IUID-Enabled SIM within the DoD Maintenance Enterprise

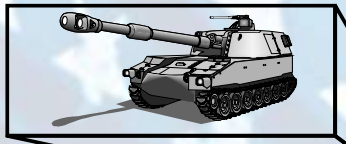
DoN IUID Enterprise Training Symposium

Session Objectives

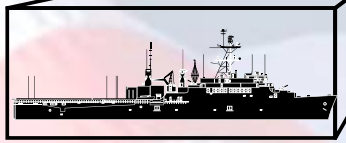
1. Describe the DoD maintenance environment
2. Describe the significance of maintenance transformation
3. Introduce IUID – SIM connection
4. Define SIM as natural progression of SNT
5. Assess the IUID Value Proposition
6. Discuss SIM implementation and challenges

DoD Maintenance Enterprise

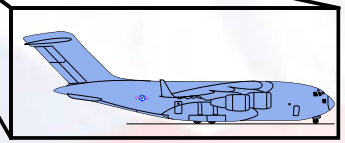
~ 34,000 Vehicles



” 800 Strategic Missiles



” 280 Ships



” 14,000 Aircraft/Helicopters

+ ~336,000 Tactical Vehicles
+ Communications/Electronics Equipment
+ Support Equipment
+ Other Systems

National Defense Inventory is valued at ”$345B

Maintained by:
- ***650,000 DoD personnel***
- ***Private sector companies***

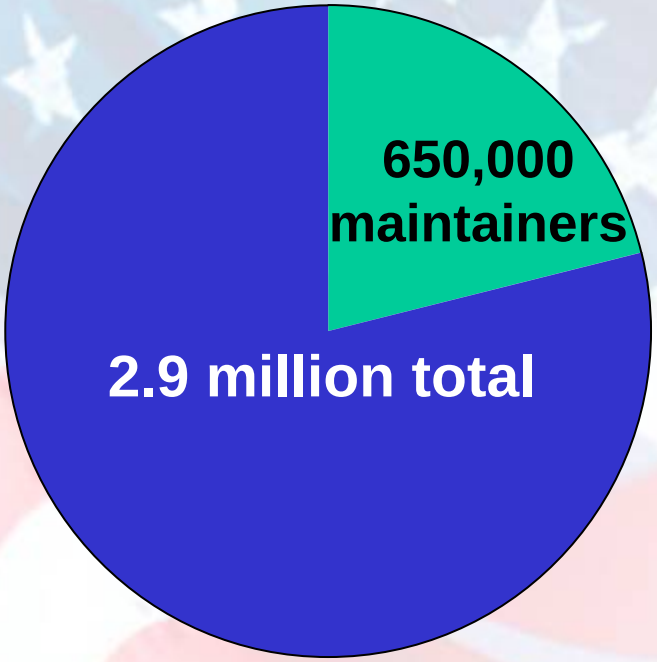
Maintenance cost:
~ $84 billion per year

> 100M Candidate UID Parts

Source: LMI analysis of DoD data

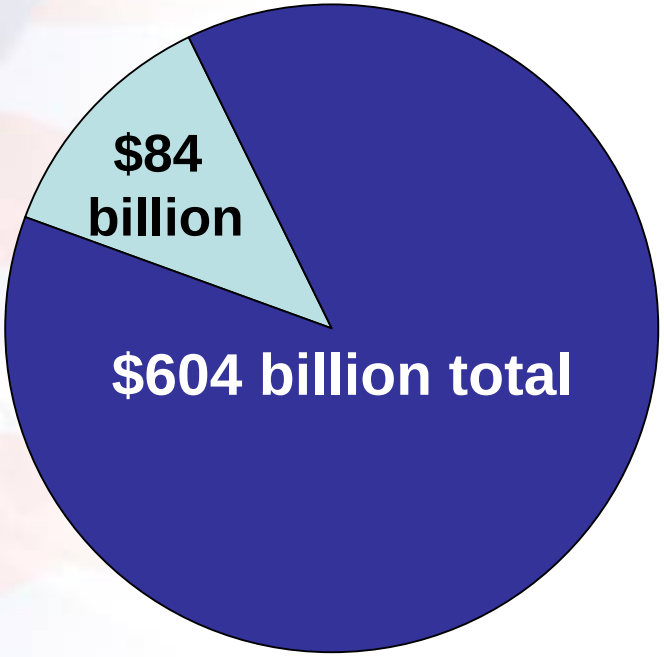
Maintenance Personnel & Budget

DoD Personnel



23% maintainers

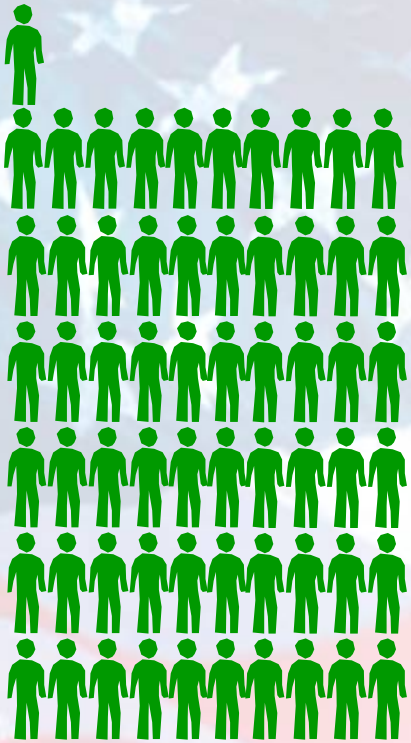
DoD Budget



14% spent on maintenance

Sources: FY2007–FY2011 President's Budget and
LMI analysis of Defense Manpower Data Center FY2007 data

