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

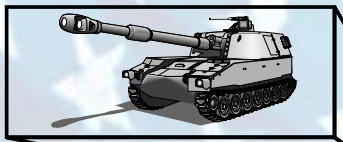
Describe the purpose of IUID within maintenance processes in order to achieve the OSD goal of optimized readiness.

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*

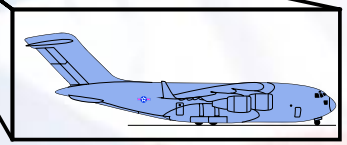
The DoD Maintenance Enterprise

~ 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

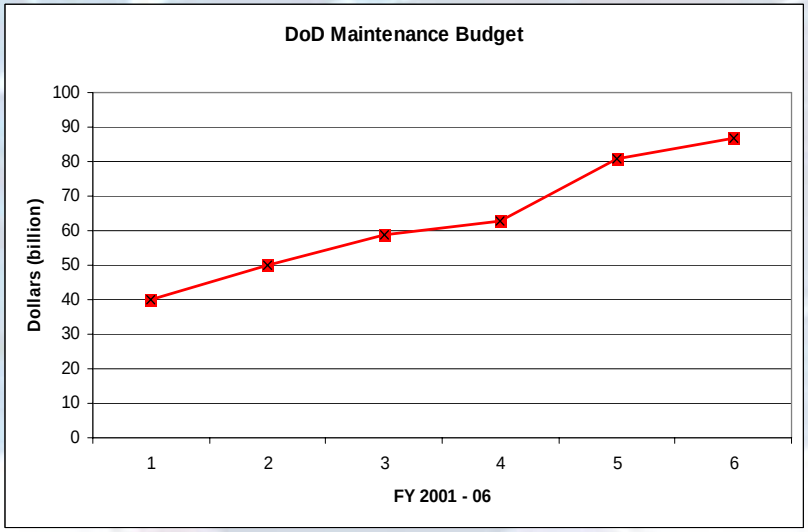
Maintained by:
- ***654,000 DoD personnel***
- ***Private sector companies***

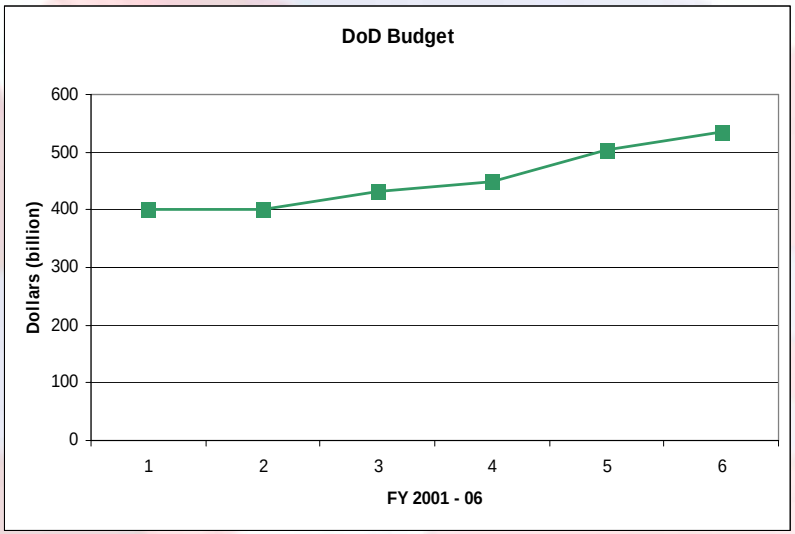
Maintenance cost:
~ $81 billion per year

> 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!

