

# *Item Unique Identification for Systems Lifecycle Management and Traceability*



Rob Leibrandt  
Deputy, UID Policy



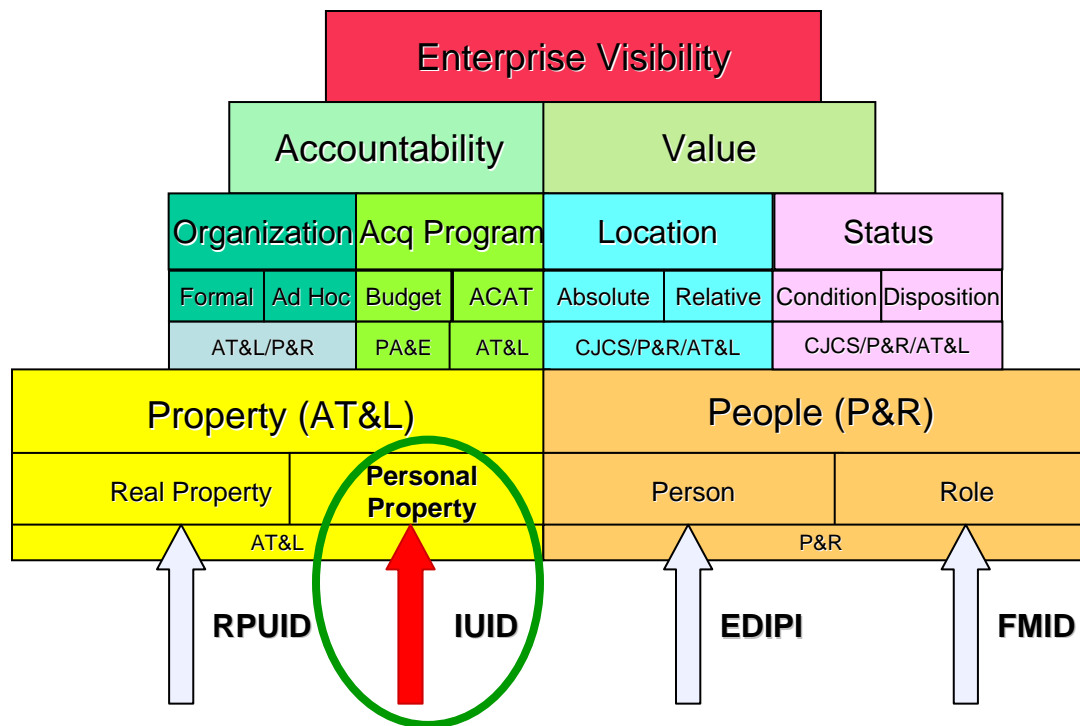
Office of the Secretary of Defense  
Defense Procurement and Acquisition Policy  
OUSD(AT&L)/DPAP/PDI

January 13, 2009

[robert.leibrandt@osd.mil](mailto:robert.leibrandt@osd.mil)

# Unique Identification – The Capstone View

- **Related ISO UID Initiative**
  - ISO 15459 proposal describes uniqueness for transportation units, location and item unique identification
- **US DoD Vision of UID (DoDD 8320.03)**



# Historical Methods of Identification

- Logistics — NSN, Manufacturer and Part Number
- Property Management — Tail Number, Hull Number, Asset Tag (usually for local tracking)
- Manufacturing — Part Number, Serial Number
- Maintenance — Manufacturer, Part Number
- Tracking (regulatory and security) — Mixed
- Acquisition — Contract and Line Item Numbers and Quantity
- Finance — Fund Cite and Requisition Documents

# Implementation Requirements of DODI 8320.04

5.3 Ensure mandatory IUID requirements for all qualifying items are met for all property items delivered to the Government under contract or in inventory or use if one or more of the following criteria apply as described in References (b), (d) and (e):

- (1) All items for which the Government's unit acquisition cost is \$5,000 or more;
- (2) Items for which the Government's unit acquisition cost is less than \$5,000, when *identified by the requiring activity*<sup>1</sup> as DoD serially managed, mission essential or controlled inventory;
- (3) When the Government's unit acquisition cost is less than \$5,000 and the requiring activity determines that permanent identification is required;
- (4) Regardless of value, (i) any DoD serially managed subassembly, component, or part embedded within an item and, (ii) the parent item (as defined in Reference (b)) that contains the embedded subassembly, component or part.

Note:

1 The requiring activity will make this determination and list the items in the DFARS 252.211-7003 contract clause. For legacy items, the requiring activity will make this determination in order to identify items for legacy item unique identification .

