD Maintenance Symposium

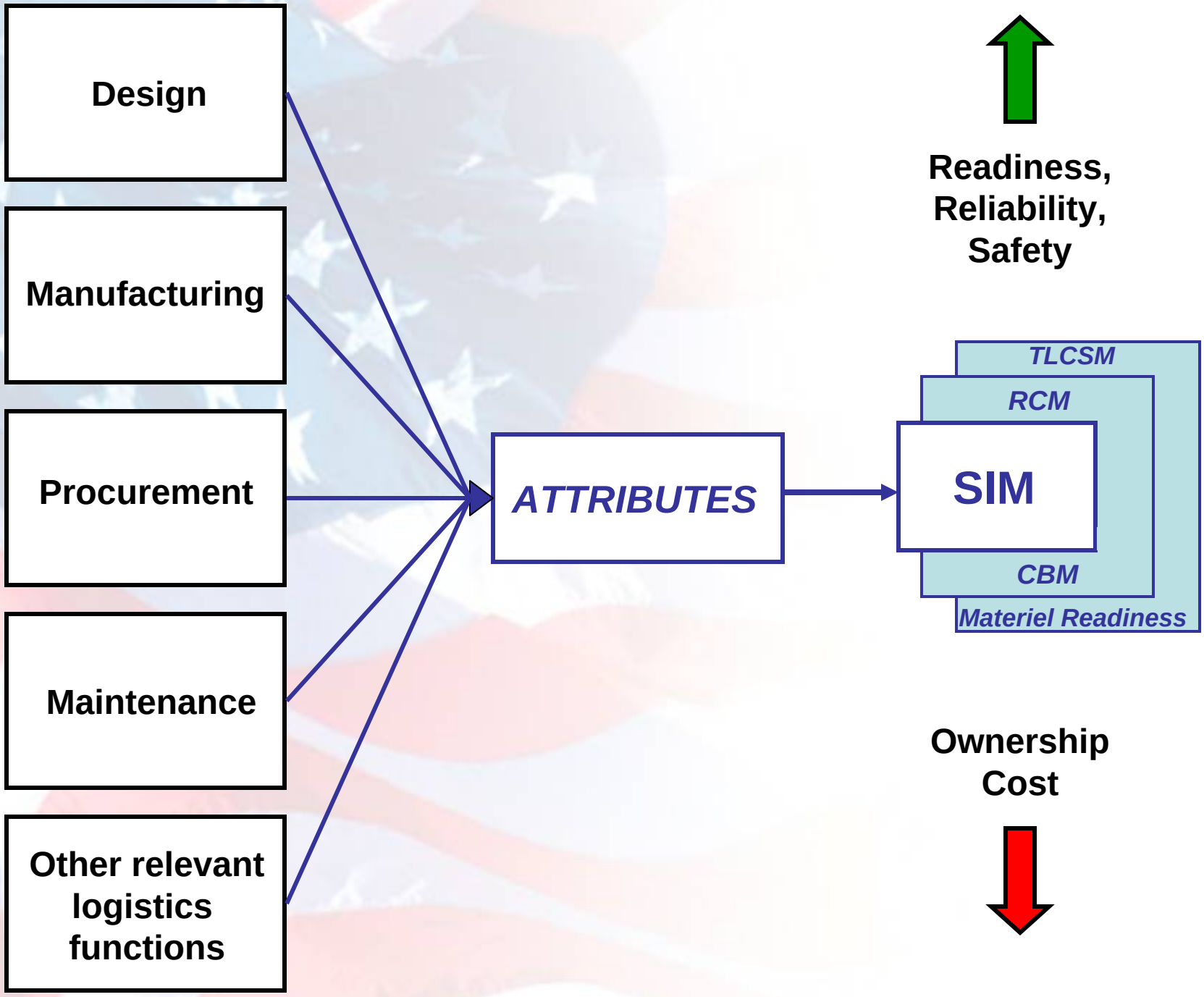
Ron Durant
Research Fellow, LMI
OADUSD (MR&MP)