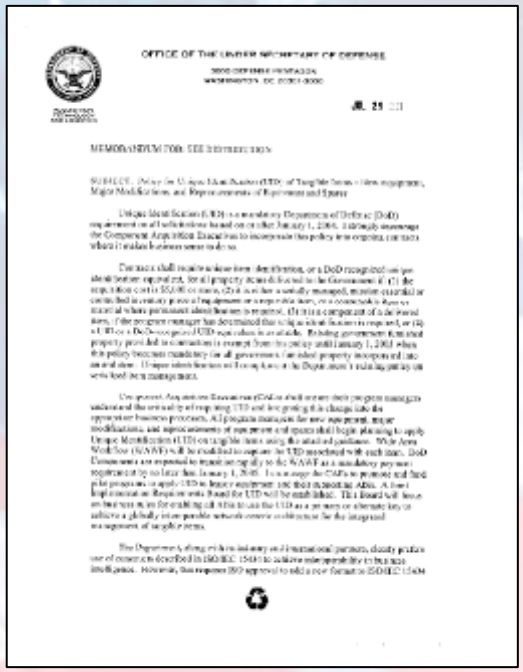
OSD Strategy:

- **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

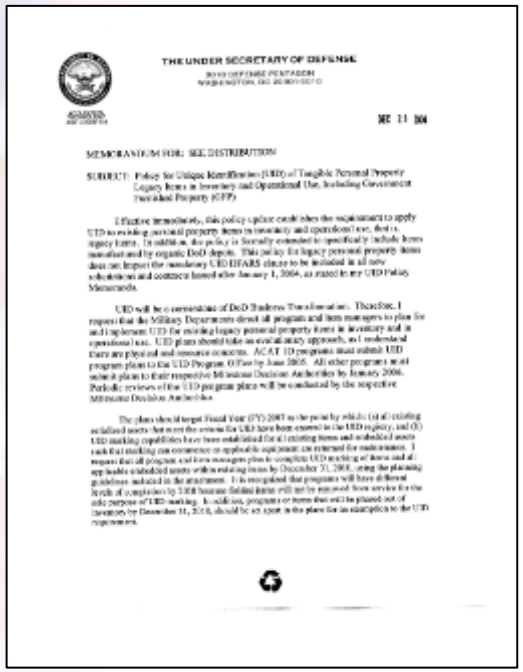
USD(AT&L) Policy Memo
29 July, 2003



OFFICE OF THE UNDER SECRETARY OF DEFENSE

- **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



