

Program Manager's Planning Roadmap  
For  
Implementing  
Item Unique Identification (IUID)

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Office of the Acting Under Secretary of Defense  
(Acquisition, Technology and Logistics)

UID Program Office

# Preface

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This roadmap guide provides suggested methods for a program manager to use in planning for implementing the marking requirements for DoD item unique identification (IUID). The scope includes items being procured under new solicitations and on-going contracts, government furnished property in the possession of contractors (PIPC), and items in operational use, inventory or undergoing depot maintenance or overhaul. Key definitions are listed in Appendix A.

The implementation of IUID is a DoD strategic imperative. DoD IUID permanently identifies an individual item distinctly from all other individual items that the DoD buys and owns. IUID provides for marking personal property items with a machine-readable Unique Item Identifier (UII), which is a set of globally unique data elements.

IUID is the path to knowledge enablement. The UII is used in functional automated information systems to value and track DoD items through their life cycle. The IUID Registry of items marked with UIIs provides accurate and accessible unique identification and pedigree information about these items. This information is used to make acquisition, repair, and deployment of items faster and more efficient. IUID will be useful throughout the DoD enterprise to facilitate achievement of:

- Adoption of best commercial practices through capitalizing on evolving and emerging asset visibility and traceability methods.
- Clean audit opinions on property, plant, and equipment and operating materials and supplies portions of DoD financial statements.
- Expanded strategic purchasing approaches as a result of more accurate and available data of similar personal property items.
- Improved long-term inventory management of personal property through better visibility of enterprise assets.
- Improved planning and execution of mission-oriented activities through total asset visibility.
- Item availability improvement and frustrated freight reduction as a result of increased data availability, more efficient item management, and enhanced asset visibility.
- Lower cost of personal property management as a result of consistent capture and use of life-cycle asset information.
- Total asset visibility in both peace and wartime, for personal property.

The basic IUID requirements are contained in an Acting USD (AT&L) Memorandum of July 29, 2003. On December 23, 2004, the policy was extended to legacy items in inventory and operational use, including Government property in the possession of contractors (PIPC). On May 12, 2005, additional policy updates were provided.

In addition, the Department published a guide to uniquely identifying items, together with Frequently Asked Questions and a set of business rules developed by a joint government and industry team. The most current guidance is available at <http://www.acq.osd.mil/dpap/UID>.

A DFARS final rule regarding IUID, entitled Item Identification and Valuation, was published in the Federal Register on 22 April 2005 (DFARS Case 2003-D081).

MIL-STD-130L, Change 1, which specifies Identification Marking of U.S. Military Property, was published on 20 December 2004 to include practices for IUID.

A list of all IUID policy memoranda and relevant guides and standards is in Appendix B.

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# Chapter 1

## Planning Considerations

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### THE DEFINITION OF ITEM

Throughout this guide, the term item will be used. An item is a single hardware article or a single unit formed by a grouping of subassemblies, components, or constituent parts<sup>1</sup>.

### TRADITIONAL USE OF ITEM IDENTIFICATION

Item identification has traditionally been a requirement for DoD programs. The processes affected by item identification include configuration management, defense specifications, technical documentation, engineering drawing practices, identification marking, transportation, inventory operations, maintenance and logistics support. These processes define item identification basically to differentiate between different products by coupling enterprise identifiers with part numbers. Serialization is added to distinguish between individual items with the same item identifier.

Serialization can be within the part number or within the enterprise. Items are marked with the item identifiers and serial numbers as required. Item marking requirements were traditionally expressed in human readable information (HRI) inscribed on data plates, directly on the item, or on item packaging. More recently, automatic identification and data capture (AIDC) technology media, such as bar codes, contact memory buttons, and radio frequency identification, have been used to supplement the HRI markings, either as labels, tags, or direct part markings.

### HOW IUID HAS CHANGED THE TRADITIONAL REQUIREMENTS FOR ITEM MARKING

#### IUID Requires the Use of Automatic Identification and Data Capture (AIDC)

IUID uses AIDC processes to collect data about an item through automatic means (that is, without the use of keyboard entry), such as bar code scanning or imaging. AIDC uses media that contains machine-readable

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<sup>1</sup> DFARS 252.211-7003, Item Identification and Valuation, April 22, 2005

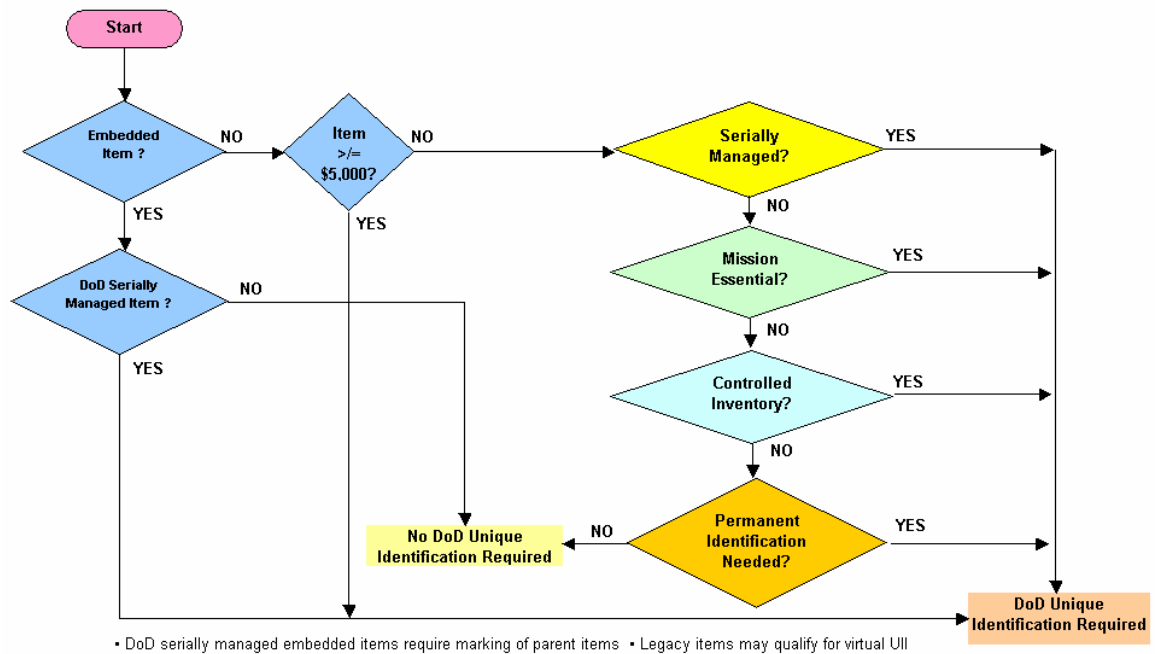
information, which is information that is in a form that a computer can accept. A peripheral device is used to “read” the machine-readable information stored on the AIDC media and transfer that information to the computer through a communication channel.

The AIDC media used in IUID is the two-dimensional Data Matrix symbol. The implementation of IUID requirements means that qualifying items must be marked with machine-readable information (MRI) encoded in the Data Matrix symbol. The encoded Data Matrix symbol is called the Unique Item Identifier (UII). It is marked on an item through use of a label or by applying the symbol directly to the surface of an item (direct part marking).

Appendix C of this guide explains the structure and method of encoding data for the DoD UII mark.

## IUID Requires Greater Use of Item Serialization

Figure 1 contains the decision tree used to determine whether or not an item qualifies for MRI marking with a unique item identifier (UII).



**Figure 1. Uniquely Identifying Items Delivered Under Contract and Legacy Items in Inventory or Use**

Items will require a DoD compliant UII<sup>2</sup> for all personal property items delivered to the Government under contract or in inventory or use if one or more of the following applies: (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* as 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<sup>3</sup> that contains the embedded subassembly, component or part.

## IUID Emphasizes Use of Machine-Readable Information in Identification Marking of U. S. Military Property

MIL-STD-130L, Change 1, provides increased insight and guidance for the implementation of MRI processes for IUID marking to facilitate automatic data capture. It provides implementing instructions for marking items with the DoD UII constructs or DoD recognized IUID equivalents<sup>4</sup>. MRI provides a valuable tool for asset management from acquisition through manufacture to logistics. Human-readable (HRI) item identification marking may also be necessary for some end users of the identified item. Finding the most effective use of both, either singly or in combination, is the prime responsibility of the Government requiring activity.

The standard provides the criteria by which product designers develop specific MRI and HRI item identification marking requirements. It notes that product designers must include in product definition data specific requirements as to marking content, size, location, and application process.

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<sup>2</sup> A DoD compliant UII is defined as is either a Construct #1, Construct #2, Global Individual Asset Identifier (GIAI), Global Returnable Asset Identifier (GRAI), Vehicle Identification Number (VIN), or Electronic Serial Number ((ESN), for cell phones only), all of which have their data elements encoded in a data matrix in the ISO/IEC 15434 syntax with ISO/IEC 15418 or ATA CSDD semantics. See Appendix C for more details.