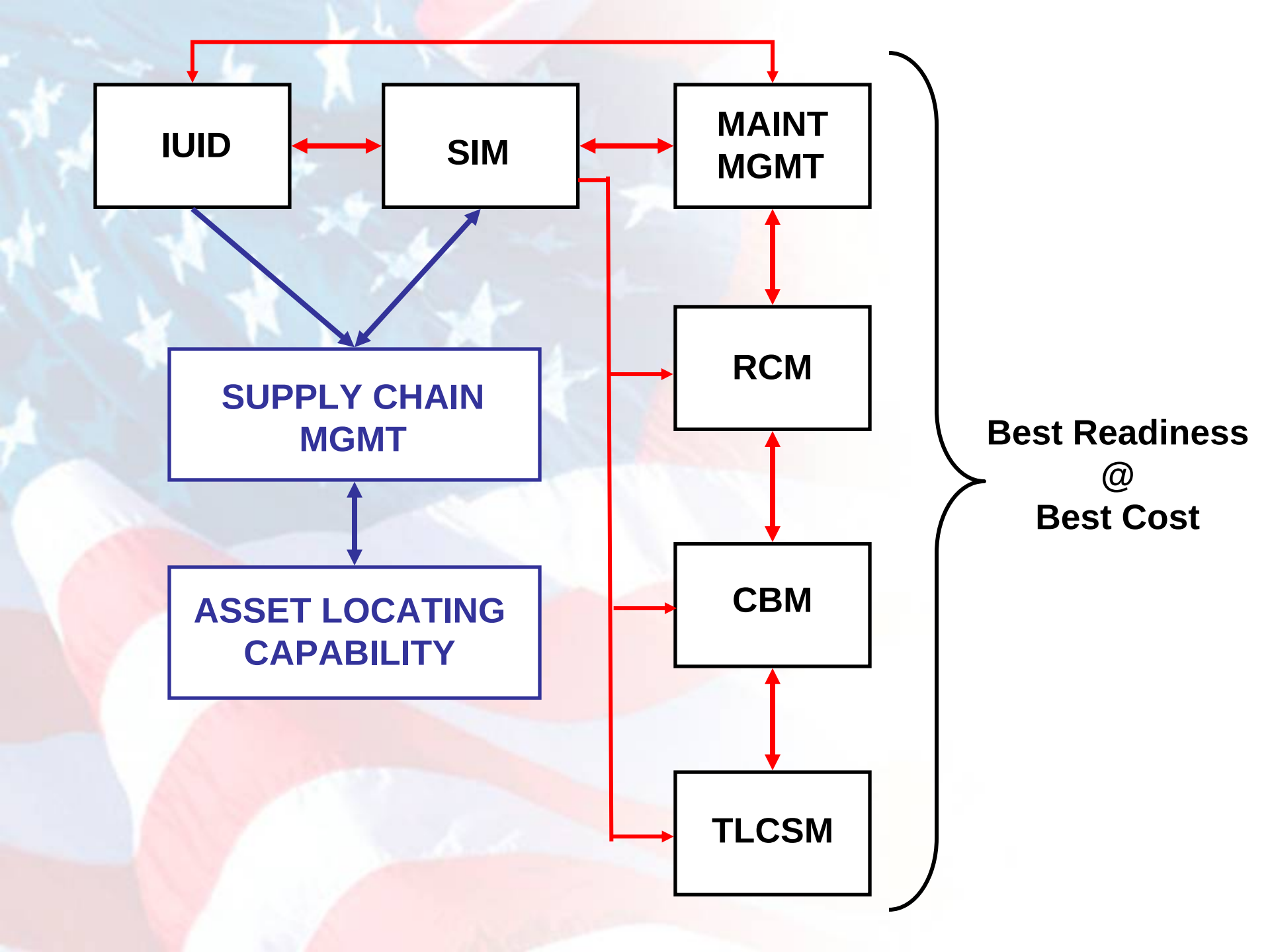
13 November 2007

SIM: Managing Unique Attributes

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

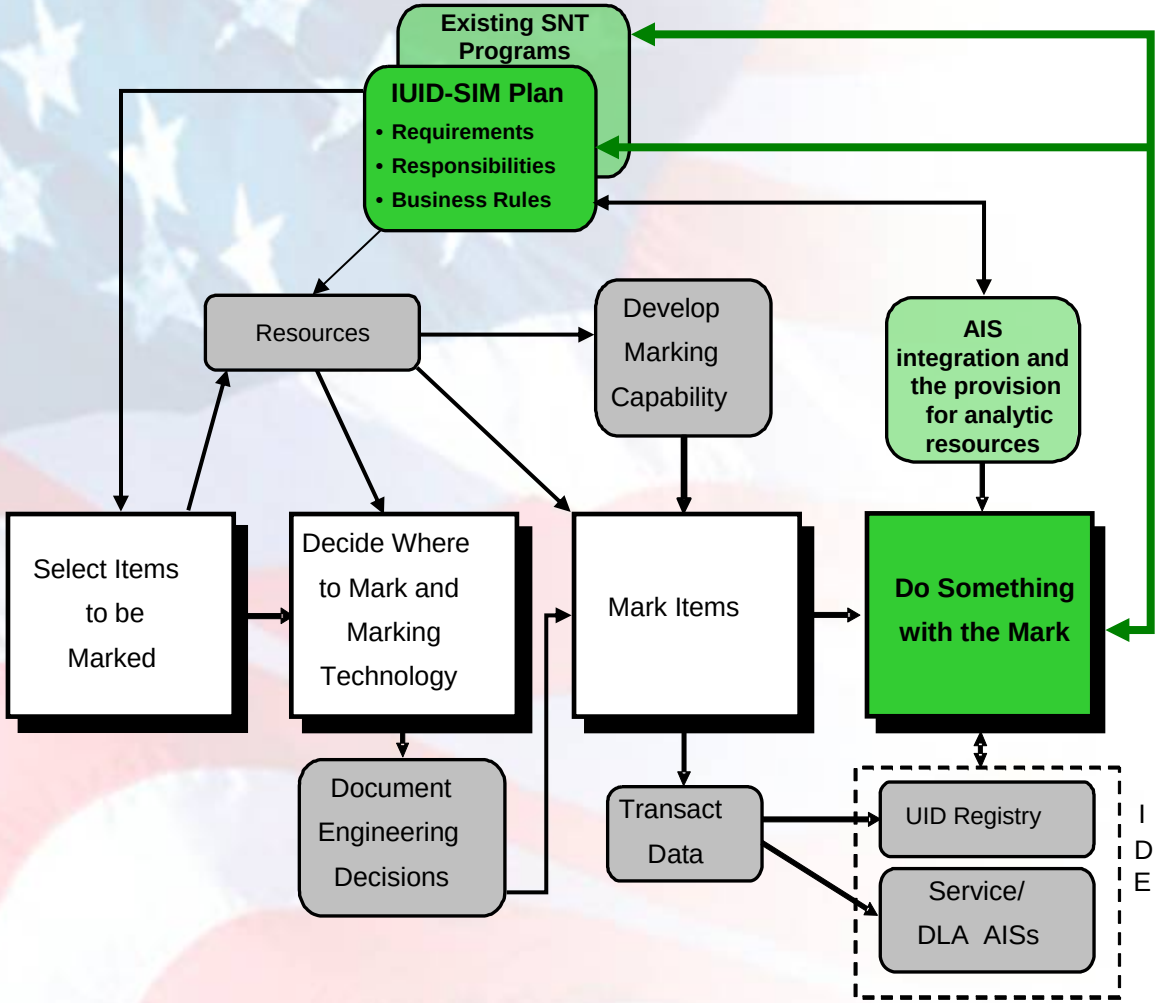
- Attributes can be any quantifiable measure of performance, time, space, composition, environment, pedigree, cost, or any other definable data such as historical, contractual, and ownership information associations.