Personnel Strength
of Field- and Depot-Level Maintenance



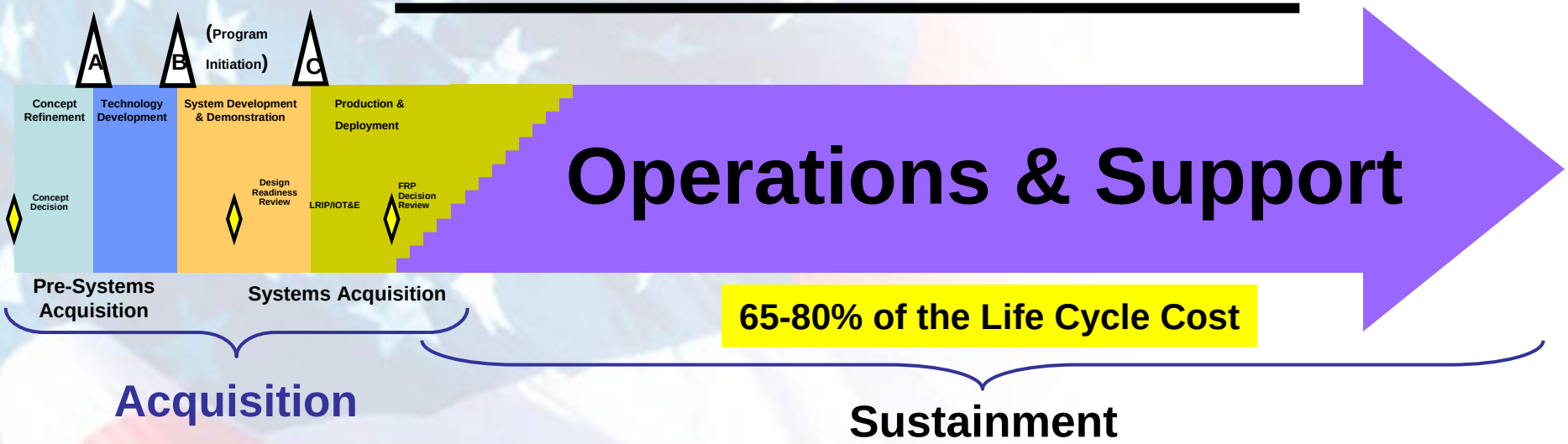
~605,000 field-level maintainers

~75,000 depot-level personnel

(including ~30,000 non-maintainers)

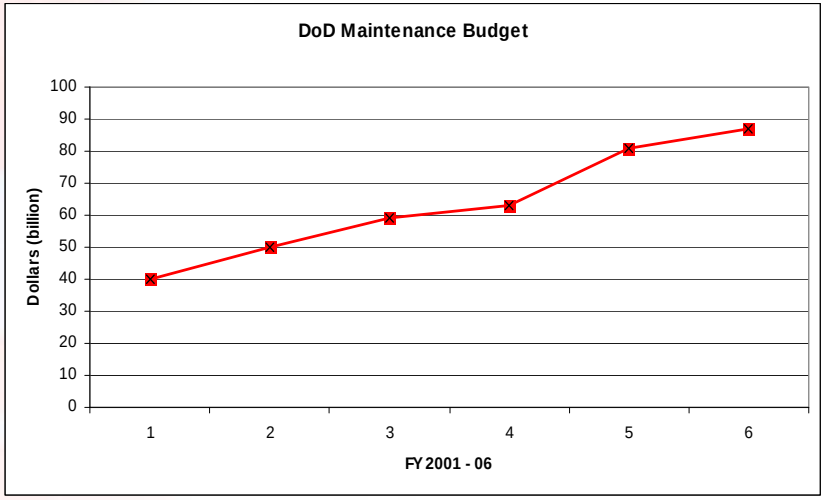
Source: LMI analysis of Defense Manpower Data Center and Joint Depot Maintenance Activity Group data for FY2007

Increased Insight & Better Maintenance Management Decisions = Reduced Cost of Readiness



Maintenance costs are escalating:

- $40 billion in FY-01 to $84 billion in FY-07
- 25% increase in maintenance budget from FY-00 to FY-08 (*constant FY 08 dollars*)



Maintenance Needs to Transform!

OSD Strategy:

♣ Promote End-to-End (E2E) Materiel Readiness Value Chain Perspective across DoD

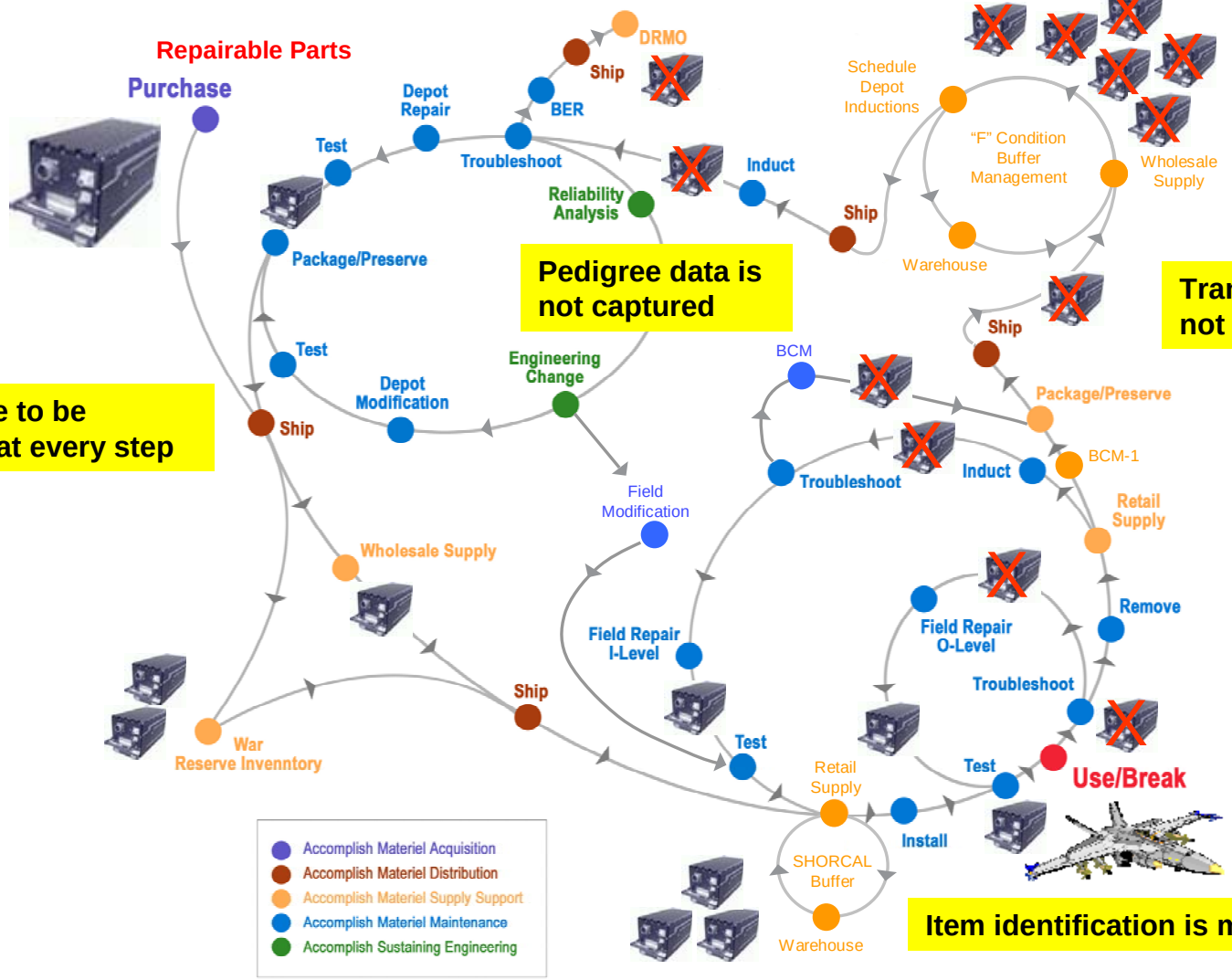
- Balance Safety, Reliability, Maintenance and Supply Distribution activities to achieve optimal materiel readiness at best cost.
- Optimize "TIME-ON-WING" and "TURN AROUND TIME"

♣ TLCSM

- Sustain Optimal Materiel Condition & Reliability
- Sustain Optimal Support Cost & Cycle Time

} **I + T = M**

Readiness Value Chain
We all play a part!!