# IUID Basic Tenets - Marking

## A compliant IUID Mark – Syntax & Semantics

- Using the syntax of ISO/IEC 15434, either of the three formats (TEIs, AIs, or DIs) can be used and Construct #1 (serialization within company), Construct #2 (serialization within Part/Lot/Batch) or DoD accepted equivalent are acceptable.
- This interoperability of formats permits enterprises to use their prevailing machine-readable marking processes
- Resulting Unique Item Identifier (UII) is globally unique serial number

### Formats:

ATA: Text Element Identifiers (TEIs)

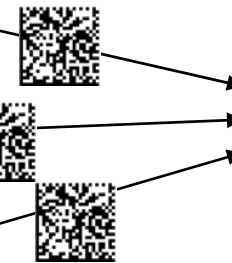
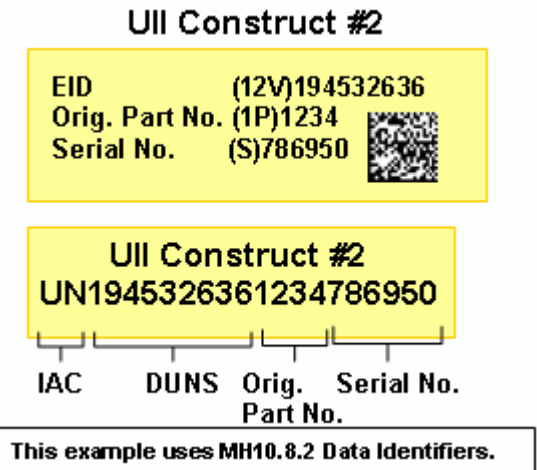
[ ] > <sup>R</sup><sub>S</sub>12<sup>G</sup><sub>S</sub>MFR OCVA5<sup>G</sup><sub>S</sub>SER 674A36458<sup>R</sup><sub>S</sub><sup>E</sup><sub>O</sub>T

GS1: Application Identifiers (AIs)

[ ] > <sup>R</sup><sub>S</sub>05<sup>G</sup><sub>S</sub>800406141411A0B9C3D6<sup>R</sup><sub>S</sub><sup>E</sup><sub>O</sub>T

MH 10.8.2: Data Identifiers (DIs)

[ ] > <sup>R</sup><sub>S</sub>06<sup>G</sup><sub>S</sub>17VOCVA5<sup>G</sup><sub>S</sub>1P1234<sup>G</sup><sub>S</sub>S786950<sup>R</sup><sub>S</sub><sup>E</sup><sub>O</sub>T



Imaging Device

# Data Plate Sample — Medium Tactical Vehicle Replacement (MTVR), USMC



*Parent*




*Transmission*



*Engine*

NOMENCLATURE: TRUCK, CARGO, XLWB, W/WINCH  
USMC VEHICLE REGISTRATION NUMBER: 595327  
NSN: 2320014652182  
DESIGN ACTIVITY: 45152  
SERIAL NUMBER: 10TDMWE3X3S078382  
GOVERNMENT OWNERSHIP DESIGNATION: US PROPERTY  
CONTRACT NUMBER: DAAE-07-99-C-M007  
HUMAN READABLE UII: LDM67854MTVR-2XLWBMK28595327