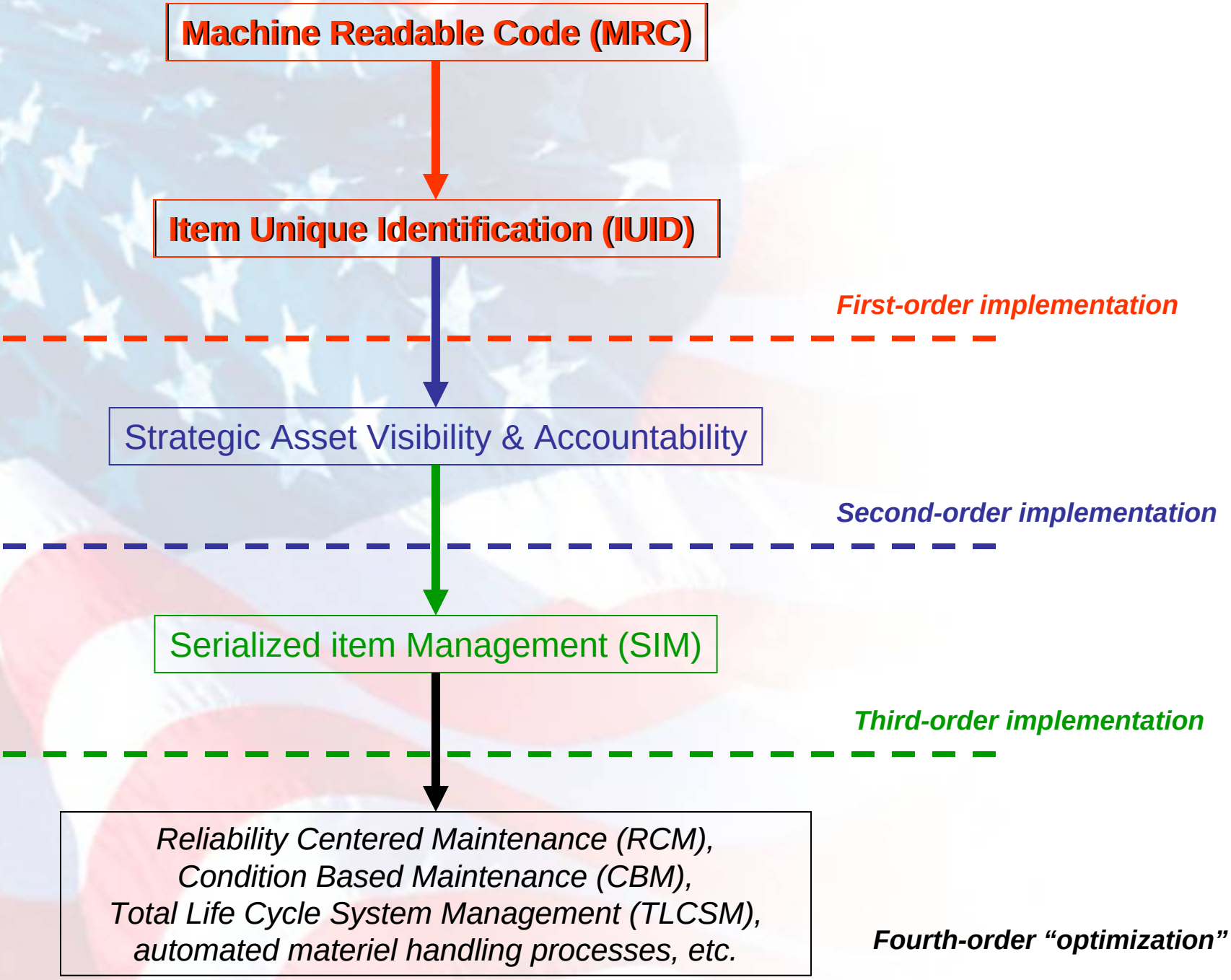

Design
Manufacturing
Procurement
Maintenance
Other relevant logistics functions
ATTRIBUTES
SIM
TLCSM
RCM
CBM
Materiel Readiness
Readiness, Reliability, Safety
Ownership Cost