Pedigree data is not captured

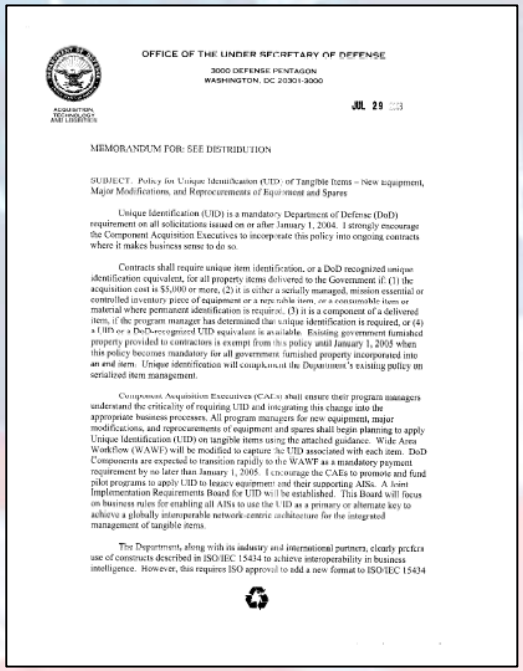
Transactions are not net-centric

Items have to be identified at every step

Item identification is manual

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

ACQUISITION, TECHNOLOGY AND LOGISTICS

JUL 29 2003

MEMORANDUM FOR: SEE DISTRIBUTION

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

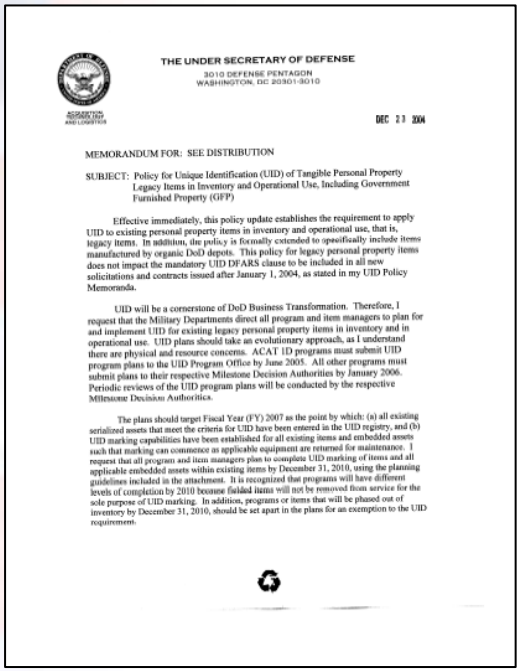
Unique Identification (UID) is a mandatory Department of Defense (DoD) requirement on all solicitations issued on or after January 1, 2004. I strongly encourage the Component Acquisition Executives to incorporate this policy into ongoing contracts where it makes business sense to do so.

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 repairable 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

USD(AT&L) Policy Memo
23 December, 2004



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

ACQUISITION, TECHNOLOGY AND LOGISTICS

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.

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

- 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

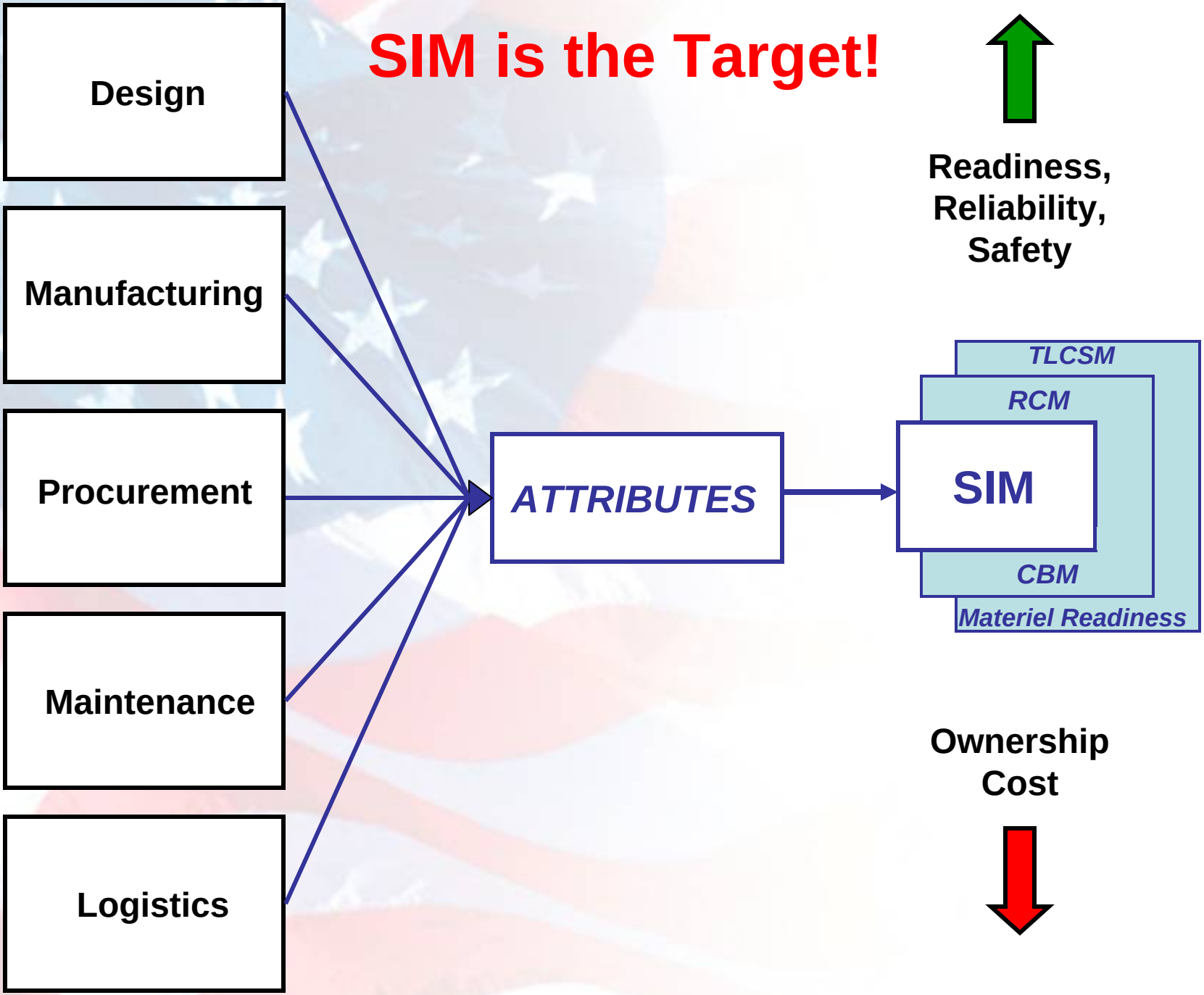
IUID is strategically critical to:

- 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**

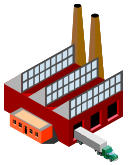
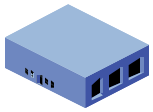
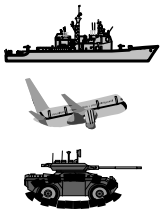
UID PROGRAM

SIM

SIM is the Target!



Notional SIM Attributes: “Tip of the Iceberg”

	Suppliers	Distribution Centers	Forward Supply	Maintenance	Field Activity
					
Positive Inventory Control	Sub tier suppliers, where in process, EDD	EDD, custodian, demand, specific location	EDD, Where in transit, who needs/uses, demand, location, cust.	EDD, Where in transit, spec. location, RFI Date, destination, Warranty, recall, status	Date received, Recall, Warranty Use, Return destination
Military Equipment Valuation	End item cost, component cost			materiel value/custodian where applicable, capital equipment valuation, status	custodian where applicable, status
Product Lifecycle Management	Raw material pedigree, cost, sub tier qualifications, EDD, test data,			bad actors identification, CBM+, RCM, RAM, configuration management, maintenance precision, TOC-R, warranty, CPI, usage/failure/maintenance history, materiel readiness, and safety metrics	

Item Attributes: What we need to know

The Heads of Defense Agencies and Secretaries of the Military Departments shall:

- **5.3.1 Establish SIM programs, where possible, to include identifying appropriate item populations and generally developing the other capabilities necessary to support SIM concepts**

- **5.3.2. Ensure operational and support activities comply with SIM requirements; designate a focal point for SIM efforts within the DoD Component**

- **5.3.5. Maintain an overview of SIM systems, plans, programs, and performance, providing periodic updates of SIM program status and performance, when requested**

- **5.3.7. Ensure that current and future AISs effectively support SIM program requirements, and support SIM program coordination and technology evaluation**

- **5.3.8. Manage the maintenance and support of the serialized items using the information generated about each unique item, i.e. its pedigree data.**

Integrating IUID and SIM DoDI 4151.19

- "It is Department of Defense (DoD) policy that the Military Departments and Defense Agencies will facilitate equipment maintenance by establishing a serialized item management (SIM) program to:
  - Identify populations of select items,
  - Mark all items in the population with a universally unique identification number, and
  - Enable the generation, collection and analysis of maintenance data about each specific item."
- "SIM programs shall enable and encourage the effective management of populations of select items throughout their life cycle. Further, these programs shall focus on providing comprehensive and timely data about each item. SIM programs will build on existing serial number tracking (SNT) initiatives and leverage the continuing progress in automatic identification technology (AIT)."

Implement SIM based on projected benefits (Value)

SIM Implementation

The Heads of Defense Agencies and Secretaries of the Military Departments shall:

- **5.3.1 Establish SIM programs, where possible, to include identifying appropriate item populations and generally developing the other capabilities necessary to support SIM concepts**

- **5.3.2. Ensure operational and support activities comply with SIM requirements; designate a focal point for SIM efforts within the DoD Component**

- **5.3.5. Maintain an overview of SIM systems, plans, programs, and performance, providing periodic updates of SIM program status and performance, when requested**

- **5.3.7. Ensure that current and future AISs effectively support SIM program requirements, and support SIM program coordination and technology evaluation**

- **5.3.8. Manage the maintenance and support of the serialized items using the information generated about each unique item, i.e. its pedigree data.**

DEPUTY UNDER SECRETARY OF DEFENSE FOR
LOGISTICS AND MATERIEL READINESS
3500 DEFENSE PENTAGON
WASHINGTON, DC 20301-3500

NOV 1 2007

MEMORANDUM FOR: SEE DISTRIBUTION

SUBJECT: Serialized Item Management (SIM) Program Plans

Serialized Item Management will assist the Department of Defense's weapon systems life cycle management and maintenance operations. SIM provides the framework needed to extract value from Item Unique Identification (IUID) to improve the effectiveness and efficiency of design and logistics processes, improve weapon system readiness, reliability and safety, and reduce ownership cost through enhanced sustainment operations.

DoDI 4151.19, *Serialized Item Management (SIM) for Materiel Maintenance*, directs the Military Departments and Defense Agencies to establish SIM programs for populations of select items that show potential benefit to DoD operations and maintenance activities. Request you submit your Service-level SIM program plans to ADUSD(MR&MP) by February 28, 2008. Service plans should address your SIM goals and objectives, projected benefits, technical approach, management and organization, resource requirements and implementation timeline.

To help facilitate SIM program development, the OADUSD(MR&MP) will host a working group on December 12, 2007. This working group will report to the Materiel Readiness Senior Steering Group (MRSSG) as the governing body and will share lessons learned and best practices for SIM program implementation. Request you provide YA-3/0-6 Service representatives to participate in the SIM working group and provide their contact information by November 16, 2007.

I appreciate your support of this important initiative. My action officer is Mr. Greg Kilchenstein, 703-697-7980 or Greg.Kilchenstein@osd.mil.