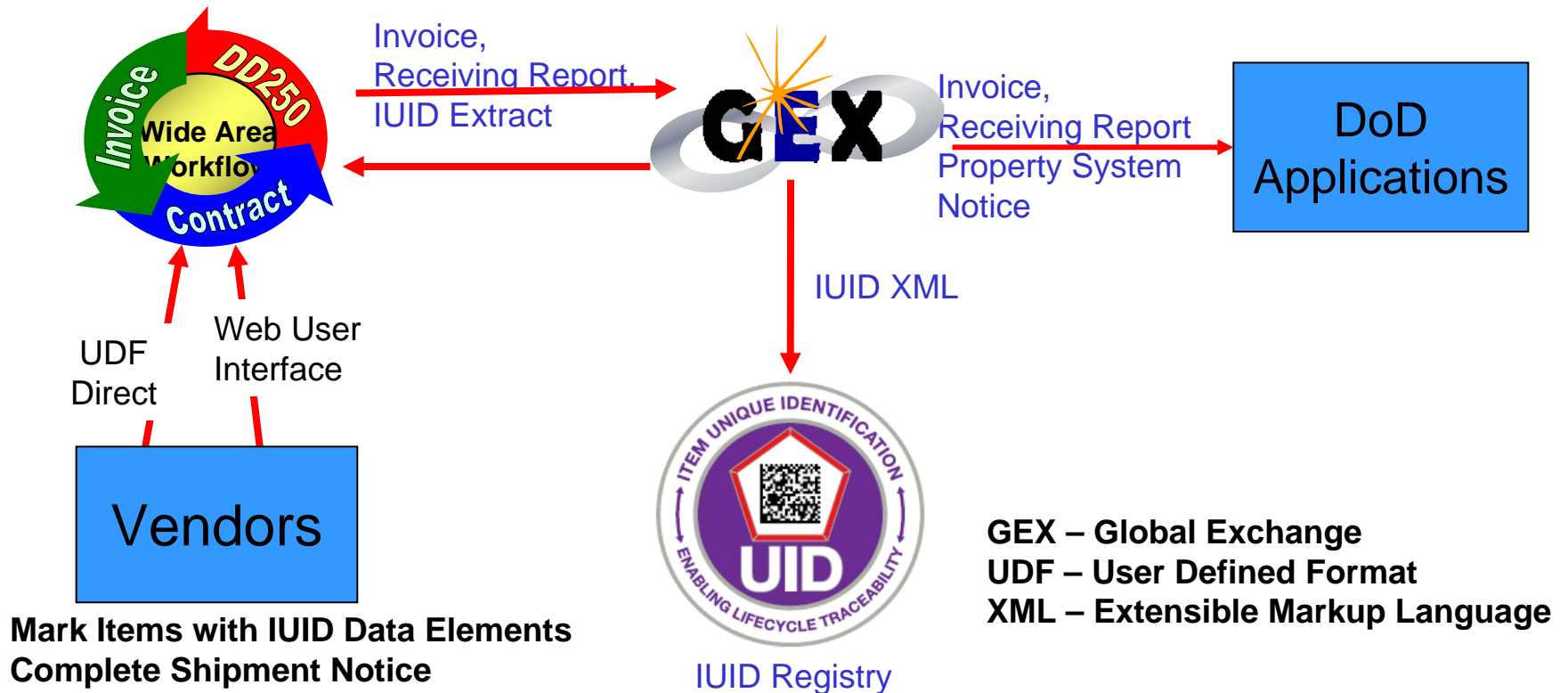
# Sample Direct Part Marks



**18 Times in Space  
on OV-103 (Discovery)**

# IUID Basic Tenets – Data Submission

## New Items Via Wide Area Workflow (WAWF)



# Data Requirements

## STANAG 2290 “UID of Items” Database Requirements

- Manufacturer
- Part Number
- Serial Number
- Ability to provide concatenated UII

## US DoD Item UID Pedigree Requirements

The table to the right identifies the data element fields within the IUID Registry.

Some data in the IUID Registry will not change; this is referred to as “static” data. Other data may be updated during the life cycle of the item; this is known as “dynamic” data. Examples of the static data include all the descriptive data elements except for Current Part Number and Current Part Number Effective Date. The Contract Info data elements are also static.

| Descriptive data                   | Custody                               |
|------------------------------------|---------------------------------------|
| UII                                | Prime Contractor CAGE, DoDAAC or DUNS |
| Issuing Agency Code                | Contract Number                       |
| Enterprise Identifier              | Received Date                         |
| Original Part Number               | Sent Date                             |
| Serial Number                      | Status Flag                           |
| UII Type                           | Category Code (E or M)                |
| Description                        | <b>Mark</b>                           |
| Batch/Lot                          | Contents                              |
| Current Part Number                | Effective Date                        |
| Current Part Number Effective Date | AddedOrRemoved                        |
| Manufacturer Identifier            | Marker Code                           |
| <b>Parent UII</b>                  | Marker Identifier                     |
| <b>Contract Info</b>               | Medium                                |
| Contract Number                    | Values in Mark Contents               |
| Prime Contractor Identifier        | Set                                   |
| Acceptance Code                    | <b>Status</b>                         |
| Acceptance Date                    | Life Cycle Event                      |
| Acquisition Cost                   | Event Date                            |
| CLIN/SLIN/ELIN                     | Recording Entity                      |
| Foreign Currency Code              | Source System and Document            |
| Ship-to Code                       | Life Cycle Event                      |
| Unit of Measure                    | Life Cycle Event                      |
|                                    | Life Cycle Event                      |
|                                    | Life Cycle Event                      |
|                                    | Location                              |
|                                    | Recipient                             |

