Unique Identification

101

The Basics

June 2004

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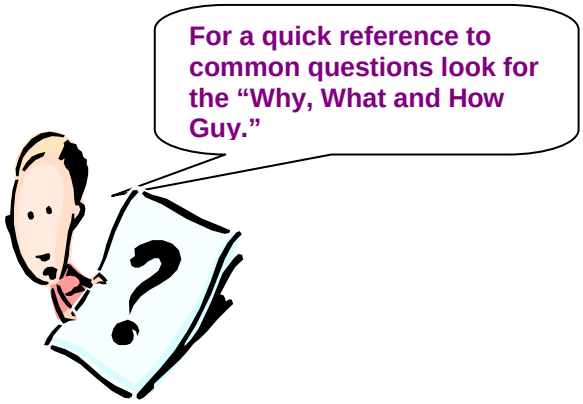


Introduction

> The leading military mission given to the U.S. military forces under the transformed defense strategy is:
> - Defend the U.S.
> - Assure friends and allies;
> - Deter aggression and coercion forward in critical regions;
> - Swiftly defeat aggression in two overlapping major conflicts while preserving for the President the option to pursue a decisive victory in one of those conflicts including the possibility of regime change or occupation; and
> - Conduct a limited number of smaller-scale contingency operations.

This guide is designed to provide an opportunity for the Department of Defense (DoD) Components, Military Services, and industry to gain insight into the Departments initiative on improving asset management through uniquely identifying property, plant and equipment, operating materials and supplies. This guide explores all aspects of this initiative and is intended to provide an understanding of how DoD program offices and commercial businesses can successfully implement the Unique Identification (UID) policy in support of the Department's mission. The guide will examine the relationship between the legislative and regulatory environment motivating this program, the policy, implementation, business rules, marking, and valuation process.

The definition below forms the basis of the discussion about the DoD Unique Identification program.

> Unique Identification is the set of data for tangible assets that is globally unique and unambiguous, ensures data integrity and data quality throughout life, and supports multi-faceted business applications and users.

Regulatory Environment

The need for Congress, Federal managers, and other decision makers to make informed decisions about future funding, oversight of Federal programs involving inventory, and operational readiness continues to challenge Federal departments and agencies to provide useful, reliable, and timely inventory data, which is still not available for daily management needs. The Unique Identification Program began as one of the Department of Defense's solutions for addressing the deficiency in complying with the Chief Financial Officers Act of 1990. The CFO Act and subsequent acts such as the Government Performance and Results Act of 1993, Government Reform Act of 1994 and the Federal Financial Management Improvement Act of 1996 were designed to:

1) improve financial management;

2) promote accountability and reduce costs; and
3) emphasize results-oriented management.

These laws set expectations for agencies to develop and deploy modern financial management systems, produce sound cost and operating performance information, and design results oriented reports on the government's financial position by integrating budget, accounting, and program information. Federal departments and agencies work hard to address the requirements of these laws.

The last several years, the General Accounting Office (GAO) has been critical of the Department's accountability and control over property, plant and equipment. They have highlighted the problems with the inability of many of the Department's property systems to properly support the warfighter's need for asset visibility and logistics support. As a result, the Department initiated a business transformation.

DoD's Business Enterprise Architecture

To ensure compliance with appropriate laws, regulations, policies, and standards, as well as to provide additional detail to govern DoD business operations, the Department's Business Enterprise Architecture was designed to assist the transformation. The architecture is a tool that identifies the Department's business processes and helps identify, plan for and implement opportunities to improve them. The Department envisions using the architecture and transition plan to help move the Department to its future business environment in an effective, efficient and timely manner, while minimizing the impact of the transition on current operations, organizations and personnel. The framework is intended to ensure that the architectures developed by the DoD are:

1. Integrated and interoperable across joint and multi-national organizational boundaries; and
2. Comparable across the Department's business operations, systems, and technical architecture environments

This is the desired end state driving the Unique Identification (UID) program. The Unique Identification Program Office was created to implement UID Policy as related to tangible items. UID will facilitate item tracking in DoD business systems and provide reliable and accurate data for program management and accountability purposes. Michael Wynne, Acting Under Secretary of Defense (Acquisition, Technology, and Logistics), announced the new policy on July 29, 2003.

Unique Identification Program

The Unique Identification (UID) Program is the foundation for enabling DoD to reach established goals and objectives by enhanced total asset visibility, improved lifecycle item management and accountability, and clean financial audits.