Jack Bell

Jack Bell

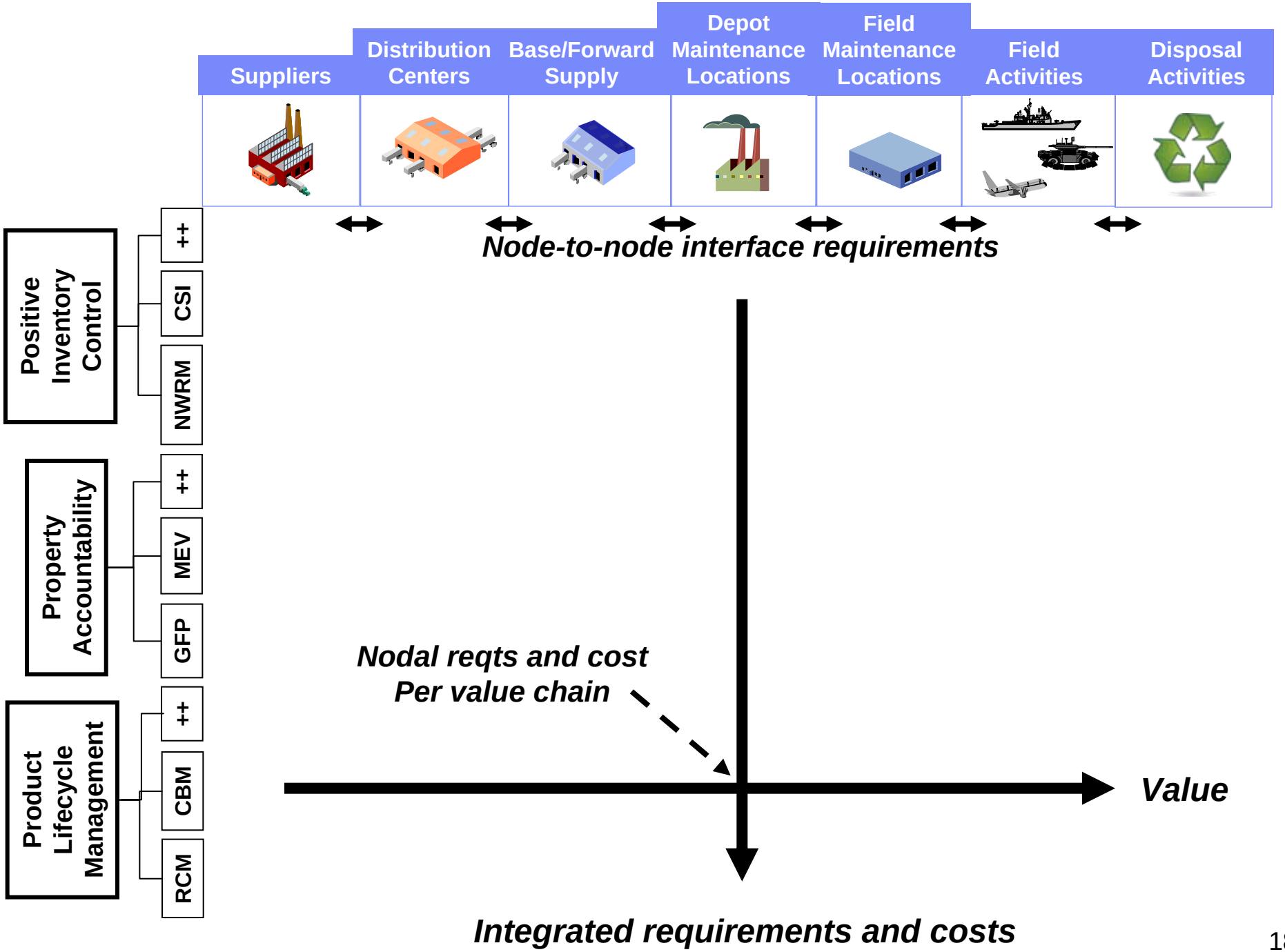
IUID-SIM Value Proposition

- **IUID offers quantifiable efficiency and effectiveness gains compared to DoD's current data capture and tracking**
- **IUID value can be quantified in key value chains:**
  - ***Positive Inventory Control***
  - ***Property Accountability***
  - ***Product Lifecycle Management***

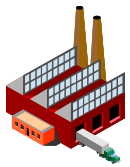
  End-to-end processes
- **Implementation requirements and costs can be assessed by examining IUID-related actions for each value chain within and across a set of applicable logistics nodes**
  - ***Suppliers***
  - ***Distribution Centers***
  - ***Base/Forward Supply***
  - ***Depot-level Maintenance***
  - ***Field-level Maintenance***
  - ***Field Activities***
  - ***Disposal Activities***

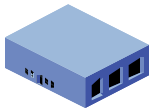
  Where people and machines interact with IUID to achieve success in defined value chains

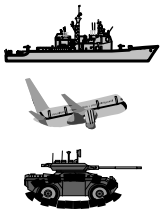
<u>Validated</u> Value Proposition Must Drive Policy & Implementation!


Suppliers
Distribution Centers
Base/Forward Supply
Depot Maintenance Locations
Field Maintenance Locations
Field Activities
Disposal Activities
Node-to-node interface requirements
Positive Inventory Control
++
CSI
NWRM
Property Accountability
++
MEV
GFP
Product Lifecycle Management
++
CBM
RCM
Nodal reqts and cost
Per value chain
Value
Integrated requirements and costs