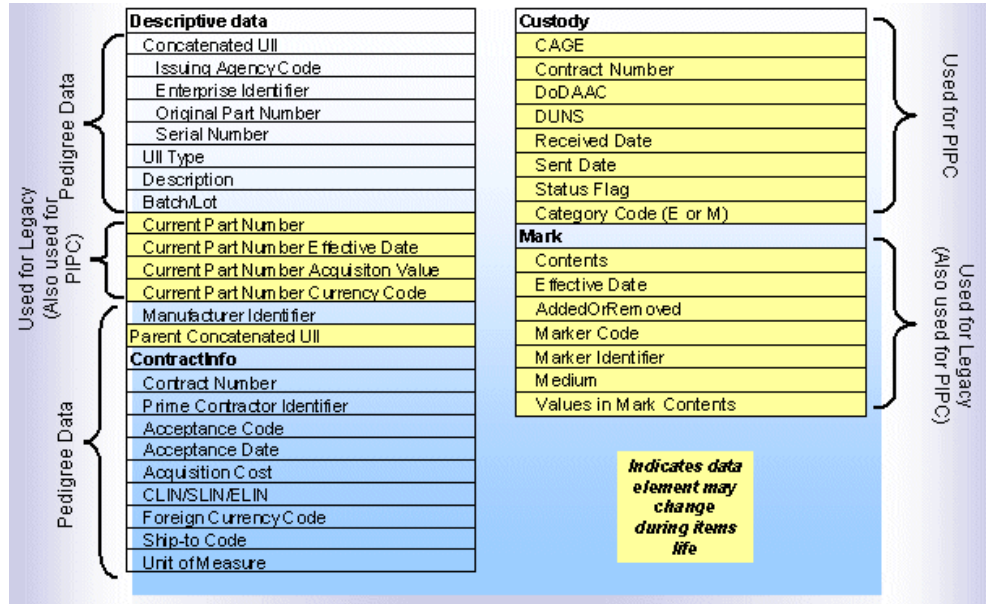
<sup>3</sup> "Parent item" means the item assembly, intermediate component or subassembly that has an embedded item with a unique item identifier or DoD recognized unique identification equivalent.

<sup>4</sup> The IUID equivalents are the Global Individual Asset Identifier (GIAI), Global Returnable Asset Identifier (GRAI), Vehicle Identification Number (VIN), and Electronic Serial Number ((ESN), for cell phones only).



## IUID Requires Registration of Unique Item Identifiers (UIIs) and Their Pedigree Data

UIIs and their pedigree data will be stored in the IUID Registry. The IUID Registry is populated as new items are acquired, or as legacy items are assigned UIIs. It is maintained by the Defense Logistics Information Service (DLIS). Figure 2 shows the types of data that are captured in the registry.



**Figure 2. Fixed and Variable IUID Master Data**

Information on the IUID Registry, pedigree data and UII data submission procedures can be found at

<http://www.acq.osd.mil/dpap/UIID/DataSubmission.htm>

## REQUIREMENTS TO BE ADDRESSED IN IUID IMPLEMENTATION PLANNING

The requirements discussed in this section are derived from the policy memoranda, guides and standards listed in Appendix B.

### Summary of Requirements and Milestones for IUID

For solicitations issued after January 1, 2004, the DFARS Clause at 252.211-7003, Item Identification and Valuation, is used as prescribed by DFARS 211.274-2, Policy for unique item identification.

Overall Service implementation planning must include modification of on-going production contracts for major program in effect before January 1, 2004. These contracts should be modified as soon as possible, but no later than at phased events or exercise of options.

Effective May 12, 2005, all acquisition milestone reviews are required to address implementation of IUID policy, including property in the possession of contractors.

For existing legacy personal property items in inventory and in operational use, ACAT ID programs are required to submit IUID plans to the OSD UID Program Office by June 2005. All other programs are required to submit plans to their respective Milestone Decision Authorities by January 2006. These plans are required to meet the following targets:

- Fiscal Year 2007: (a) all existing serialized assets that meet the IUID criteria have been entered in the IUID Registry, and (b) IUID marking capabilities have been established for all existing items and embedded assets such that marking can commence as applicable equipment are returned for maintenance.
- December 31, 2010: Complete IUID marking of items and all applicable embedded assets within existing items.

In the case of DoD organic depot maintenance operations, the Military Departments should plan on establishing initial depot operating capabilities for legacy items by July 2005 at those depots currently involved with IUID for depot manufactured items. Full operating capability at all organic depots will be put in place not later than FY 2007.

Effective January 1, 2006, all new solicitations and contracts that include Government Furnished Property (GFP) must comply with the IUID requirements. On existing contracts, the transition period for GFP to an electronic capability in the IUID Registry is June 2005 through September 2006. Beginning FY 2007, all PIPC (including equipment and material<sup>5</sup>) acquisition valuation data will be obtained from the IUID Registry.

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<sup>5</sup> Equipment – A tangible article of personal property that is a single item or a single unit formed by a grouping of subassemblies, components, or constituent parts that is durable, nonexpendable, and needed for the performance of a contract. Equipment generally has an expected life of one year or more, and does not ordinarily lose its identity or become a component part of another article when put into use.

Material – Property that may be incorporated into or attached to a deliverable end item or that may be consumed or expended during the performance of a contract. It includes assemblies, components, parts, raw and processed materials, and small tools and supplies that lose their individual identity through incorporation into an end-item.

## Milestone Decision Review Criteria

The following milestone criteria shall apply to DoD IUID program reviews. IUID Program Plans must –

- Apply to all programs that result in the delivery of items to the Department of Defense;
- Incorporate IUID requirements for all new end items meeting the IUID criteria;
- Incorporate the capability to use IUID in all new Automated Information Systems (AIS) used for the management of property;
- Support Performance Based Logistics objectives for total asset visibility, life cycle inventory management, and serialized item management;
- Be consistent with financial accounting and property management objectives;
- Integrate IUID in configuration and document management;
- Address organic manufacturing;
- Incorporate IUID requirements for all embedded items that meet the IUID criteria, including all serially managed embedded items;
- Address IUID requirements for legacy items, to include –
- Retrofit plans for 2010 completion for in-service items,
- Inventory items and embedded items, and
- Impact to Automated Information Systems (AIS);
- Address automatic identification technology (AIT) infrastructure requirements, to include –
  - Maintenance and supply support,
  - Organic manufacturing, and
  - Deployable assets;
- Address compatibility with automated information systems, to include –
  - Program-specific information, and
  - Cross-program/cross-service information systems.

## New Items Delivered under Contracts Issued After January 1, 2004

DFARS 211.274, Item Identification and Valuation, adds requirements for contractors to provide unique identification for items meeting certain criteria and delivered to DoD, through the use of item identification marking. In addition, the rule adds requirements for DoD contracts to provide for identification of the Government's acquisition cost of all hardware items delivered by the contractor to DoD under the contract.

The rule requires that the clause at 252.211-7003 be used in solicitations and contracts. An item qualifies for unique identification if it meets the requirements of DFARS 211.274-2(a). The Government requiring activity identifies those qualifying items for which the Government's unit acquisition cost is less than \$5,000 in paragraph (c)(1)(ii) of DFARS Clause 252.211-7003 and embedded items in an Attachment Number (see 252.211-7003(c)(1)(iii)).

The contractor shall place the UII data elements (enterprise identifier, serial number and, for serialization within the part number only, original part number) in Data Matrix MRI media on items requiring marking, based on the criteria provided in MIL-STD-130L, Change 1, Identification Marking of U.S. Military Property.

In constructing the UII, the contractor shall select the method of serialization for the items delivered. Also, the contractor shall determine which semantics scheme will be used to encode the UII data elements in the Data Matrix MRI media. There are three semantics schemes that can be used: (1) Data Identifiers (DIs)<sup>6</sup>, Application Identifiers (AIs)<sup>7</sup>, and Text Element Identifiers (TEIs)<sup>8</sup>.

## Legacy Items in Operational Use and Inventory

Policy was issued on December 23, 2004 on the use of IUID in on-going contracts, government furnished property in the possession of contractors, and items in operational use, inventory or undergoing depot maintenance or overhaul. The IUID policy was further updated on May 12, 2005.

### **Planning Guidelines**

UIIs must be applied to items that are serialized within DoD today or already have data plates. These items may be assigned virtual UIIs in DoD information systems, deferring the physical item marking until a trigger event, such as maintenance or overhaul, occurs. Migration strategies will be used to resource and accomplish the technical analysis, as required, providing instructions for labeling or directly marking items that are not currently serialized or do not have data plates.

In-service items shall be assessed for retrofit for UII and plans prepared for implementation. Categories may be used by the program manager to distinguish implementation approaches for items based on specific criteria (e.g., items in use, items in stock, items under contract but not yet

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<sup>6</sup> DIs are governed by ISO/IEC 15418, EAN/UCC Application Identifiers and ANSI MH 10 Data Identifiers and ANSI MH 10 Data Identifiers and Maintenance.