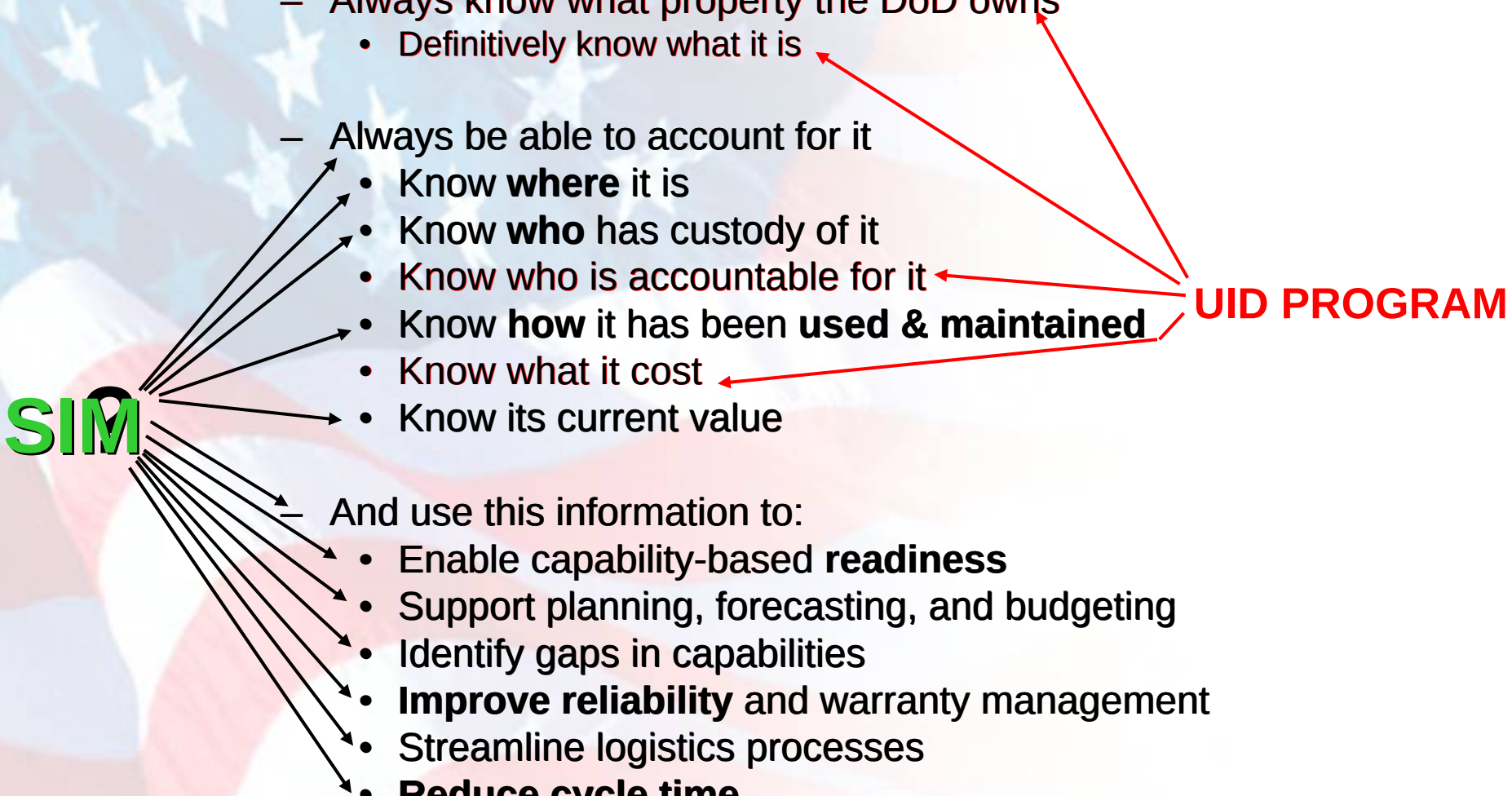
THE UNDER SECRETARY OF DEFENSE

- **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**



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

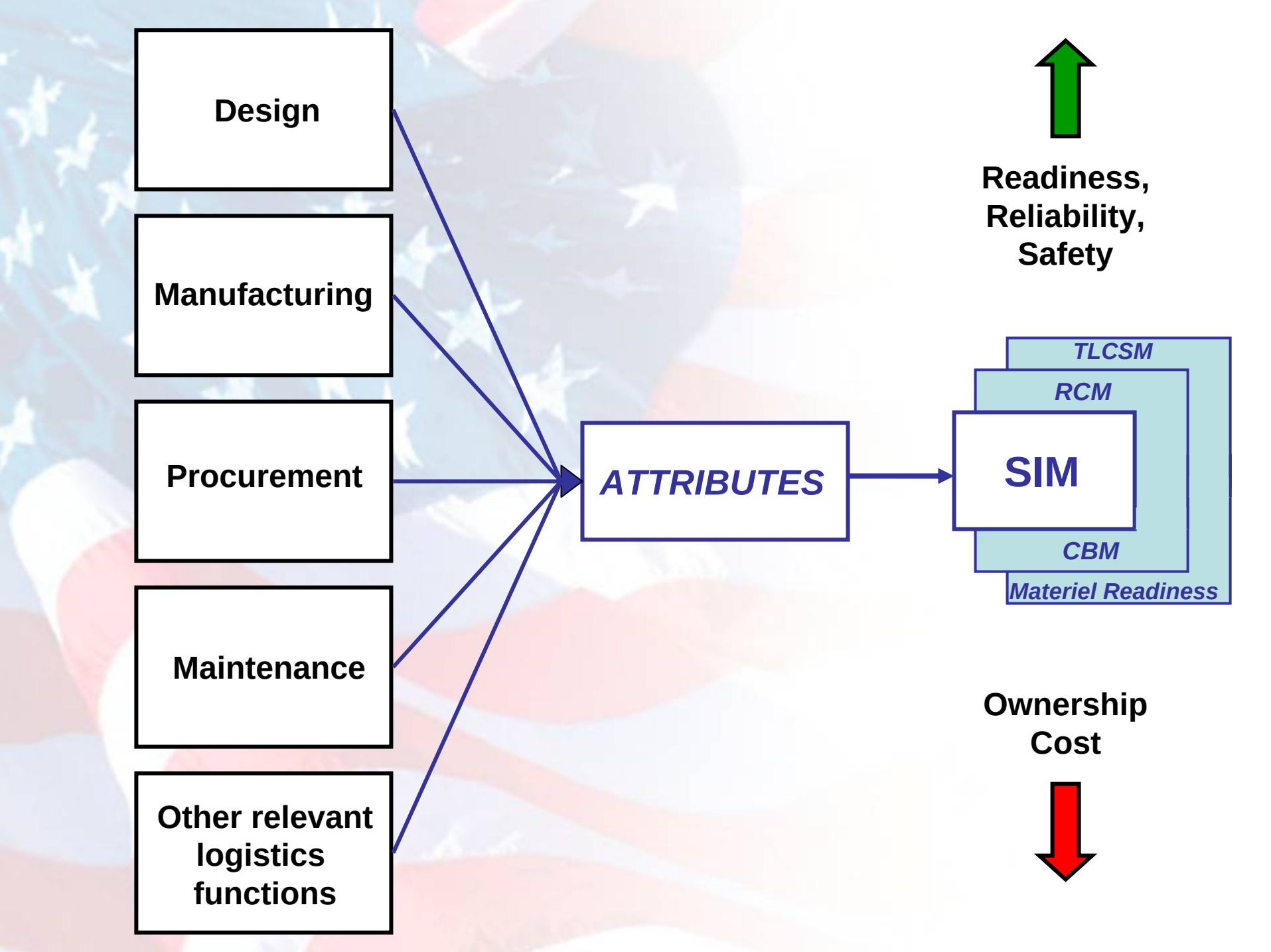
Ron Durant
Research Fellow, LMI
OADUSD (MR&MP)