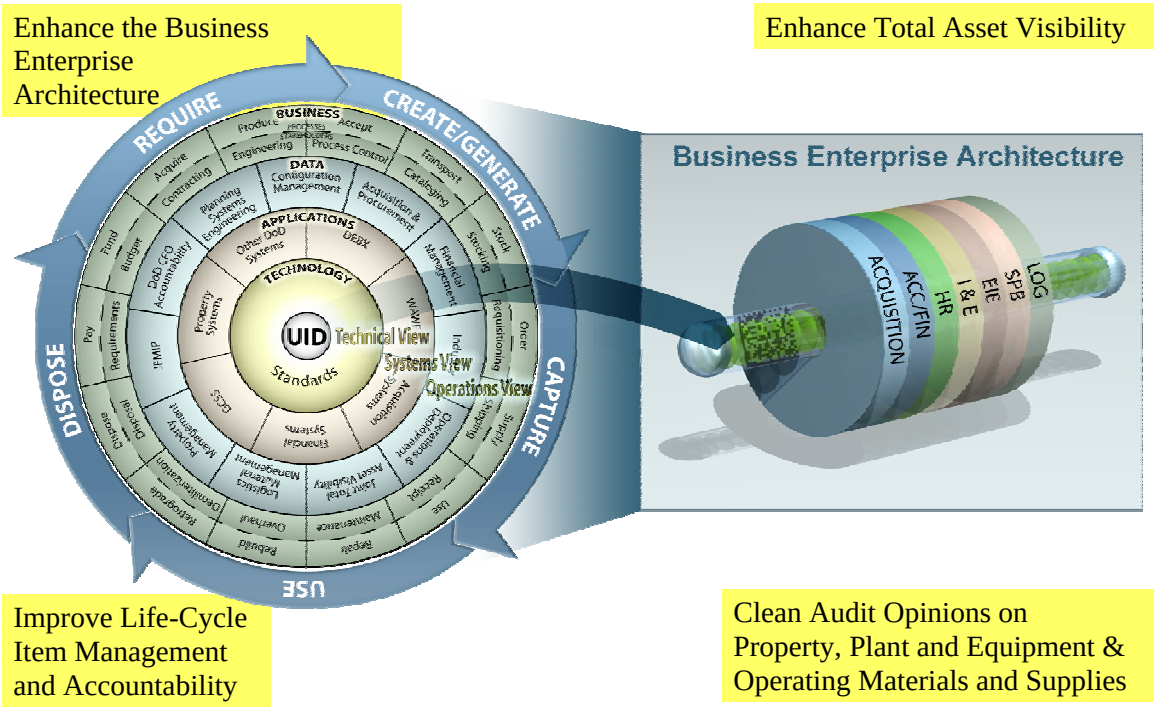


Figure 1: UID Role – Business Enterprise Architecture

Figure 1 illustrates UID's role in the Business Enterprise Architecture. With the ability to distinguish one item from another, UID ensures data integrity and data quality throughout life, and supports multi-faceted business applications and users. This will enable the achievement a globally interoperable network-centric architecture for the integrated management and valuation of items.

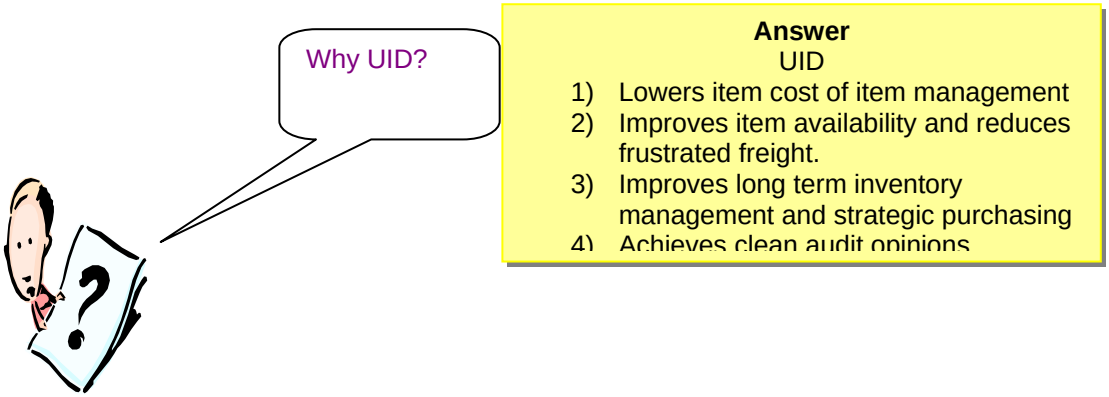
Unique identification of items will help achieve:

- Integration of item data across the Department of Defense (hereafter referred to as the Department), and Federal and industry asset management systems, as envisioned by the DoD

> "In every troop deployment this century, DoD has been plagued by a major difficulty—the inability to *see* assets as they flow into a theater and are in storage. This situation has led to direct and significant degradation in operational readiness. When assets in the pipeline are not visible, they are difficult to manage. Property is lost, customers submit duplicate requisitions, superfluous material chokes the transportation system, and the cycle continues. Assets at the retail level that are not visible and, therefore, not available for redistribution, further compound the degradation of operational readiness." Joint Total Asset Visibility Strategic Plan, January 1999, Joint Total Asset Visibility Office, DoD.