<sup>7</sup> AIs are governed by ISO/IEC 15418, EAN/UCC Application Identifiers and ANSI MH 10 Data Identifiers and ANSI MH 10 Data Identifiers and Maintenance.

<sup>8</sup> TEIs are governed by Air Transport Association Common Support Data Dictionary.

delivered, items containing embedded items). Chosen approaches and/or candidate approaches for each category shall address consistency with weapon system support and asset management objectives and processes. Relevant factors shall be identified and considered (e.g. weapon system/item life limitations, attrition rates, automated information systems updates, stock turnover, overhaul schedules, planned modifications, future production, and organic capabilities). Plans shall include:

- Criteria for deciding which items shall be uniquely identified
- Identification of serially managed subassemblies, components and parts embedded within end items that can be assigned virtual UIIs
- Methods for making items available for marking
- Process for capturing product data for database entry
- Serialization methodology and UII construction
- Marking process and infrastructure requirements
- Integration with automated information systems
- Related schedules for actions and milestones including initial marking capability and estimated date of retrofit completion (by category)

Service IUID Implementation plans must provide for data validation to eliminate duplicate and erroneous item data prior to establishment of UIIs or virtual UIIs.

### **Guidance for Preparation of Program Plans**

To be considered complete for unique identification purposes, a program plan should address cost, schedule, impacts on legacy assets in service, existing on-going contracts, drawing update strategy, business approach, and budget requirements, and should reflect coordination with program sustainment activity and industry.

- Planning should include the identification of Automatic Information Technology (AIT) infrastructure requirements for organic manufacturing, for maintenance and supply support, and for deployable assets.
- Planning should include the identification of process reengineering opportunities and Automated Information Systems (AIS) enhancements to exploit the capabilities of UII markings.

### **Criteria for Completing IUID of Legacy Items**

To be considered complete for unique identification purposes, a legacy program would have marking instructions (process, location, method), orders or business process modifications for organic operations and contractual language in place to support every attrition-based opportunity to mark sub-assemblies, components and parts not yet marked. Where

applicable, existing legacy serial number tracking programs are being utilized to provide virtual UII within parent assembly. Supporting automated information systems have IUID capability, and rudimentary sorts/relational linkages are established. It is recognized that programs will have different level of completion by 2010. Program plans should reflect the following:

- Program plans need to be complete by 2005
- Identify mission-essential items first.
- Identify scope of embedded assets
- Address the trigger events for applying UII to items
- Forecast target level of completion by year
- Identify expected technology for marking and reading
- Establish interim target dates for updating all sub-assemblies and end items with existing data plates
- Establish interim target dates for update program plan to address business processes and data integration
- Establish date for Services and Components to develop plans to implement strategy to address data capture and use by a specific milestone date.

## Government Property in the Possession of Contractors (PIPC)

Development of one central DoD electronic Government PIPC capability as an integral function of the IUID Registry will be evolutionary, with increasing functionality and integration incorporated at each phase. Effective May 31, 2005, the function of the IUID Registry will expand to provide storage of and access to data that identifies and describes DoD PIPC. The transition of GFP to the DoD electronic PIPC capability will be accomplished in phases, beginning with equipment PIPC. Remaining PIPC, classified as material, will be transitioned as transactions are migrated to Wide Area Workflow as a PIPC gateway. Beginning FY07, it is the intent that all PIPC acquisition valuation data will be obtained from the IUID Registry. Contractor Acquired Property (CAP) will only be added to the IUID Registry if DoD takes custody of the property. All legacy data systems in use by the Military Departments and DoD Components, as well as all future data systems, must accommodate IUID as the basis for integrated management of assets, including DoD PIPC, and facilitate the correlation and sharing of information in a net-centric environment. The IUID Registry will provide the central enterprise-wide DoD capability for electronic management of PIPC.

Transition to electronic management of Government PIPC will provide information to ensure accurate stewardship and accountability of

Government PIPC. The use of electronic forms and processing of transactions and approvals will reduce paper processes.

Further details on the IUID of Government PIPC can be found in Attachment 2 to the USD(AT&L) Memorandum, Policy Update for Item Unique Identification of Tangible Personal Property, Including Government Property in the Possession of Contractors, 12 May 2005, available at <http://www.acq.osd.mil/dpap/UID/policy.htm>.

## DoD Organic Depot Maintenance Operations

The Services should plan on establishing initial depot operating capabilities for legacy personal property items by July 2005 at those depot facilities currently involved with UID for depot-manufactured items (i.e., NADEP Cherry Point, Letterkenny Army Depot, and Ogden Air Logistics Center). Planning will ensure that appropriate design authority approval is obtained prior to actual parts marking (which will be done IAW the associated policy and standards). After such Initial Operating Capability (IOC) is established, and based on corresponding lessons learned/experience gained, Full Operating Capability (FOC) at all organic depots will be put in place NLT FY2007.

## Technical Documentation

The implementation of part marking with Data Matrix MRI media to uniquely identify items may require changes in manufacturing and maintenance processes if these processes have not already been enabled to mark items with MRI media. If item designs are final and do not enable MRI marking, changes to enable MRI marking must be incorporated in those engineering drawings and/or manufacturing specifications that describe item markings. Methods of dealing with technical documentation changes in a cost effective manner can be found in the Guidelines for Engineering, Manufacturing and Maintenance Documentation Requirements for Unique Identification (UID) Implementation, Version 1.0, December 6, 2004, available at <http://www.acq.osd.mil/dpap/UID/guides.htm>.

## Virtual Unique Item Identifier (UII)

Virtual UIIs may be used for DoD-owned legacy personal property items or PIPC. Some items may have the requisite data elements necessary to construct a UII already marked on them; however, these data elements are physically placed in a marking medium that is not DoD UII compliant, i.e., the marking medium is not the data matrix symbology encoded with ISO/IEC

15434 syntax and ISO/IEC 15418 or ATA CSDD<sup>9</sup> semantics. In these cases, the UII data elements for such an item can be recorded in the IUID Registry, even though the marks containing the data elements are not DoD UII compliant. The virtual UII shall be assigned and managed through use of the following business rules:

- An item shall have an existing innate serialized identity and meet the criteria for item unique identification. Contractors in possession of Government property may use the asset identification number they use to track the item as the innate serialized identity.
- The innate serialized identity data (e.g., enterprise designation; part, lot or batch number; serial number; or property control number) is affixed to the item (e.g., contact memory button, linear bar code, two-dimensional bar code, human readable data plate, etc).
- The enterprise identifier of the enterprise that assigns the virtual UII for the item shall be used in conjunction with the existing innate serialized identity data (e.g., manufacturer; part, lot or batch number; serial number; or property control number) to establish a virtual UII<sup>10</sup> The enterprise assigning the virtual UII shall: (a) validate the accuracy of the innate serialized identity data for items to guarantee uniqueness of the virtual UIIs to be assigned, and (b) assure that using the innate serialized identity data on items from different manufacturers does not create a duplicate UII<sup>11</sup>.
- The enterprise that has responsibility of Government property shall use its enterprise identifier for the assignment of virtual UIIs to the Government property in its possession, even though the Government property may be physically located at different facilities of the enterprise or at the enterprise's subcontractor facilities.
- The assigned virtual UII must become the permanent UII used for a physical compliant UII mark using the mandatory DoD requirement of the two-dimensional data matrix symbol encoded with ISO/IEC 15434 syntax and ISO/IEC 15418 or ATA CSDD semantics.

Additional summary information on the virtual UII is in Appendix D. Further details are in The Guidelines for the Virtual Unique Identifier

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<sup>9</sup> Air Transport Association Common Support Data Dictionary

<sup>3</sup> As an alternative, an enterprise identifier other than that of the enterprise assigning the virtual UII may be used provided there is a written agreement between the two parties to document the arrangement.

<sup>4</sup>The enterprise assigning the unique identifier may wish to consider appending a prefix to the item's current serialization construct in order to minimize this issue.



(UII), Version 1.0, December 27, 2004, available on the UID website,  
<http://www.acq.osd.mil/dpap/UID/Guides.htm>.