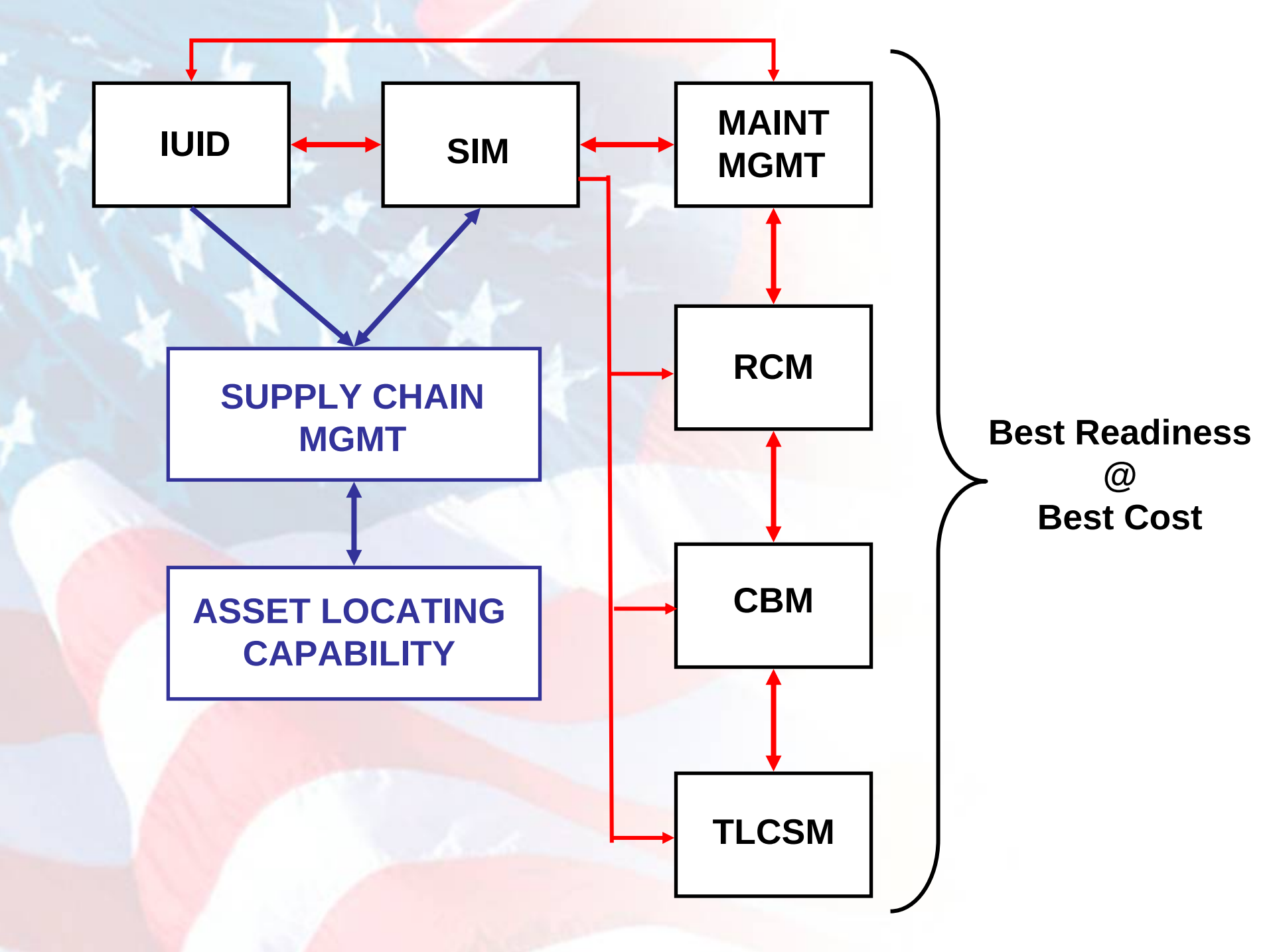
13 November 2007

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.

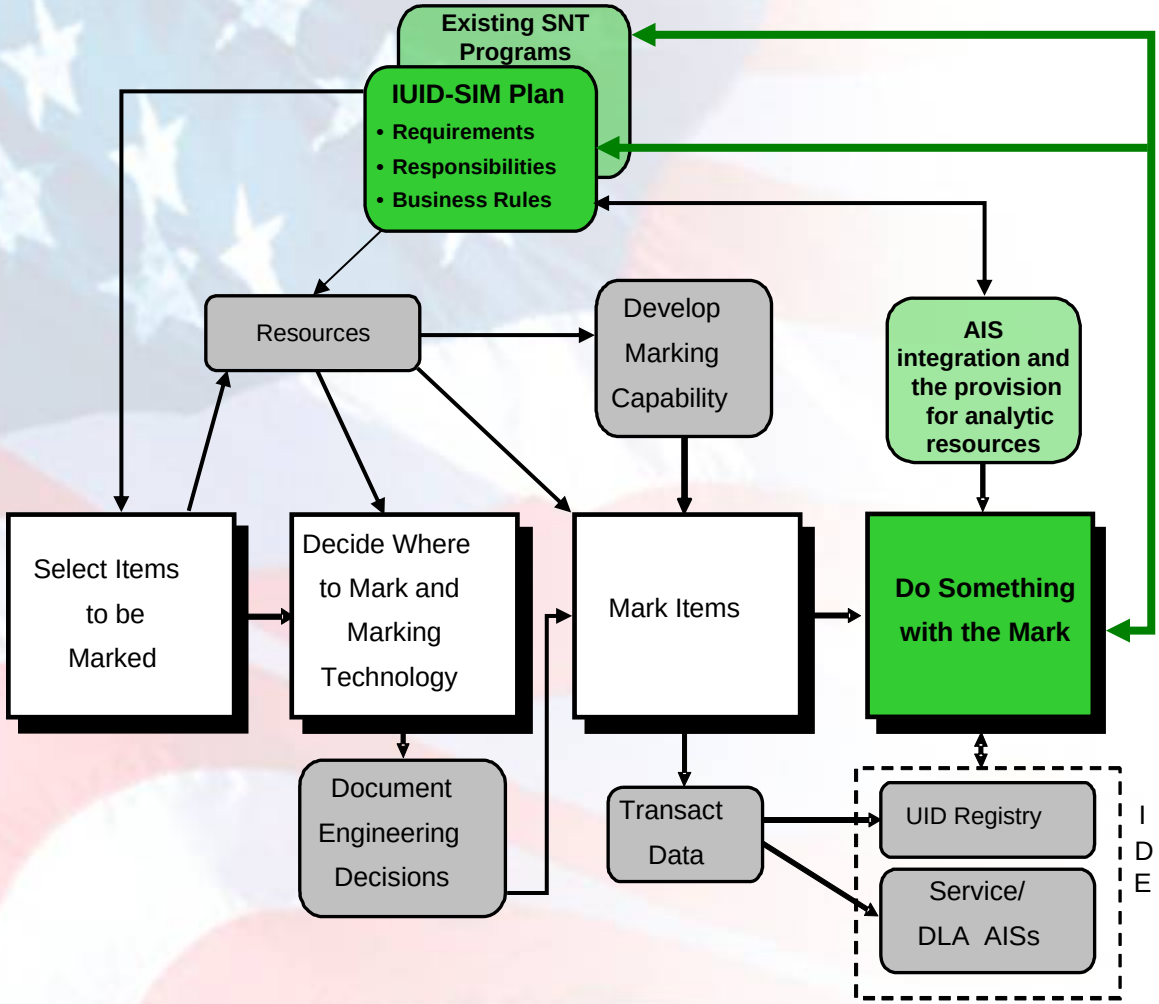
- Attributes can be any quantifiable measure of performance, time, space, composition, environment, pedigree, cost, or any other definable data such as historical, contractual, and ownership information associations.