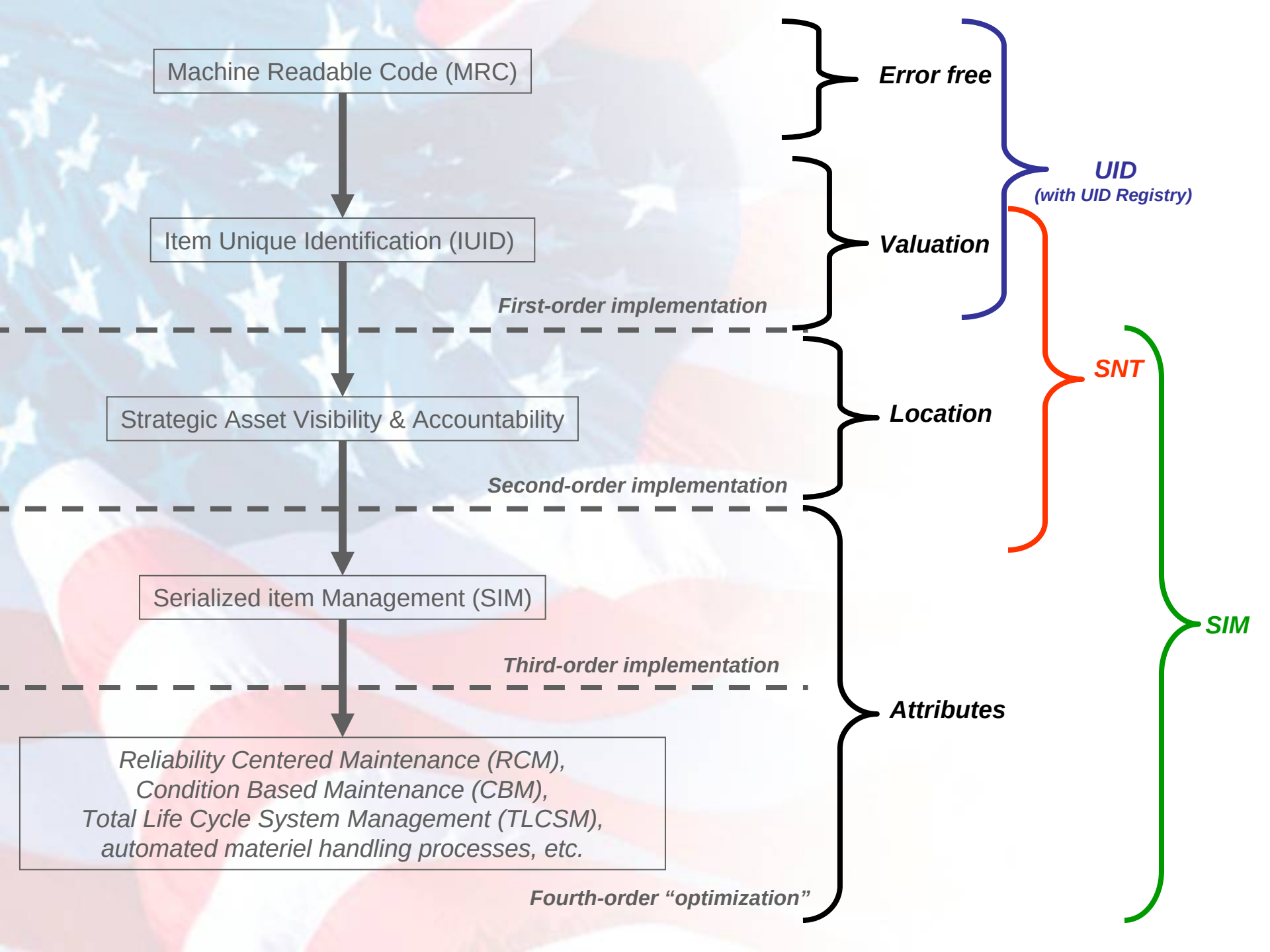

IUID
SIM
MAINT MGMT
SUPPLY CHAIN MGMT
RCM
ASSET LOCATING CAPABILITY
CBM
TLCSM
Best Readiness @ Best Cost

Revised Implementation Pathway

DO SOMETHING WITH THE DATA!