## Chapter 2

# Roadmap of IUID Actions

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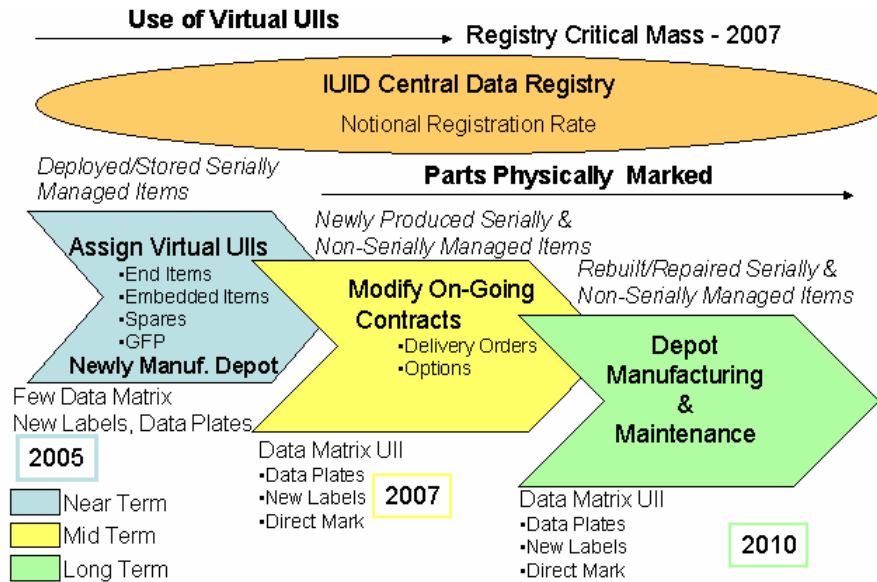
### THE SCOPE OF ACTIONS FOR LIFE CYCLE IMPLEMENTATION OF IUID

The life cycle scope of IUID must include items being procured under new solicitations and on-going contracts, government furnished property in the possession of contractors, and items in operational use, inventory or undergoing depot maintenance or overhaul. The following is a list of actions that must be achieved:

- Establish priority for application of IUID
- Develop strategies for application of IUID
- Achieve full IUID capability for new solicitations
- Achieve full IUID capability for on-going contracts
- Achieve full IUID capability for GFP in the possession of contractors
- Assign virtual UIIs to items in operational use
- Assign virtual UIIs to item in inventory
- Achieve full IUID capability in depot maintenance for items without virtual UIIs

### A MIGRATION STRATEGY FOR LEGACY ITEMS

Figure 3 depicts a migration strategy for IUID of legacy items. In this strategy, IUID migrates from the use of virtual UIIs to the physical marking of UIIs on legacy items. Initially starting with deployed/stored serially managed items in the near term (2005), IUID moves to new serialized and non-serially managed items in the mid term (2007) to rebuilt/repaired and non-serially managed items in the long term (2010).



**Figure 3. Migration Strategy for Legacy Items**

## Establish Priorities for Application of IUID

With the migration strategy in mind, priorities should be established for application of IUID to all items managed by a program manager. A priority listing might look like this:

1. **New Solicitations:** Post-January 2004. Includes items and spares delivered under acquisition contracts and items delivered under contractor logistics support contracts.
2. **On-Going Contracts:** Post-June 2005 (ACAT 1D programs), Post-January 2006 (All other programs). Includes items and spares delivered under acquisition contracts and items delivered under contractor logistics support contracts.
3. **Property in Possession of Contractors (PIPC):** Post-January 2006. Transition to full electronic capability for equipment PCIP in the IUID Registry by September 2006. Beginning FY 2007, all PIPC (including equipment and material) acquisition valuation data will be obtained from the IUID Registry. Includes fixed GFP, GFP that moves between different accountable enterprises, and new GFP provided to an enterprise by the Government.
4. **Operational Fleet:** Post-June 2005 (ACAT 1D programs), Post-January 2006 (All other programs). Includes serialized items and DoD serially managed items embedded in items.



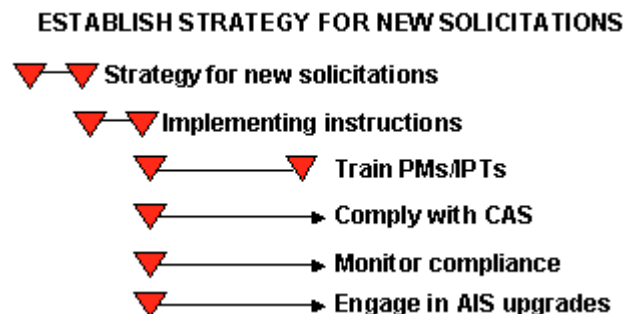
4. Operational Fleet: Post-June 2005 (ACAT 1D programs), Post-January 2006 (All other programs). Assign Virtual UIIs to serialized items and to DoD serially managed items embedded in items.
5. Assets in Inventory: Post-June 2005 (ACAT 1D programs), Post-January 2006 (All other programs). Assign virtual UIIs to serialized items only.
6. Assets in Depot Maintenance: Post-July 2005 (Initial operational capability), End FY 2007 (Full operational capability). Mark end items and spares > \$5,000 and DoD serially managed items embedded in items and spares if accessible during maintenance. Assign virtual UIIs to items inaccessible.

## Achieve Full IUID Capability for New Solicitations

Tasks to accomplish for achieving full IUID capability for new solicitations include the following:

- Issue Implementing Instructions
- Train Supporting Integrated Product Teams on IUID
- Include DFARS 252.211-7003 in Solicitations
- Comply With Established Cost Accounting Standards For IUID Cost Recovery on Contracts
- Monitor Compliance & UII Registrations
- Engage Support Functions in Upgrade of Automated Information Systems to Utilize IUID

A notional timeline for achieving this capability is shown in Figure 5.



**Figure 5. Full IUID Capability for New Solicitations**

## Achieve Full IUID Capability for On-going Contracts

Tasks to accomplish for achieving full IUID capability for on-going contracts include the following:

- Establish Feasibility
  - Remaining Period of Performance
  - Time/Cost to Implement
  - Method/Source of Funding
  - Contractor IUID Capability
- Direct Implementation on Feasible Contracts
  - Issue Modification for Including DFARS 252.211-7003
  - Negotiate and Award Modification
- Comply With Established Cost Accounting Standards For IUID Cost Recovery on Contracts
- Monitor Compliance & UII Registrations
- Engage Support Functions in Upgrade of Automated Information Systems to Utilize IUID

A notional timeline for achieving this capability is shown in Figure 6.



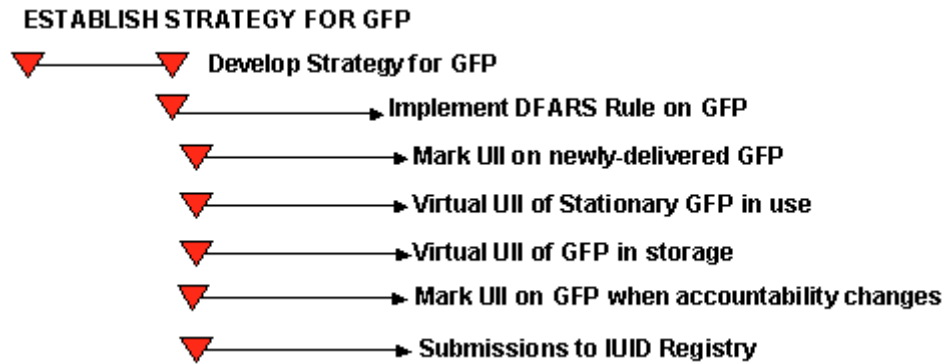
**Figure 6. Full IUID Capability for On-Going Contracts**

## Achieve Full IUID Capability for GFP in the Possession of Contractors

Tasks to accomplish for achieving full IUID capability for GFP in the possession of contractors include the following:

- Implement DFARS rule on GFP IUID (pending)
- Mark UII on newly delivered GFP
- Assign virtual UIIs to stationary GFP
- Assign virtual UIIs to GFP in storage
- Mark UIIs on stationary and stored GFP when it is moved
- Provide for GFP UII submissions to the IUID Registry

A notional timeline for achieving this capability is shown in Figure 7.



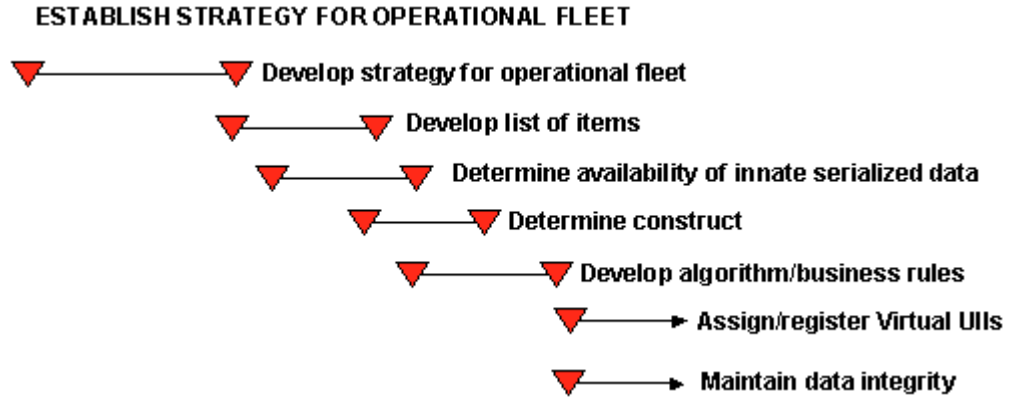
**Figure 7. Full IUID Capability for GFP in Possession of Contractors**

## Assign Virtual UIIs to Items in Operational Use

Tasks to accomplish for assigning virtual UIIs to items in operational use include the following:

- Determine List of Serialized Items
- Assess Availability of UII Data Elements on Serialized Items
- Determine Which UII Construct to Use For Virtual UIIs
- Develop Algorithm and Business Rules for Construction Virtual UIIs From Available Data Elements on Assets
- Assign Virtual UIIs and Register in IUID Registry
- Maintain Integrity of UII Data Elements Appearing on Serialized Items

A notional timeline for achieving this capability is shown in Figure 8.