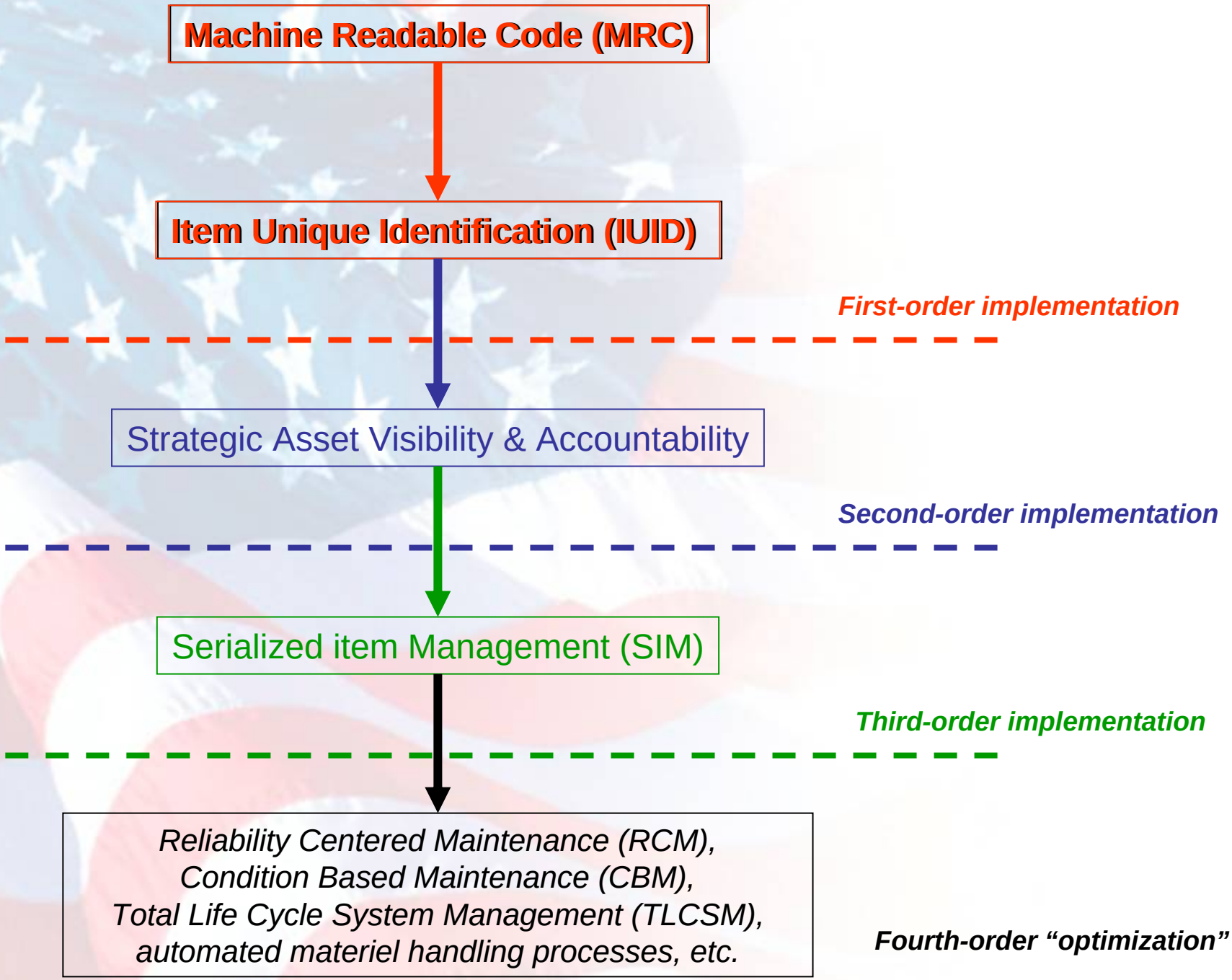

Design
Manufacturing
Procurement
Maintenance
Other relevant logistics functions
ATTRIBUTES
SIM
TLCSM
RCM
CBM
Materiel Readiness
Readiness, Reliability, Safety
Ownership Cost