# Registry Statistics

## as of 31 Dec 08

- **5,069,595** Items registered
- **3,629,046** New items
- **1,440,549** Legacy
- **1,334** Contractors have delivered new UIIs
- **765** of the contractors (**57%**) are small businesses\*
- **1,157,431** of the new items (**32%**) are from small businesses\*
- **Growth rate of over 35,000** new UIIs/week\*\*
- **306,172** Items are in GFP status

\* Based on current size status in CCR

\*\* Legacy and GFP UIIs often come in large batches and weekly rates for those are not meaningful

# Acquisition Management Requirements

## DODI 5000.02 Requirements (Dec 8, 2008)

- Table 3. Regulatory Requirements Applicable to All Acquisition Programs
  - IUID Implementation Plan in accordance with DoD Instruction 8320.04
    - MS A (summarized in SEP)
    - MS B (annex to SEP)
    - MS C (annex to SEP)
- Enclosure 2, para 7.c.4 (Military Equipment Valuation)
- Enclosure 12, para 10 (IUID)

# US DoD Instruction 8320.04, Item Unique Identification (IUID) Standards for Tangible Personal Property

- Signed 16 June 2008 and immediately effective
- Assigns responsibilities across the Office of the Secretary of Defense and the DoD Components to:
  - **leverage IUID capabilities** throughout policy, standards, and data systems
- Establishes the IUID Registry as:
  - **the master data source for Government Furnished Property**
  - the **authoritative source of Government unit acquisition cost** for items with Unique Item Identifiers (UIIs) acquired after January 1, 2004