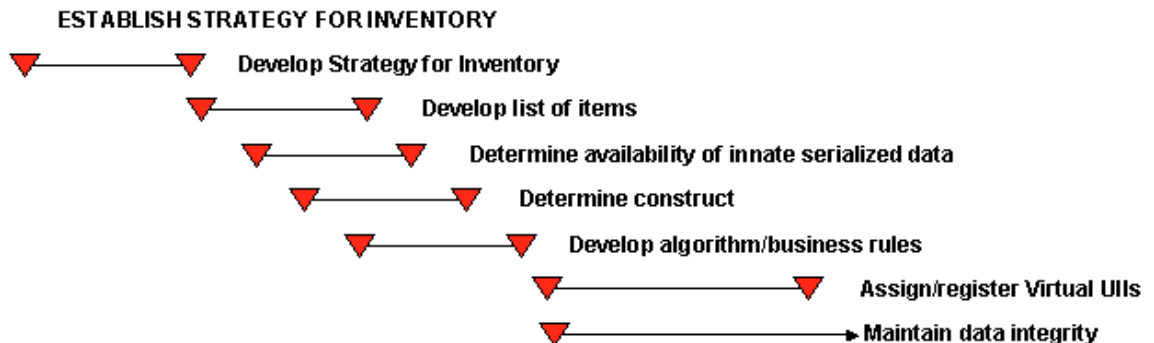
**Figure 8. Full IUID Capability for Items in Operational Use**

## Assign Virtual UIIs to Items in Inventory

Tasks to accomplish for assigning virtual UIIs to items in inventory include the following:

- Determine List of Serialized Items
- Assess Availability of UII Data Elements for Serialized Items
- Determine Which UII Construct to Use for Virtual UIIs
- Develop Algorithm and Business Rules for Constructing Virtual UIIs From Available Data Elements on Assets
- Assign Virtual UIIs and Register in IUID Registry
- Maintain Integrity of UII Data Element on Assets Assigned Virtual UIIs (Serialized Items)

A notional timeline for achieving this capability is shown in Figure 9.



**Figure 9. Full IUID Capability for Items in Inventory**

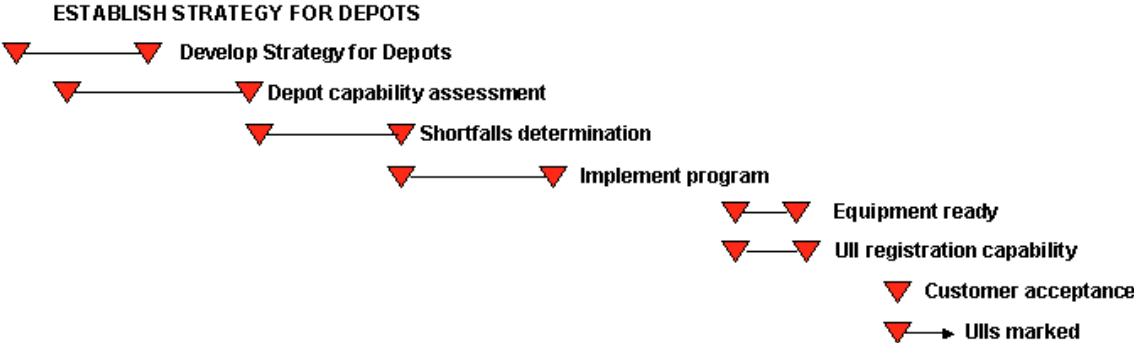


## Achieve Full IUID Capability in Depot Maintenance for Items w/o Virtual UIIs

Tasks to accomplish for achieving full IUID capability in depot maintenance for items without virtual UIIs include the following:

- Assess Depot IUID Capability
  - Marking Methods
  - Part Numbering
  - Serialization
  - Machine-Readable Information Marking
- Determine Shortfalls in Current Depot IUID Capability to Meet IUID Requirements
  - Processes
  - Equipment
  - Software
  - Training
  - Funding
- Implement Program to Overcome Shortfalls
  - Specify Symbology
  - Specify Semantics
  - Specify Syntax
  - Acquire Marking Software
  - Acquire Marking/Labeling Equipment
  - Acquire Printers & Verifiers
  - Acquire Readers
  - Facilitate Host Computer
  - Select Process Specifications
    - Label, stock, inks, solvents, adhesives, coatings, equipment, etc.
- Equipment & Software Installed Tested
- UII Registration Capability
- Customer Acceptance of Marks
- Virtual UIIs Assigned for Inaccessible, Embedded DoD Serially Managed Items in Items/Spares

A notional timeline for achieving this capability is shown in Figure 10.



**Figure 10. Full IUID Capability for Depot Maintenance**

## SUMMARY

This planning guide has discussed considerations that program managers need to take into account as they conduct planning to implement DoD IUID requirements on their assigned programs. Program managers should complete the necessary planning by the end of 2005, with plans in place to the IUID of items being procured from new solicitations and on-going contracts and for items in operational use, inventory and depot maintenance. The IUID effort should be completed by the end of 2010.

There are many supporting resources to assist programs in their IUID efforts. These resources are posted at <http://www.acq.osd.mil/dpap/UID>. Training resources are available from the Defense Acquisition University.

Finally, program managers will have to determine how they are going to pay for IUID on their programs. DoD programs do have established product marking and labeling requirements in their technical data packages. The contractor IUID costs will then be incremental to the existing marking requirements and will probably be limited to MRI reading, marking and printing equipment. The contractor can recoup these costs on the program under the normal cost accounting standards that DoD program use today. It may mean, however, that program managers will have to look for funds within the program over the course of the initial IUID applications to offset these incremental IUID costs. For the mid to long-term, programs managers will have to budget for the continuing IUID application costs.

The USD(AT&L) Memorandum, May 11, 2005, Budget Instructions for Unique Identification Implementation, can be found at <http://www.acq.osd.mil/dpap/UID/policy.htm>.


# Appendix A - Definitions

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## Key Definitions

Word or Phrase	Definition	Source
<b>Automatic identification device</b>	A device, such as a reader or interrogator, used to retrieve data encoded on machine-readable media.	252.211-7003
<b>Compliant unique item identifier</b>	For DoD purposes, a compliant UII is either a Construct #1, Construct #2, Global Individual Asset Identifier (GIAI), Global Returnable Asset Identifier (GRAI), Vehicle Identification Number (VIN), or Electronic Serial Number ((ESN), for cell phones only), all of which have their data elements encoded in a data matrix in the ISO/IEC 15434 syntax with ISO/IEC 15418 or ATA CSDD semantics.	DoD Guide to Uniquely Identifying Items
<b>Concatenate</b>	To link together in a series or chain.	Merriam-Webster Online Dictionary
<b>Concatenated unique item identifier</b>	<ol style="list-style-type: none"> <li>1. For items that are serialized within the enterprise identifier, the linking together of the unique item identifier data elements in order of the issuing agency code, enterprise identifier, and unique serial number within the enterprise identifier; or</li> <li>2. For items that are serialized within the original part, lot or batch number, the linking together of the unique item identifier data elements in order of the issuing agency code, enterprise identifier, original part, lot or batch number, and serial number within the part, lot or batch number.</li> </ol>	252.211-7003

Word or Phrase	Definition	Source
<b>Controlled inventory</b>	Those items that are designated as having characteristics that require that they be identified, accounted for, segregated, or handled in a special manner to ensure their safeguard and integrity. Includes classified items (require protection in the interest of national security), sensitive items (require a high degree of protection and control due to statutory requirements or regulations, such as precious metals; items of high value, highly technical, or hazardous nature; and small arms), and pilferable items (items having a ready resale value or application to personal possession, which are especially subject to theft) (See DoD 4100.39-M, Volume 10, Table 61); and safety controlled items.	
<b>Custodian</b>	The enterprise that has stewardship accountability of an item, i.e., responsibility for the control of, transfer and movement of, and access to, equipment and material. Custody also includes the maintenance of accountability for equipment and material.	Based on the definition of “custody” from the JCS DoD Dictionary
<b>Data carrier</b>	The medium selected to record, transport or communicate data. For unique identification purposes, the data carrier is the Data Matrix symbol.	The American Heritage Dictionary

Word or Phrase	Definition	Source
<b>Data Matrix</b>	<p>A two-dimensional matrix symbology containing dark and light square data modules. It has a finder pattern of two solid lines and two alternating dark and light lines on the perimeter of the symbol. A two-dimensional imaging device such as a charge-coupled device camera is necessary to scan the symbology. Data Matrix is designed with a fixed level of error correction capability. It supports industry standard escape sequences to define international code pages and special encodation schemes. Data Matrix is used for small item marking applications using a wide variety of printing and marking technologies. The data matrix symbol looks like this:</p> 	See ANSI/AIM BC11 International Symbology Specification - Data Matrix
<b>Data qualifier</b>	A specified character (or string of characters) that immediately precedes a data field that defines the general category or intended use of the data that follows.	252.211-7003
<b>DoD item unique identification</b> <sup>12</sup>	A system of marking items delivered to the Department of Defense with unique item identifiers that have machine-readable data elements to distinguish an item from all other like and unlike items. Items are marked with a Data Matrix, the contents of which are encoded in the syntax of ISO/IEC 15434 and the semantics of ISO/IEC 15418 or the ATA CSDD <sup>13</sup> . The Data Matrix contents may be either a Unique Item Identifier (Construct #1 or Construct #2) or a DOD recognized IUID equivalent.	211.274

<sup>12</sup> Formerly known as DoD unique item identification.