Notional Integrated Requirements Analysis



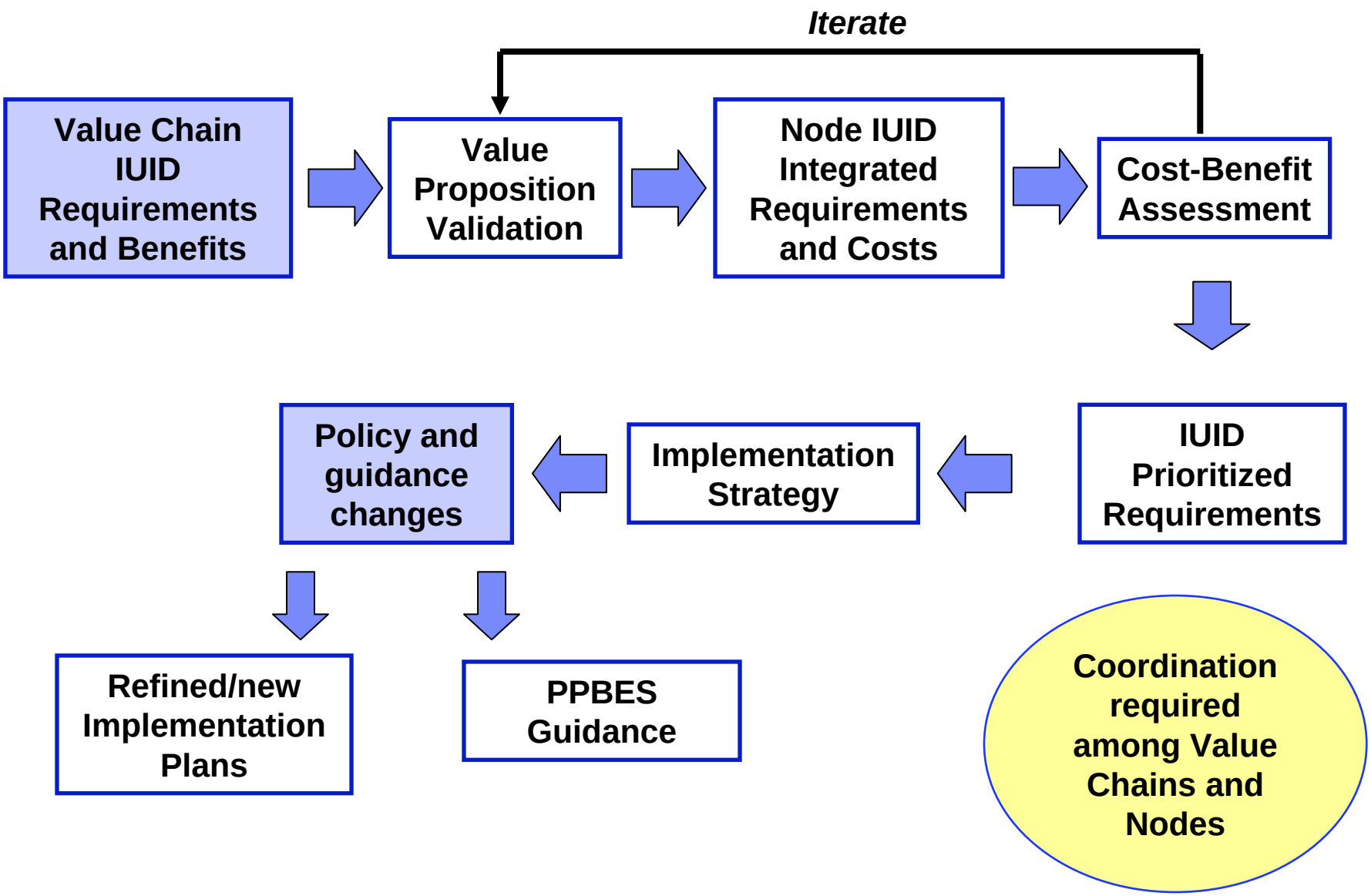




	Suppliers		Distribution Centers		Forward Supply		Maintenance		Field Activity
Positive Inventory Control	Mark, Issue with ASN by UII, Register UII	ASN/Item/UII	Receive, Stow, Inventory, Recall, Warranty Management, and Issue by UII	ASN/Item/UII	Receive, Stow, Inventory, Recall, Warranty Management, and Issue by UII	ASN/Item/UII	Receive, Manage In-Process, Recall, Warranty Management, Issue, and Return by UII	ASN/Item/UII	Receive, Recall, Warranty Management, Use, and Return by UII
Military Equipment Valuation	Mark, Issue with ASN by UII, Register UII Value						Update materiel value/custodian where applicable, capital equipment valuation by UII		Update custodian where applicable
Product Lifecycle Management	Mark, Issue with ASN by UII, Register UII Pedigree Data						Mark UII items. Collect UII data that supports bad actors identification, CBM+, RCM, RAM, configuration management, maintenance precision, TOC-R, warranty execution, CPI, usage/failure/maintenance history, materiel readiness, and safety assurance.		

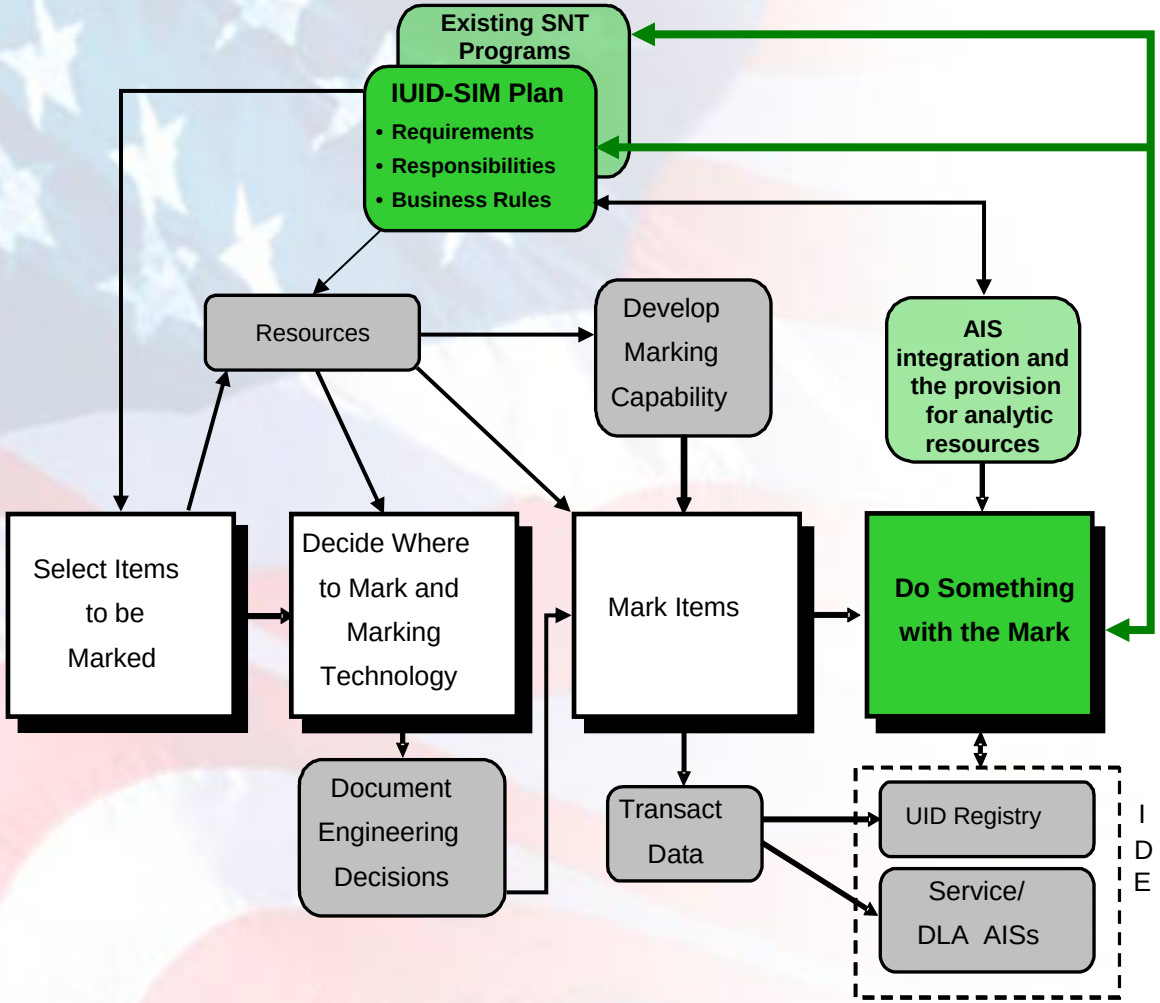
Green – All policy and guidance in place **Amber – Some policy and guidance in place**

Assessment Approach



IUID/SIM Implementation Pathway

DO SOMETHING WITH THE DATA!