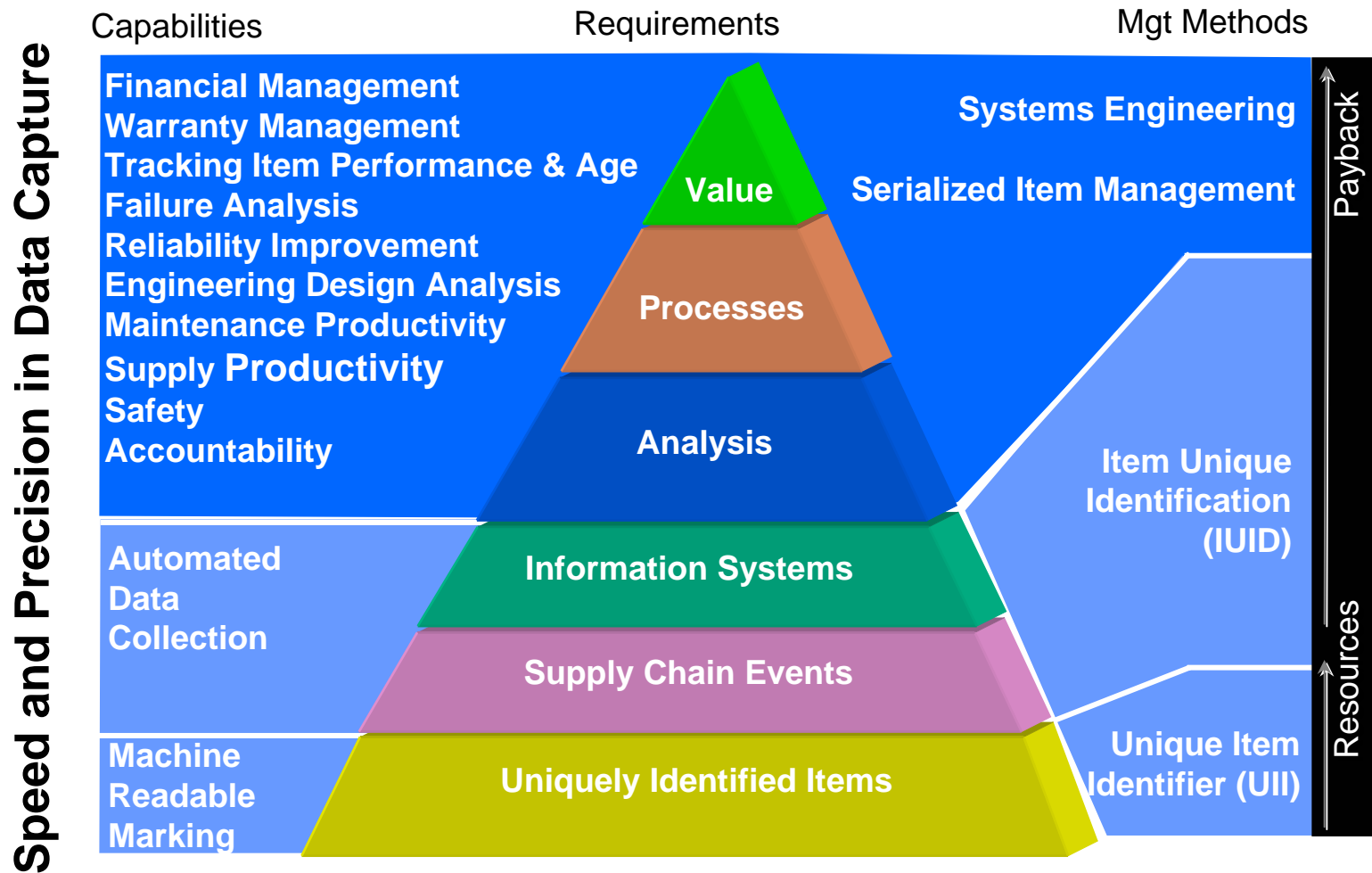
# Highlights of DoD Instruction 8320.04

- Directs the Heads of the DoD Components to:
  - **Develop and issue guidance for IUID**
  - **Implement** IUID across all programs and systems
  - Ensure program managers **plan for** and **implement** IUID requirements
  - **Ensure IUID compliant marking** of all **new and legacy** items meeting the IUID criteria
  - **Populate** the DoD IUID Registry with all UII data
  - **Use** the UII or DoD-approved IUID equivalent in all unique item tracking, serial number tracking, and Serialized Item Management (SIM) programs
  - **Resource IUID requirements and implementation strategies** to ensure commonality and interoperability with all automatic identification technology infrastructure requirements and IUID data management
  - **Modernize** acquisition, logistics, and property management **Automated Information Systems** with UII requirements including use of the IUID Registry as defined in Enclosure 2 of the DoDI

# Systems Life Cycle Management View

- UII is one of the “common data keys” needed for System Life Cycle Management to link item level data and information across multiple systems and owners
- Comprehensive UII visibility from “as-built” configuration through distribution and deployment process to item configuration at disposal
- Existing mandated tracking uses UII as a common approach across all in scope platforms
  - Tracking via serial numbers is not new (e.g. Flight Critical Safety Items, controlled items, serially managed)
  - Individual systems or reporting requirements generate “point” solutions that do not encourage common usage
- Supply Chain Management decision making using UIIs.
- Complete lifecycle traceability
- Common data exchange formats virtually eliminate translation requirements

# IUID Enabled Intensive Systems Life Cycle Management



# The US DoD Requirements Foundation

- USD(AT&L) Policy Memoranda (select list)
  - July 03, All New DoD Acquisitions beginning Jan 1 2004 including FMS and purchases through other agencies
  - Dec 04, ACAT Program Implementation
  - May 05, Gov Furnished Property
  - Mar 08, Systems Engineering and Supportability Planning Must Address IUID
- DoD Directive 8320.03, Unique Identification for a Net-Centric Department of Defense Mar 23, 2007
- **DoD Instruction 8320.04, Item Unique Identification (IUID) Standards for Tangible Personal Property (JUN 2008)**
- **DFARS 252.211-7003, Item Identification and Valuation (JUN 2005)**
- DoDI 5000.64, Accountability and Management of DoD-Owned Equipment and Other Accountable Property, Nov 2, 2006
- Defense Acquisition Guidebook
  - Ongoing revision of: DODI 5000.2, Operation of the Defense Acquisition System, May 12, 2003
- DoD I 4151.19, Serialized Item Management
- **MIL STD 129P(4) Department Of Defense Standard Practice Military Marking For Shipment And Storage**
- **MIL STD 130N DoD Standard Practice: Identification Marking of U.S. Military Property**
- Standard Financial Information Structure (SFIS)
- The Concept of Operations for IUID-Enabled Maintenance in Support of DoD Materiel Readiness, Revision 1, January 2007