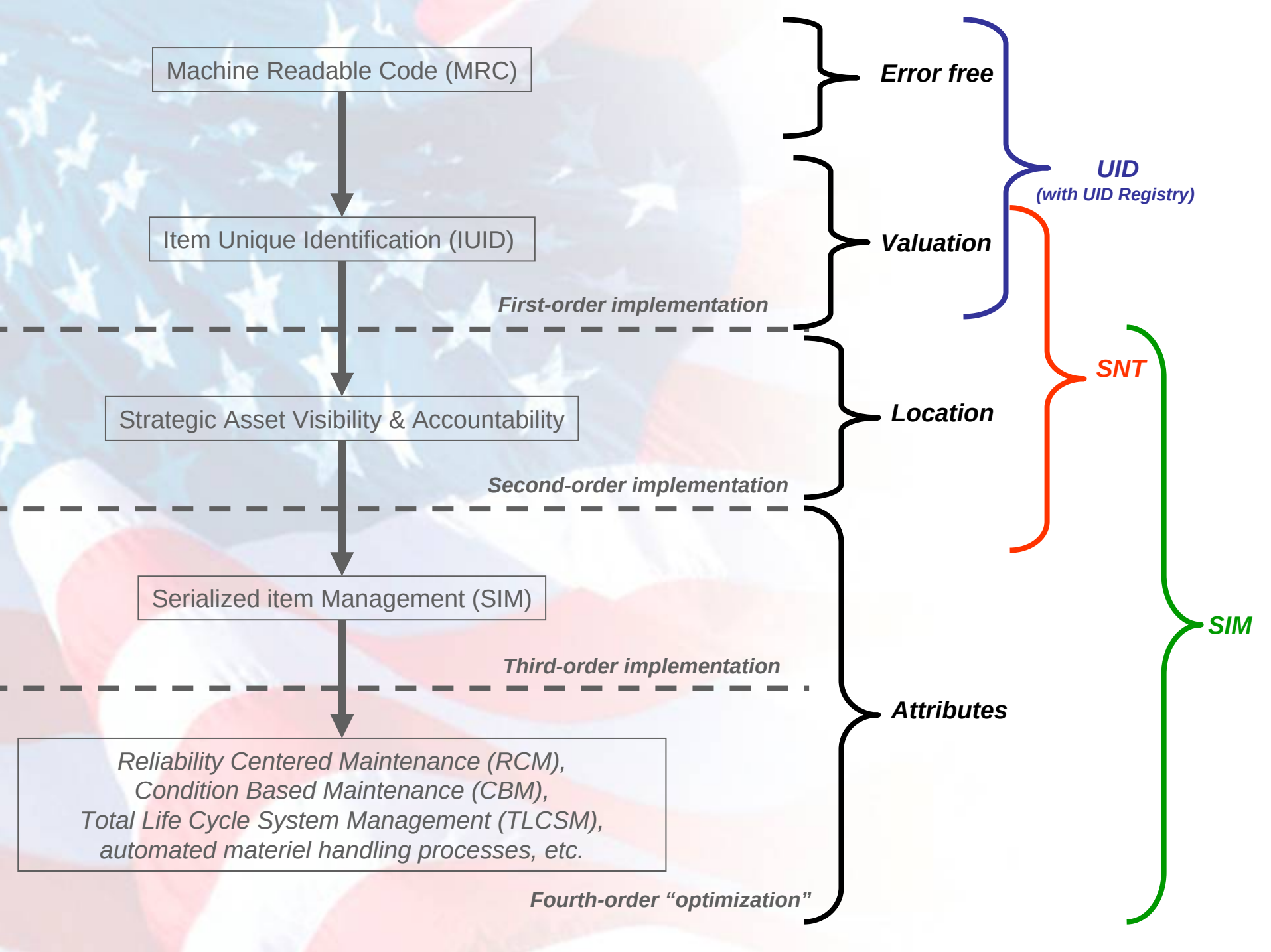

IUID
SIM
MAINT MGMT
SUPPLY CHAIN MGMT
RCM
ASSET LOCATING CAPABILITY
CBM
TLCSM
Best Readiness @ Best Cost

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"


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"
Error free
Valuation
UID
(with UID Registry)