<sup>13</sup> Text Element Identifiers are taken from the Air Transport Association Common Support Data Dictionary.

Word or Phrase	Definition	Source
<b>DoD serially managed items</b>	<p>Includes reparable items down to and including sub-component reparable unit level; life-limited, time-controlled, or items requiring records (e.g., logbooks, aeronautical equipment service records, etc.); and items that require technical directive tracking at the part level.</p> <p>A distinction must be made between “serialized items” and “DoD serially managed” items. While DoD may use an item that has been serialized by the manufacturer, DoD may not manage the item by means of its serial number. When DoD elects to serially manage an item it becomes "DoD serially managed". This means it is a tangible item used by DoD, <i>which is designated by a DoD, or Service Item Manager</i> to be uniquely tracked, controlled or managed in maintenance, repair and/or supply by means of its serial number<sup>14</sup></p>	DUSD(Logistics & Material Readiness) Memorandum, September 4, 2002, Serialized Item Management
<b>DoD recognized unique identification equivalent</b>	A unique identification method that is in commercial use and has been recognized by DoD. The IUID equivalents are the Global Individual Asset Identifier (GIAI), Global Returnable Asset Identifier (GRAI), Vehicle Identification Number (VIN), and Electronic Serial Number ((ESN), for cell phones only). While the constructs are equivalent, they must be placed on the items in a Data Matrix symbol encoded with ISO 15434 syntax and semantics of ISO 15418 in order to be compliant with DoD IUID policy.	252.211-7003
<b>Enterprise</b>	The entity (e.g., a manufacturer or vendor) responsible for assigning unique item identifiers to items.	252.211-7003
<b>Enterprise identifier</b>	A code that is uniquely assigned to an enterprise by a registered issuing agency.	252.211-7003

<sup>14</sup> A serial number is an assigned combination of numbers and/or letters to an item instance that separately identifies that item instance from all others.

Word or Phrase	Definition	Source
<b>Equipment</b>	<p>A tangible article of personal property that is complete in-and-of itself, durable, nonexpendable, and needed for the performance of a contract. Equipment generally has an expected service life of one year or more, and does not ordinarily lose its identity or become a component part of another article when put into use.</p> <p>Includes military equipment, support equipment, general-purpose equipment, special test equipment, and special tooling. Includes Class VII, Major End Items, a final combination of end products that is ready for its intended use, that is, launchers, tanks, mobile machine shop, and vehicles, etc. It does not include real property, reparables, consumables or materials.</p>	4140.1-R
<b>Innate serialized identity</b>	<p>The essential inherent data elements that are physically and permanently placed on an item at original manufacture, subsequent overhaul, or during operations to distinguish it from all other like items, which can be read from either a human or machine-readable format. For contractors with possession of Government property, this may be the asset identification number they use to track the item.</p>	<p>Adapted from the definition of “innate” and “serial” in the American Heritage Dictionary and the definition of “unique item identifier” listed below.</p>
<b>Issuing agency</b>	<p>An organization responsible for assigning a non-repeatable identifier to an enterprise (i.e., Dun &amp; Bradstreet's Data Universal Numbering System (DUNS) Number, Uniform Code Council (UCC)/EAN International (EAN) Company Prefix, or Allied Committee 135 Commercial and Government Entity (CAGE) Code).</p>	252.211-7003
<b>Issuing agency code</b>	<p>A code that designates an agency with authority to issue unique enterprise identifiers.</p>	252.211-7003
<b>Item</b>	<p>A single hardware article or unit formed by a grouping of subassemblies, components, or constituent parts.</p>	252.211-7003(a)



<b>Word or Phrase</b>	<b>Definition</b>	<b>Source</b>
<b>Item essentiality</b>	A measure of an item's military worth in terms of how its failure (if a replacement is not immediately available) would affect the ability of a weapon system, end item, or organization to perform its intended functions.	AP16.61 4140.1-R
<b>Item identification</b>	Sufficient data to establish the essential characteristics of an item that give the item its unique character and differentiate it from other supply items.	4140.1-R
<b>Legacy items</b>	DoD-owned items and end items that have already been produced and deployed for use, or that have been produced and placed in inventory or storage pending issue for use.	USD(AT&L) Memorandum, dated 23 Dec 04, Policy for Unique Identification (UID) of Tangible Personal Property Legacy Items in Inventory and Operational Use, Including Government Furnished Property (GFP)
<b>Lot/Batch number</b>	An identifying number assigned by the enterprise to a designated group of items, usually referred to as either a lot or a batch, all of which were manufactured under identical conditions.	252.211-7003
<b>Machine-readable media</b>	An automatic information technology media, such as bar codes, contact memory buttons, radio frequency identification, or optical memory cards.	252.211-7003
<b>Marking</b>	The application of legible numbers, letters, labels, tags, symbols, or colors to ensure proper handling and identification during shipment and storage.	4140.1-R
<b>Mission essential</b>	A measure of an item's military worth in terms of how its failure (if a replacement is not immediately available) would affect the ability of a weapon system, end item, or organization to perform its intended functions.	4140.1-R

Word or Phrase	Definition	Source
<b>Operating materials and supplies</b>	Personal property to be consumed in normal operations. Excluded are (a) goods that have been acquired for use in constructing real property, (b) stockpile materials, and (c) inventory. FMR, Volume 4, Chapter 4, Operating Materials and Supplies and Stockpile Materials, January 1995.	7000.14
<b>Original part number</b>	A combination of numbers or letters assigned by the enterprise at asset creation to a class of items with the same form, fit, function, and interface.	252.211-7003
<b>Parent item</b>	The item assembly, intermediate component or subassembly that has an embedded item with a unique item identifier or DoD recognized unique identification equivalent.	252.211-7003
<b>Personal property</b>	Property of any kind or any interest therein, except real property.	JCS DoD Dictionary
<b>Pilferable items</b>	Items that have a ready resale value or application to personal possession and that are, therefore, especially subject to theft. (See DoD 4100.39-M, Volume 10, Table 61)	E2.1.12.3 5000.64
<b>Property accountability record</b>	The official record of personal property, including inventory, owned by the Department that is maintained to identify the quantities of items on-hand, unit prices, locations, physical condition, receipt and issue records, authorized stock numbers, item descriptions, and other such information necessary to properly account for materiel and exercise other inventory management responsibilities.	AP16.104 4140.1R
<b>Registration authority</b>	Refers to the Nederlands Normalisatie-instituut (NEN), Registration Authority for ISO/IEC 15459, which is responsible for assigning codes to issuing agencies with conforming systems for issuance of unique enterprise identifiers.	252.211-7003

Word or Phrase	Definition	Source
<b>Sensitive items</b>	Items that require a high degree of protection and control due to statutory requirements or regulations, such as narcotics and drug abuse items; precious metals; items that are of a high value, highly technical, or a hazardous nature; and small arms, ammunition, explosives, and demolition material. (See DoD 4100.39-M, Volume 10, Table 61)	E2.1.12.2 5000.64
<b>Serialization within the enterprise identifier</b>	Each item produced is assigned a serial number that is unique among all the tangible items produced by the enterprise and is never used again. The enterprise is responsible for ensuring unique serialization within the enterprise identifier.	252.211-7003
<b>Serialization within the part, lot or batch number</b>	Each item of a particular part, lot or batch number is assigned a unique serial number within that part, lot or batch number assignment. The enterprise is responsible for ensuring unique serialization within the part, lot or batch number within the enterprise identifier.	252.211-7003