# International IUID Standards Journey

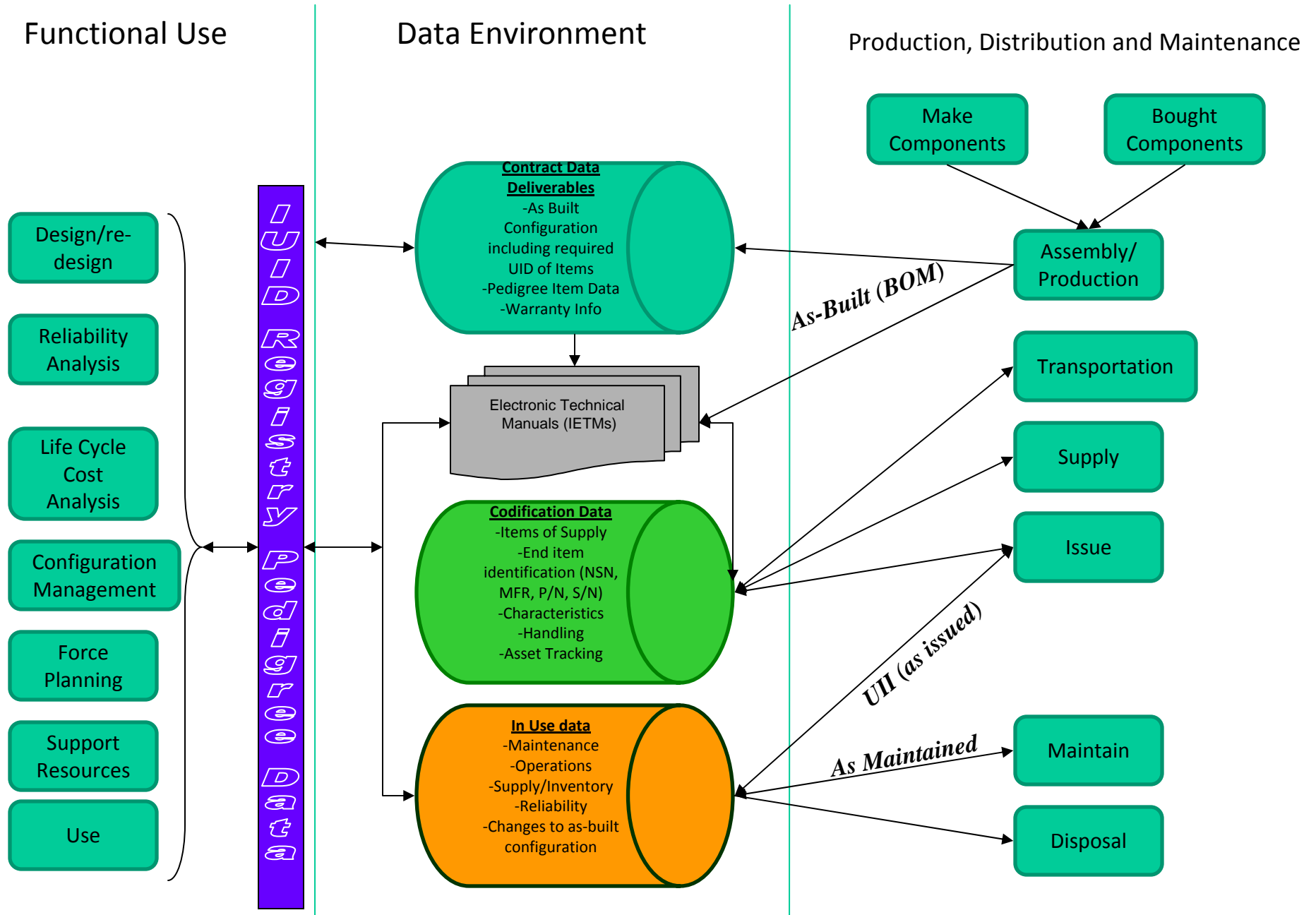
## Not just a US DoD Mandate

- ISO 15459 sets the Unique Item Identifier (UII) framework internationally
- US DoD requires ISO 15459 to be followed along with specific ISO standards for marking an encoded ECC 200 2D Data Matrix and requires delivery of IUID Pedigree data to the US DoD IUID Registry
- Air Transport Association Spec 2000 accepts ISO standard marking to expand IUID use to commercial aviation
- US DoD Recognizes IUID Equivalents (VIN, ESN, GIAI, GRAI-when serialized) that meet IUID marking requirements (i.e., IUID compliant ECC200 2D Data Matrix)
- NATO Activity
  - Standardization Agreement (STANAG) 2290 promulgated Dec 2007
    - Agreed marking would conform to ISO 15459/15434
    - Requires minimum database capability
    - Implementation subject to a national decision
  - Related NATO Initiative/Publications that could Leverage UID of Items
    - OLCM integration
    - AAP 48, NATO System Life Cycle Stages and Processes
    - AJP 4.11, Allied Joint Publication For Nato Asset Visibility
    - ACoD P1, AC 135, NATO Codification System
  - Jan 2008, Allied Committee 327 established Working Group
    - Second Draft Allied Publication (AUIDP-1) to support NATO Standardization Agreement 2290 due Jan 2010
- Non-US national policies and implementations are underway
  - Netherlands issued mandatory UID/AIT Policy and contractual language similar to US requirement
  - Canada has included UID requirements in contracts
  - Norway and UK using ISO 10303