Location
SNT
Attributes
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**.

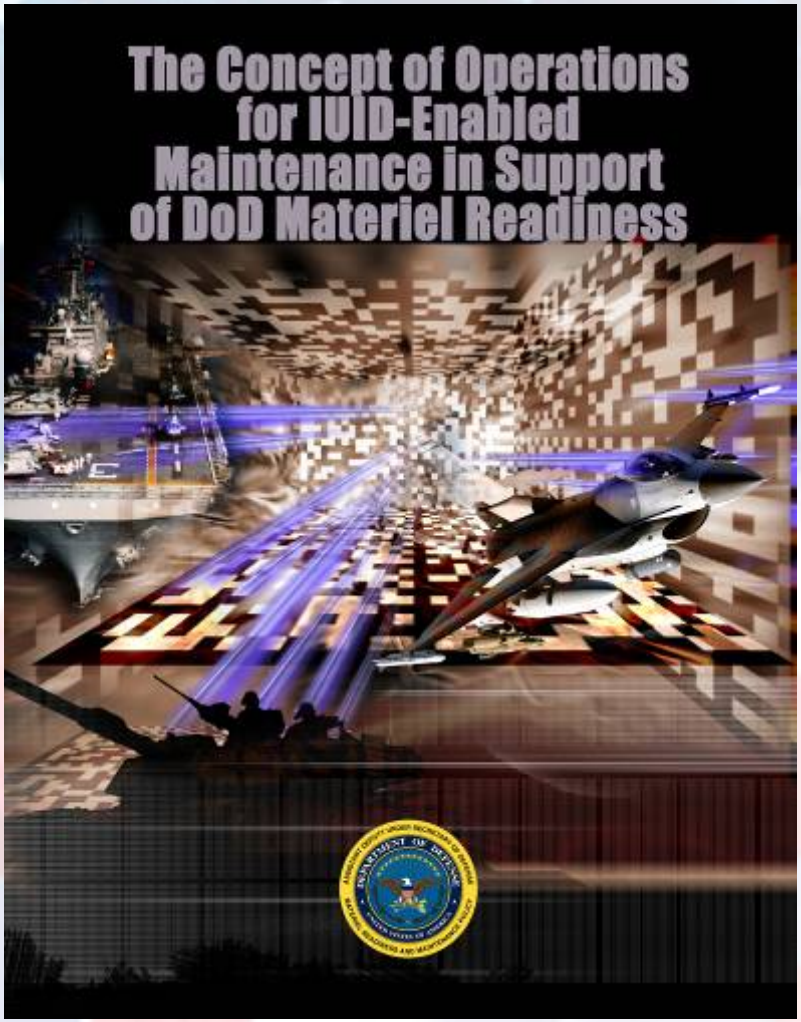
- Capitalizing on this insight, weapon system support **decisions will both be more informed and take less time.**

- **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.