Word or Phrase	Definition	Source
<b>Unique item identifier</b>	<p>The unique item identifier (UII) is defined in two separate contexts:</p> <ol style="list-style-type: none"> <li>1. <u>DoD UII Data Set</u>. A UII is a set of data elements marked on an item that is globally unique and unambiguous. For items that are serialized within the enterprise identifier, the UII data set includes the data elements of enterprise identifier and a unique serial number (Construct #1). For items that are serialized within the part, lot or batch number within the enterprise identifier, the UII data set includes the data elements of enterprise identifier, the original part, lot or batch number, and the serial number (Construct #2).</li> <li>2. <u>Use</u>. The generic term, UII, has evolved through usage to mean the concatenated UII as a common data base key without regard to the data set construct being used. In this context, the term “UII” may be used to designate UII Constructs #1 and #2, or the DoD recognized IUID equivalents of Global Individual Asset Identifier (GIAI), Global Returnable Asset Identifier (GRAI), Vehicle Identification Number (VIN), or Electronic Serial Number ((ESN), for cell phones only).</li> </ol>	252.211-7003
<b>Unique item identifier type</b>	<p>A designator to indicate which method of uniquely identifying a part has been used. The current list of accepted unique item identifier types is maintained at <a href="http://www.acq.osd.mil/dpap/UII">http://www.acq.osd.mil/dpap/UII</a>.</p>	252.211-7003
<b>Unit acquisition cost</b>	<ol style="list-style-type: none"> <li>1. For fixed-price type line, subline, or exhibit line items, the unit price identified in the contract at the time of delivery; and</li> <li>2. For cost-type line, subline, or exhibit line items, the Contractor's estimated fully burdened unit cost to the Government for each item at the time of delivery.</li> </ol>	252.211-7003
<b>Virtual unique item identifier</b>	<p>The UII data elements for an item that have been captured in a database, but not yet physically marked on the item.</p>	DoD Guide to Virtual Unique Item Identifiers, 29 Dec 04

# Appendix B – Item Unique Identification (IUID) Policy, Guides and Standards

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## POLICY MEMORANDA

- Acting Undersecretary of Defense (USD) (AT&L) Memorandum, Policy for Unique Identification (UID) of Tangible Items – New Equipment, Major Modifications, and Reprocrements of Equipment and Spares, July 29, 2003
- Acting USD (AT&L) Memorandum, Update to Policy for Unique Identification (UID) of Tangible Items – New Equipment, Major Modifications, and Reprocrements of Equipment and Spares, November 26, 2004
- Acting USD (AT&L) Memorandum, Revision of Update to Policy for Unique Identification (UID) of Tangible Items – New Equipment, Major Modifications, and Reprocrements of Equipment and Spares, December 22, 1994
- Acting USD (AT&L) Memorandum, Policy for Unique Identification (UID) of Tangible Personal Property Legacy Items in Inventory and Operational Use, Including Government Furnished Property (GFP), December 23, 2004
- USD(AT&L) Memorandum, Budget Instructions for Unique Identification Implementation, May 11, 2005
- USD (AT&L) Memorandum, Policy Update for Item Unique Identification of Tangible Personal Property, Including Government Property in the Possession of Contractors, 12 May 2005

## GUIDES

- Office of the Principal Deputy Under Secretary of Defense (AT&L), Department of Defense Guide to Uniquely Identifying Items, Version 1.4, April 16, 2004
- Office of the Principal Deputy Under Secretary of Defense (AT&L), Department of Defense Guidelines for the Virtual Unique Item Identifier (UII), Version 1.0, December 29, 2004
- Office of the Principal Deputy Under Secretary of Defense (AT&L), Department of Defense Guidelines for Engineering, Manufacturing and Maintenance Documentation Requirements for Unique Identification (UID) Implementation, Version 1.0, December 6, 2004

## STANDARDS

- Department of Defense Standard Practice Identification Marking of U.S. Military Property, MIL-STD-130L, Change 1, December 2004
- ISO/IEC Standard 15418, EAN/UCC Application Identifiers and ASC MH 10 Data Identifiers and Maintenance
- ISO/IEC Standard 15434, Syntax for High Capacity ADC Media

# Appendix C - The Language of Item Unique Identification (IUID)

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## WHAT IS THE LANGUAGE OF ITEM UNIQUE IDENTIFICATION?

A DoD Unique Item Identifier (UII) permanently identifies an individual item distinctly from all other individual items that DoD buys and owns. See Table 1 for what a DoD UII is and is not.

A UII Is:	A UII Is Not:
<ul style="list-style-type: none"><li>✓ A globally unique unambiguous item identifier</li><li>✓ Permanent through life</li><li>✓ Created by concatenating a string of specific data elements</li><li>✓ Stored within a 2-D matrix</li><li>✓ A means of creating and utilizing life cycle data</li></ul>	<ul style="list-style-type: none"><li>✓ A physical method of communicating data, such as radio frequency identification (RFID) tags, contact memory buttons, linear bar codes, or 2-D data matrices</li><li>✓ A replacement for the national stock number</li><li>✓ Intelligent stand-alone data that contain information about an item</li></ul>

**Table 1**

With the UII, the DoD can associate valuable business intelligence with an item throughout its life cycle and accurately capture and maintain data for valuation and tracking of items.

## WHAT DOES A DOD UII MARK LOOK LIKE?

Recognizing the need for high data capacity and direct part marking capability, the mandatory DoD UII mark, as contained in MIL-STD-130L, Change 1, is Data Matrix, a high density 2 dimensional matrix style bar code symbology that can encode up to 3116 characters from the entire 256 byte ASCII character set. The symbol is built on a square or rectangular grid arranged with a finder pattern around the perimeter of the bar code symbol. A Data Matrix symbol looks like this. Obviously, it is not possible for the human eye to read what has been encoded in the Data Matrix symbol.



## HOW IS THE DoD UII MARK READ?

Automatic identification technology (AIT) is used to mark (or write) the UII data elements within the data matrix symbol on an item and to read the UII, using an automated reader. To do this, the data elements have to be described to the AIT device by a prefix used to represent instructions to the device. These “prefixes“ are known as data qualifiers, referred to as semantics. “Data qualifier” means a specified character (or string of characters) that immediately precedes a data field that defines the general category or intended use of the data that follows. Data qualifiers can take one of three forms in commercial use: alphanumeric Data Identifiers (DI), numeric Application Identifiers (AI), or alpha Text Element Identifiers (TEI). For additional information on data qualifiers to be used in DoD IUID, refer to the DoD Guide to Uniquely Identifying Items at <http://www.acq.osd.mil/dpap/UID/Guides.html>.

## HOW DO YOU BUILD A DoD UII?

There are two methods to construct the UII for an item. These methods are: (1) Serialization within the Enterprise Identifier, called Construct #1, and (2) Serialization within the Original Part, Lot or Batch Number (within the enterprise identifier), called Construct #2. The UII data elements for Construct #1 and Construct #2 are summarized in Table 2.

	UII Construct #1	UII Construct #2	
Based on current enterprise configurations	If items are serialized within the Enterprise	If items are serialized within Part, Lot or Batch Number	
UII is derived by concatenating the data elements IN ORDER:	Issuing Agency Code* Enterprise ID Serial Number	Issuing Agency Code* Enterprise ID	
		Original Part # Serial Number	Lot or Batch # Serial Number
Data Identified on Assets Not Part of the UII (Separate Identifier)	Current Part Number**	Current Part Number**	
<p>*The Issuing Agency Code (IAC) represents the registration authority that issued the enterprise identifier (e.g., Dun and Bradstreet, EAN.UCC). The IAC can be derived from the data qualifier for the enterprise identifier and does not need to be marked on the item.</p> <p>**In instances where the original part number changes with new configurations (also known as part number roll), the current part number may be included on the item as a separate data element for traceability purposes.</p>			

Table 2

The concatenated UII is not normally marked on the item because the UII can be constructed from its component data elements each time the data matrix symbol is read, as long as those elements are contained in the data matrix<sup>15</sup>. The current part number is not part of the UII. It is an additional, separate data element. Table 3 shows the data qualifiers to be used in constructing the UII.

Data Element	DI (Format 06)	AI (Format 05)	TEI (Format DD)
<b>Enterprise Identifier</b>			
CAGE/NCAGE	17V		CAG, MFR or SPL
DUNS	12V		DUN
EAN.UCC	3V	95	EUC
Other Agencies	18V		
<b>Serial Number within Enterprise Identifier</b>			SER or UCN
<b>Serial Number within Original Part Number</b>	S	21	SEQ
<b>Original Part Number</b>	1P	01	PNO
<b>Lot/Batch Number</b>	1T	10	LOT or BII
<b>Concatenated UIIs</b>	25S	8002	UID
	I	8003	
	22S	8004	
<b>Unique item identifier (not including the IAC)</b>	18S		USN or UST
<b>Current Part Number</b>	30P	240	PNR

Table 3

## HOW ARE THE BUILDING BLOCKS' DATA ELEMENTS PUT TOGETHER?

Once the data elements are identified to the AIT device, the AIT device needs instructions on how to put the data element fields together to create the UII. The instructions are referred to as message syntax. For items that require a UII, DoD requires syntax that follows ISO/IEC 15434, Information Technology – Syntax for High Capacity ADC Media. Standard syntax is crucial to the UII, since the process of identifying and concatenating the data elements must be unambiguous.