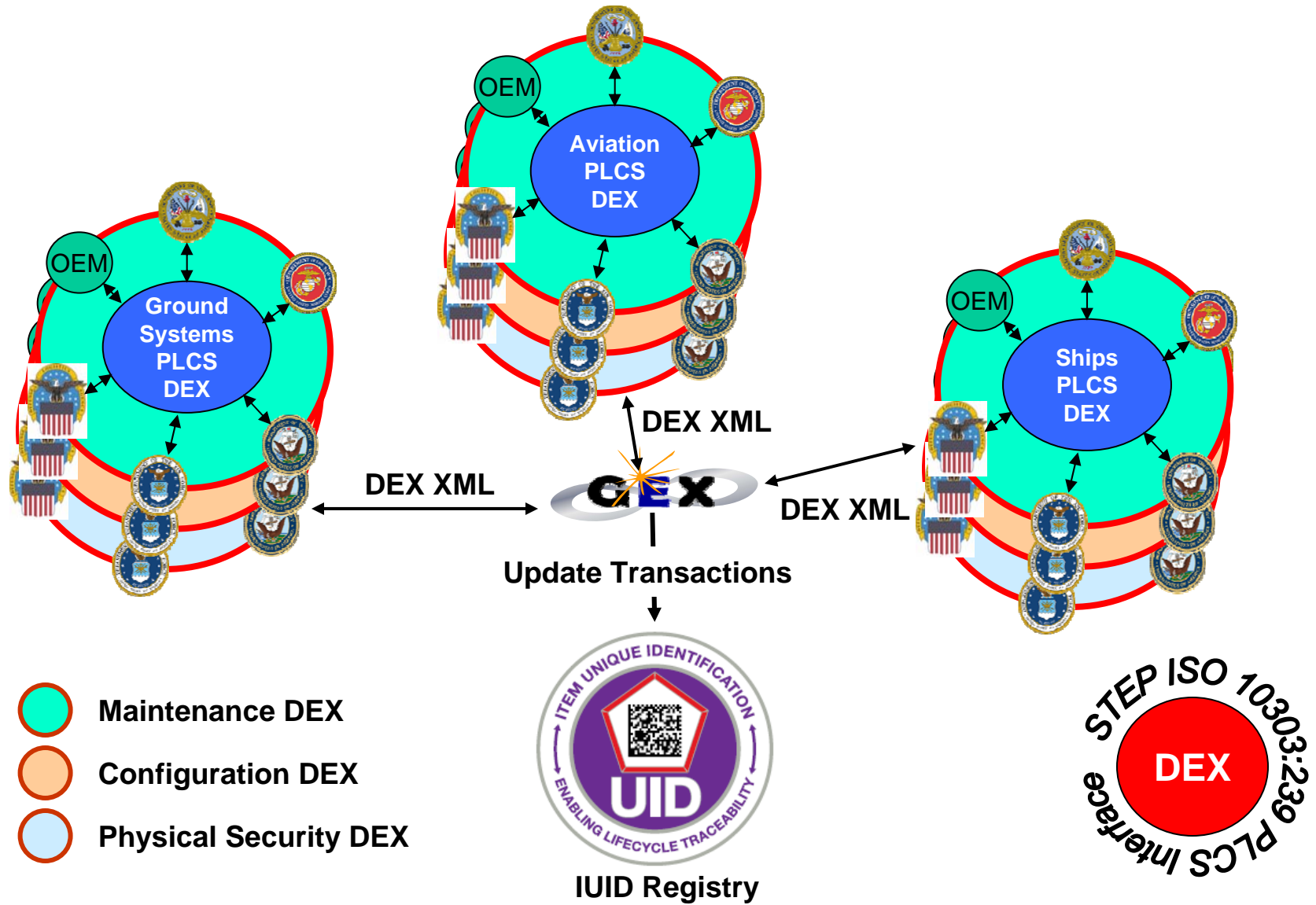
# International Systems Life Cycle Management and Data Exchange Requirements

- NATO
  - SNLC, Asset Tracking Working Group
    - STANAG 2290 – UID of Items – 15 nations Ratified Dec 2007
  - CNAD, AC/327, Life Cycle Management Group
    - Life Cycle Management Policy in NATO
    - UID Policy Working Group Established Jan 25, 2008
      - 7 nations, industry, plus organization under both SNLC and CNAD supporting the work
    - PLCS STANAG forwarded to NATO Standardization Agency for Promulgation, Dec 2007
  - CNAD, AC/135, NATO Codification System
    - Working on ISO 10303 Codification DEX
- OASIS
  - AP 239, PLCS
    - Public Comment Period
      - Aviation Maintenance DEX
      - Task Resource DEX