Machine Readable Code (MRC)
Item Unique Identification (IUID)
First-order implementation
Strategic Asset Visibility & Accountability
Second-order implementation
Serialized item Management (SIM)
Third-order implementation
Reliability Centered Maintenance (RCM),
Condition Based Maintenance (CBM),
Total Life Cycle System Management (TLCSM),
automated materiel handling processes, etc.
Fourth-order "optimization"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First-order implementation
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Serialized item Management (SIM)
Third-order implementation
Reliability Centered Maintenance (RCM),
Condition Based Maintenance (CBM),
Total Life Cycle System Management (TLCSM),
automated materiel handling processes, etc.
Fourth-order "optimization"
Error free
Valuation
Location
Attributes
UID
(with UID Registry)
SNT
SIM

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**.

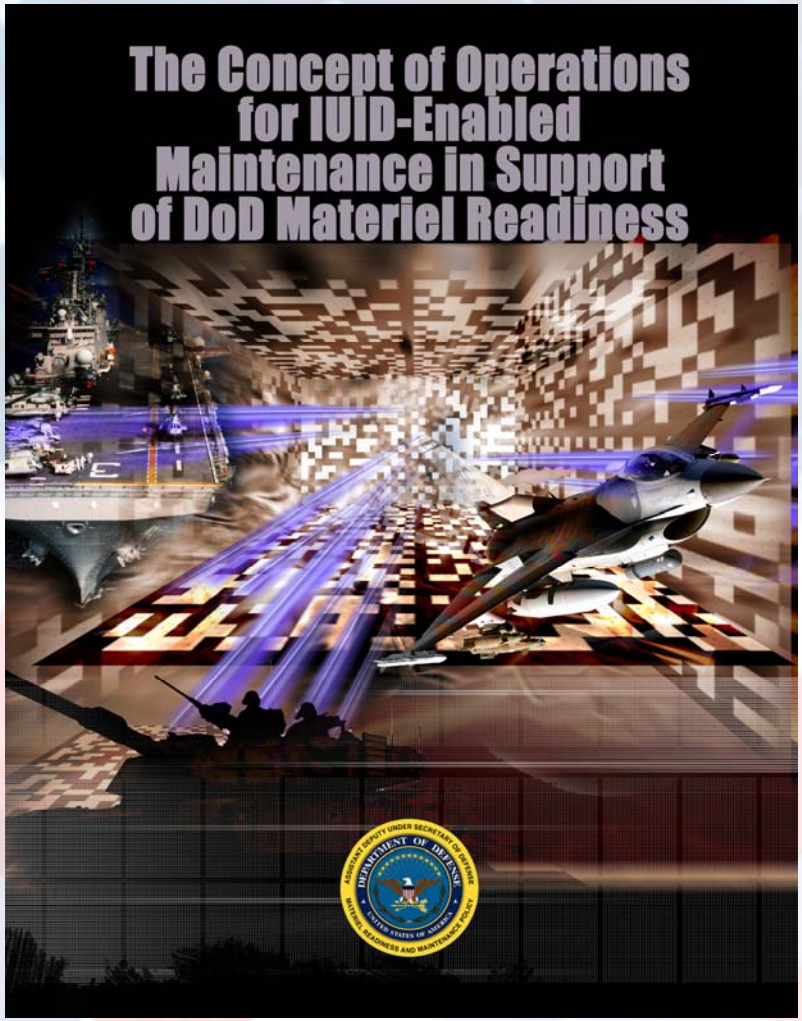
- Capitalizing on this insight, weapon system support **decisions will both be more informed and take less time.**

- **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.