Figure 1 shows examples of the data elements and Data Identifiers that are placed on the item within the Data Matrix symbol. The ISO/IEC 15434 syntax encoded in the data matrix, using ISO/IEC 15418 (MH10.8.2 Data

<sup>15</sup> If the enterprise chooses to mark the concatenated UII as a discrete data element on the item, the component data elements must also be marked on the item as discrete data elements, in addition to the concatenated UII.



Identifiers), for Construct #1 is  $[\ ]>^R_s06^G_s18S0CVA5786950^R_sE_{oT}^{16}$ . For Construct #2, the encoded syntax is  $[\ ]>^R_s06^G_s12V194532636^G_s1P1234^G_sS786950^R_sE_{oT}$ . The figure further shows how the AIT devices would output the data elements in a concatenated UII according to the syntax instructions. Notice that the UII data elements contained in the Data Matrix symbol can also be included on the item in human readable form.

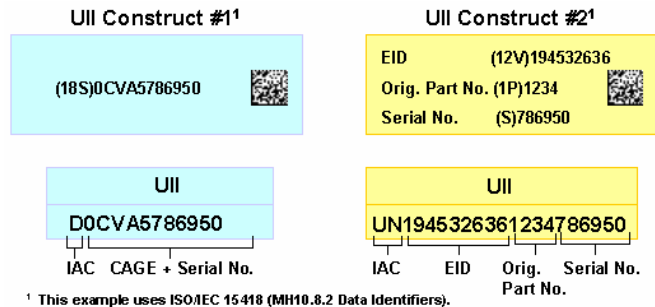


Figure 1

Figure 2 shows an example of the data elements and Application Identifiers that are placed on the item within the Data Matrix symbol. When using EAN.UCC Application Identifiers (ISO/IEC 15418) for purposes of unique identification, enterprises must use the General EAN.UCC Specifications to construct the unique identifier. Within the General EAN.UCC Specifications, the Global Individual Asset Identifier (GIAI) is considered a DoD IUID equivalent. The application identifier (8004) indicates that the data field contains a GIAI. The GIAI is made up of the EAN.UCC Company Prefix and an individual asset reference number. This is equivalent to the UII Construct #1. The data is encoded as follows under Format 05 for Application Identifiers of the ISO/IEC 15434 syntax:  $[\ ]>^R_s05^G_s800406141411A0B9C3D6^R_sE_{oT}$ . For Construct #2, the encoded syntax is  $[\ ]>^R_s05^G_s0100614141999996^G_s211A0B9C3D6^R_sE_{oT}$ . The figure further shows how the AIT devices would output the data elements in a concatenated UII according to the syntax instructions.

<sup>16</sup>The <sup>R</sup><sub>s</sub>-Record Separator, <sup>G</sup><sub>s</sub>-Group Separator, and <sup>E</sup><sub>oT</sub>-End of Transmission, represent non-printing characters from the ASCII character set. The decimal ASCII codes for <sup>R</sup><sub>s</sub>, <sup>G</sup><sub>s</sub>, and <sup>E</sup><sub>oT</sub> are 30, 29 and 4 respectively.

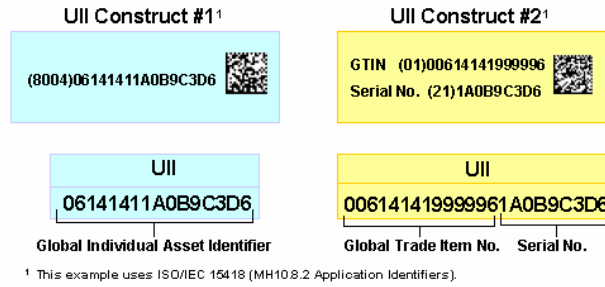


Figure 2

Figure 3 shows examples of the data elements and Text Element Identifiers<sup>17</sup> that are placed on the item within the Data Matrix symbol. The ISO/IEC 15434 syntax encoded in the data matrix, using the DD format of the DoD collaborative solution, for Construct #1 would be  $[\ ]>^R_sDD^G_sMFR\ 0CVA5^G_sSER\ 786950^R_sE_{OT}$ . For Construct #2, the encoded syntax is  $[\ ]>^R_sDD^G_sMFR\ 0CVA5^G_sPNO\ 1234^G_sSEQ\ 786950^R_sE_{OT}$ . The figure further shows how the AIT devices would output the data elements in a concatenated UII according to the syntax instructions.

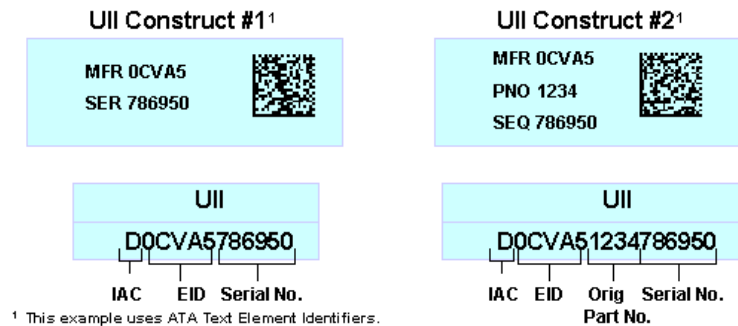


Figure 3

## DoD RECOGNIZED IUID EQUIVALENTS

A commercial identifier can be considered for use as a DoD recognized IUID equivalent if it meets all of these criteria: (1) Must contain an enterprise identifier, (2) Must uniquely identify an individual item within an enterprise identifier, product or part number, and (3) Must have an existing Data Identifier (DI) or Application Identifier (AI) listed in American National Standard (ANS) MH10.8.2, Data Identifier and Application Identifier Standard. The commercial unique identifiers meeting these criteria that the Department recognizes as IUID equivalents are the EAN.UCC Global Individual Asset Identifier (GIAI) for serially-

<sup>17</sup> Text Element Identifiers are listed in the ATA Common Support Data Dictionary.

managed assets, the EAN.UCC Global Returnable Asset Identifier (GRAI) for returnable assets, the ISO Vehicle Identification Number (VIN) for vehicles, and the Electronic Serial Number (ESN) for cellular telephones only.

# Appendix D - Use of Virtual UII for Legacy Items, Including Property in the Possession of Contractors (PIPC)

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## STRATEGIES FOR ASSIGNING VIRTUAL UIIS

Virtual UII strategies can be developed for legacy items, which are physically in operational use or inventory, including government property in the possession of contractors.<sup>18</sup> A virtual UII exists in effect though not in actual form. Under this concept, the UII data elements for an item are captured in a database, but the data matrix carrier containing the data elements is not physically applied to, or marked on, the item.

Legacy item strategies must address: (a) the process of identifying those items of legacy equipment to be uniquely identified virtually, (b) which UII construct or DoD recognized IUID equivalent will be used in the virtual unique identification, and (c) the procedures for capturing data elements which define the virtual UII for the legacy items with the unique identifier.

## Process for Identifying Legacy Items for Application of Virtual Item Unique Identification

Virtual unique identification should be deployed to those legacy items that can be readily identified. The legacy item must have identifying data elements physically attached to, or marked on it so that the legacy item can be associated with its virtual UII. These attached data elements will be used to track and locate the legacy item so its valuation can be associated with its virtual UII. The ability to track and locate the physical item is also important when a triggering event<sup>19</sup> occurs that makes the legacy item available to physically attach the data matrix to, or mark on it, the data elements of the UII. These facets suggest that legacy items should receive a virtual UII where the items are already serially managed equipments or reparable items.

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<sup>18</sup> For detailed information on virtual UIIs, see Guidelines for the Virtual Unique Item Identifier (UII), Version 1.0, December 29, 2004, available from <http://www.acq.osd.mil/dpap/UIID/guides.htm>.

<sup>19</sup> A trigger event might be scheduled depot maintenance of an end item, or removal and repair of an embedded item in and end item.

## Selecting the UII Constructs

The basic elements of information required to construct a virtual UII are (1) the definition of the organization that will serialize the item, known as the enterprise, (2) the part number of the item, and/or (3) a serial number either unique within the enterprise or within the original part, lot or batch number. For purposes of unique identification, an enterprise identifier will define the entity that does the virtual UII serialization. An enterprise, which assigns a virtual UII, may be an entity such as a depot, program management office or a third party. Appendix C contains summary guidance on how to formulate the UII constructs<sup>20</sup>.

## Procedures for Capturing Data Elements that Define the Virtual UII

The virtual UIIs will be registered in the IUID Registry. The data for the virtual UII pedigree is listed in Figure 2 under the heading “IUID Requires Registration of Unique Item Identifiers (UIIs) and Their Pedigree Data” in Chapter 1 of this Guide. The registration of virtual UIIs will be web-enabled.

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<sup>20</sup> Additional details on formulating UIIs are in the DoD Guide for Uniquely Identifying Items (available at <http://acq.osd.mil/dpap/UID>).