Begin via existing SNT systems

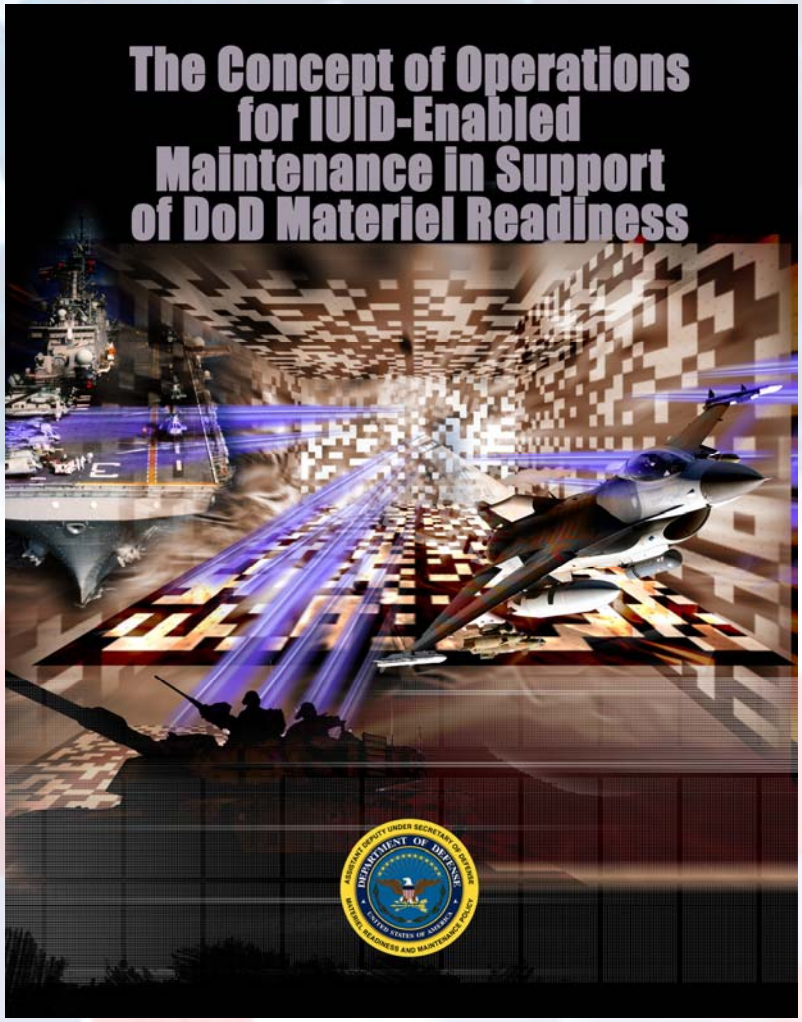
Current serial numbered tracked item quantities (~)

- **> 3.8 million items for Army aviation**
- **> 7 million NAVAIR**
- **1.2 million DDG-51 class (potential end state 21.7 million)**
- **12.2 million items for USAF**
- **> 144K Strategic weapon systems (submarine based)**

24.3 million

UIT (small arms, sensitive items) not included

How can IUID work in “End-to-End” processes?

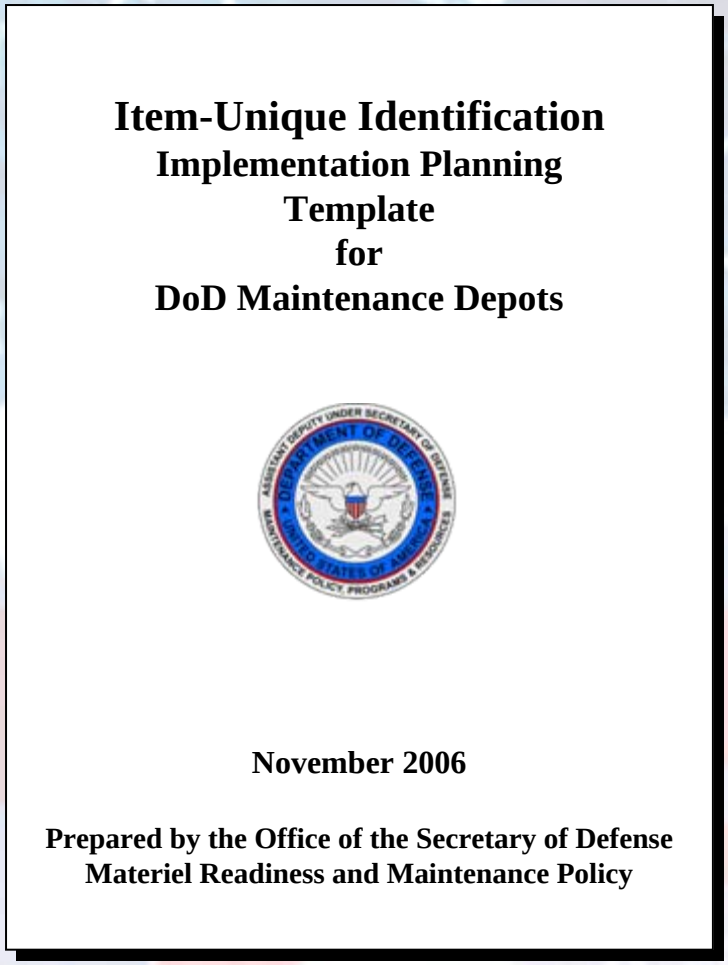


- Describes the operational functions and processes of an “end-state” vision for a fully IUID-enabled automated maintenance environment from a users perspective

- 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

IUID Implementation Planning Template for DoD Maintenance Depots



Item-Unique Identification
Implementation Planning Template
for
DoD Maintenance Depots

November 2006

Prepared by the Office of the Secretary of Defense
Materiel Readiness and Maintenance Policy

Depot FOC is defined by achieving the *outcomes* of a 3 phase approach that establishes:

1. **Depot IUID processes and associated doctrine.**
2. **Capability to uniquely identify and mark items using DoD sanctioned serialization schemas and parts marking techniques (plates, labels, DPM)**
3. **Capability to automatically capture, modify, and query UID data in a local database and to transmit that data to a DoD centralized registry.**