# Conceptual View by Functional Use (Notional)



# “To Be” - Electronic Data Interchange Environment



# The Keys to Success!

- Compliance is only the beginning not the end
- Leverage IUID versus treating it as just a cost
- Mark, Mark, Mark!!
- Capture Marks using AIT
- Exchange item data in a Common Format (ISO 10303)
- Share access to data
- Leverage other electronic data sources (e.g. IETMs)
- Do something with the improved data
  - Warranty management
  - Assembly sequence proofing
  - Training and calibration confirmation
  - Packaging and handling/labeling automation
  - Warehousing/inventory at the eatches
- Document your experience
- Tell your story!

# Summary



- US DoD/DoN/NATO and industry have a lot more to do
  - AIT to capture the machine-readable mark
  - AIS Systems capabilities to carry IUID data
  - Marking of Legacy Items and ensuring marks/data maintained
  - Continue to ensure compliance with new contract requirement
- IUID is the global future (not just Defense) of item identification and serialized item management!
  - ISO, AIM and MH10 closely monitoring US DoD progress and supporting efforts
  - ERP Systems embedding IUID and ISO 10303 capability in their offerings
- International support for IUID is rapidly growing
  - Industrial partners are improving their capabilities
  - Netherlands has published policy
- The International Defense Industrial Base is on the forefront of item level traceability for lifecycle management
  - NATO STANAG's already published
  - NATO WG5 Allied Publication in Draft

# OUSD(AT&L) Sponsored Resources

- UID Website
  - <http://www.acq.osd.mil/dpap/pdi/uid>
- IUID Toolkit
  - <http://www.iuidtoolkit.com>
  - Four tracks: PMs, Suppliers, Depot, Warfighter
  - Two new videos – Technology Demo and Future Vision
- DAU
  - UID Special Interest Area: Within Acquisition Community Connection  
[https://acc.dau.mil/simplify/ev.php?ID=18058\\_201&ID2=DO\\_TOPIC](https://acc.dau.mil/simplify/ev.php?ID=18058_201&ID2=DO_TOPIC)
  - Continuous Learning Modules: <https://learn.dau.mil/html/clc/Clc1.jsp>
    - CLM200 - Item Unique Identification
    - CLC033 - Contract Format and Structure for the DoD e-Business Environment
    - CLL 013 - DoD Packaging
    - Coming soon – Marking for IUID
  - Rapid Deployment Training
  - AFMC Sponsored Course pilot (last week in Dayton)
- Outreach and Communication
  - Dozens of Presentations annually
  - Published Articles (AT&L Magazine, SOLE, DSPO, Army AT&L, etc.)
  - Program Office engagements
  - 13 IUID Forums/Bootcamps (7000 attendees), next events Apr and Sep 2009
  - IUID Quarterly E-Newsletters

Backup

# US DoD Instruction 8320.04, Item Unique Identification (IUID) Standards for Tangible Personal Property

- Signed 16 June 2008 and immediately effective
- Assigns responsibilities across the Office of the Secretary of Defense and the DoD Components to:
  - **leverage IUID capabilities** throughout policy, standards, and data systems
- Establishes the IUID Registry as:
  - **the master data source for Government Furnished Property**
  - the **authoritative source of Government unit acquisition cost** for items with Unique Item Identifiers (UIIs) acquired after January 1, 2004

# What Next to Implement/Support DoDI 8320.04

- **Component Implementation**
  - Signed Component Level Instructions (e.g. SECNAV Instructions)
  - Maintenance
    - Updated Technical Instructions and Technical Documentation
      - Handling Previously Marked Items
      - Procedures for Unmarked Items
  - **New Contract Compliance!**
    - Challenge Contractor Compliance
- **Information Systems**
  - Business Enterprise Architecture (BEA) Revisions (ongoing)
  - Investment Review Board Criteria (ongoing)

# What Next to Implement/Support DoDI 8320.04 (continued)

- Depots
  - Standard Practice for Items that would be required
- DLA
  - Developing IUID Implementation Strategy (Sep 08)
  - Reliant on Design Authority Initiative and Support
  - Considering specific codes to “notify” customer of IUID requirement at NSN level
- DCMA
  - Pursuing marking and IUID Registry data submission problems as specific information is provided by users