Describes organized steps to plan and successfully execute implementation to achieve outcomes

The “Take-aways”

- Service SIM Plans are required
  - Navy-wide plan is good, but……
    - Enterprise plans provide the “meat”

- SIM implementation is dependent upon IUID and an effective strategic asset tracking & locating capability
  - Expand upon IUID Plans and SNT Programs
  - Phase Implementation based on validated Value

- Alignment between Command, PMOs, Maintenance, and Supply is required to effectively implement IUID-enabled SIM! Navy IUID Training Symposium is a model for DoD

Online Resources

- UID Website
  - http://www.acq.osd.mil/dpap/uid
- IUID Toolkit
  - http://www.iuidtoolkit.com
  - Four tracks: PMs, Suppliers, Depot, Warfighter
- DAU UID Special Interest Area
  - Within Acquisition Community Connection https://acc.dau.mil/simplify/ev.php?ID=18058_201&ID2=DO_TOPIC
- MP&P (Maintenance IUID CONOPS & Depot Implementation Guide/Template)
  - http://www.acq.osd.mil/log/mrmp/UID_maintenance.htm

Questions?

Back-up

Integrating IUID and SIM "Prime Movers"

Integrated Policy:

- DoDI 5000.2 - Life Cycle Acquisition/Support
- DoDI 4151.19 - Serialized Item Management
- DoDD 8320.03 - Unique Identification (UID) Standards for a Net-Centric Department of Defense
- DoDI 8320.04– IUID for Tangible Personal Property
- DAG/Supportability Guide/SEP/RAM

Requirements: CJCS 3170.01F

- JROC approved sustainment KPP – Materiel Availability
  - 2 KSAs – Life Cycle Cost, Reliability

Governance/Oversight:

- DAB, DAES, MESC, GAO, BTA-IRB, IUID Scorecard, IUID-TF

Machine Readable Code (MRC)

Item Unique Identification (IUID)

First-order implementation

Strategic Asset Visibility & Accountability

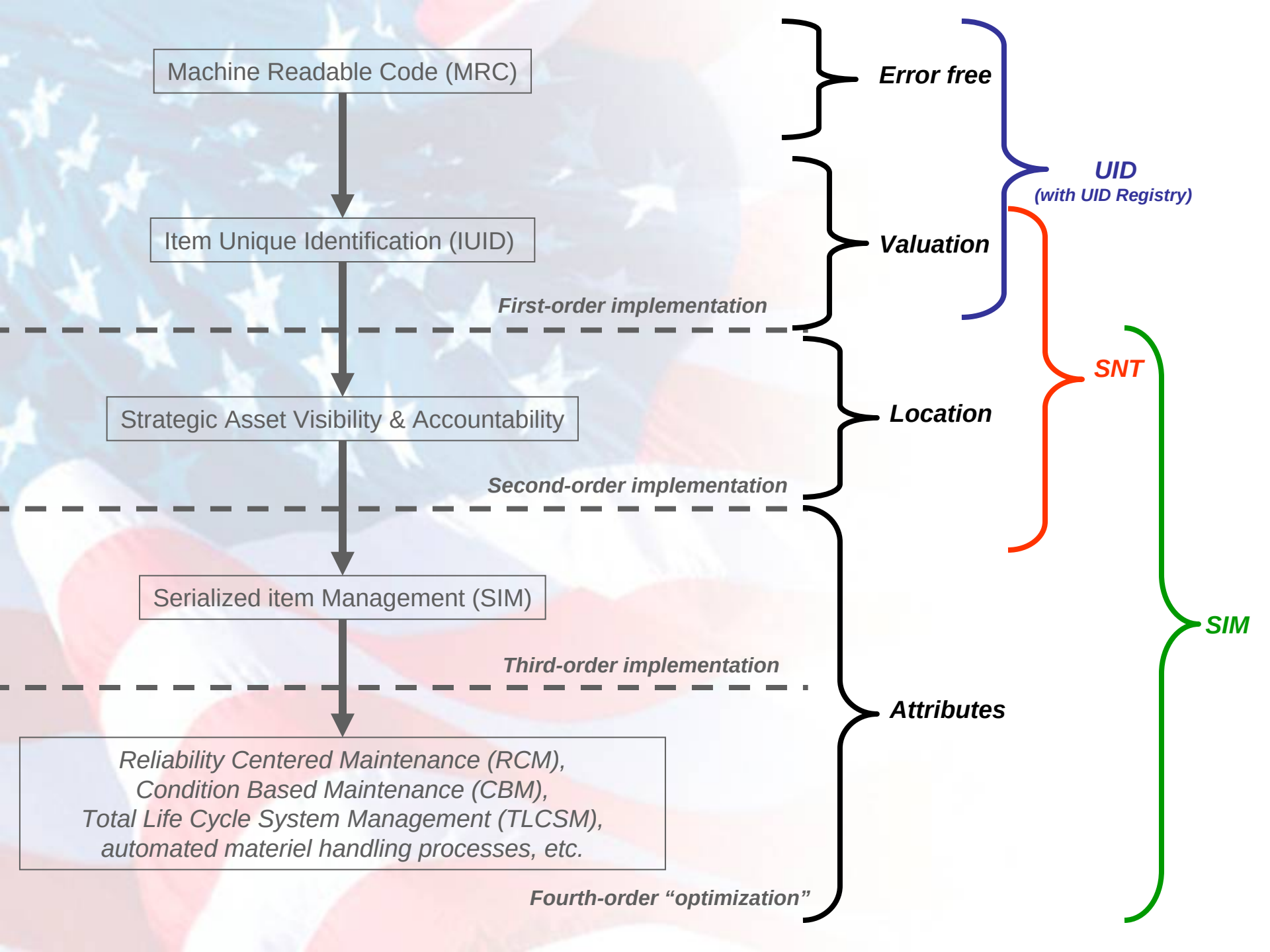
Second-order implementation

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
Location
Attributes
UID
(with UID Registry)
SNT
SIM

Haven't initiated

0 – 1/3 Complete

1/3 – 2/3 Complete

2/3 or More Complete

Complete

Instructions: Color code steps undertaken to indicate level of progress

IUID Implementation Tower

Phase I

1
2a
2b
2c
2d
2e
2f
2g
2h
2i
3

Phase II

1
2
3
4
5
6
7
8
9
10
11

Phase III

1
2
3
4
5
6

Conducting Preliminary Research & Planning Efforts

Determining New Business Environment & Establishing Transition Plan For Initial Items Targeted

Executing Transition Plan & Developing Implementation Plan For Remaining IUID Items