Financial Management Enterprise Architecture (FMEA), to include improved data quality and global interoperability and rationalization of systems and infrastructure.

- Improved item management and accountability.
- Improved asset visibility and life cycle management.
- Clean audit opinions on item portions of DoD financial statements.



The Policy and Regulations

Policy

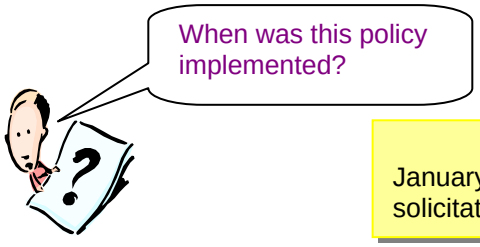
On July 29, 2003, Michael Wynne, the Acting Under Secretary of Defense (Acquisition, Technology and Logistics) (OUSD(AT&L)) signed the "Policy for Unique Identification (UID) of Tangible Items - New Equipment, Major Modifications, and Reprocurements of Equipment and Spares." This policy makes UID a mandatory DoD requirement on all solicitations issued on or after Jan. 1, 2004.

Chronology of the Unique Identification Policy:

UID Implementation	Announcement
Unique Identification is mandatory for all DoD solicitations issued on or after Jan. 1, 2004	USD (AT&L) Memo of July 29, 2003
Existing Government Furnished Property provided to contractors is exempt from the UID policy until Jan. 1, 2005 when the policy becomes mandatory for all Government Furnished Property incorporated into an end item.	USD (AT&L) Memo of July 29, 2003
UID Policy Update, outlining a number of clarifications and further detail on the UID policy	USD (AT&L) Memo of November 26, 2003
Revision of Update of UID Policy, clarifies the use of Issuing Agency Codes for UID	USD (AT&L) Memo of December 22, 2003

The policy memorandums define step-by-step procedures to determine what items need to be marked and also states “Existing government furnished property provided to contractors is exempt from this policy until Jan 1, 2005 when the policy becomes mandatory for all government furnished property

incorporated into an end item." For all additional policy updates, please visit the UID web site at www.acq.osd.mil/uid.

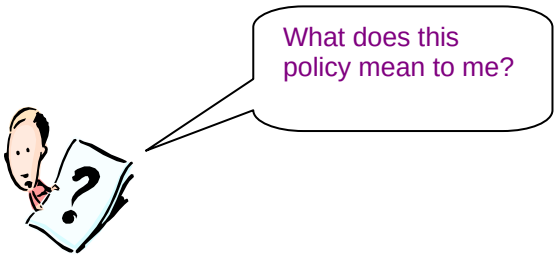


Answer
January 1, 2004 for all new DoD solicitations and orders.

Acquisition Regulation

The Defense Federal Acquisition Regulation Supplement (DFARS) contains the rules used by DoD and suppliers to DoD to comply with UID policy when solicitations are issued.
The Federal Acquisition Regulation (FAR) is the body of regulations which is the primary source of authority governing the government procurement process. The Defense Federal Acquisition Regulation Supplement (DFARS) is a supplement to the FAR which includes clauses particular to DoD contract procurement. The interim rule for item identification and valuation is contained in DFARS Clause 252.211-7003. DoD contracting officers are required to include the clause in all solicitations, defining items necessary for identification and valuation. Refer to Figure 3 on page 9 for instructions on what items to UID.

It is anticipated that situations might arise where vendors of commercial products may not be prepared to comply with DoD UID requirements within the cost constraints and time frames required for product deliveries. Should this occur, DoD requiring activities may consider implementing a strategy under which the DoD would either: (1) furnish product UID labels to the commercial vendors for application to products before shipment, or (2) contract with third parties to furnish and apply the UID labels after product delivery from the commercial vendors. This strategy should only be implemented if cost advantages would accrue to the Department.



Answer
Contractor: UID is required to do business with DoD.

Department Program Office: UID requirements must be incorporated into all new solicitation and orders.

The UID enables traceability of the item throughout its life within the DoD inventory system. Figure 2 illustrates the UID lifecycle and the business rules at each phase. Business rules illustrated on the next page have been developed to determine when an item is to be marked.

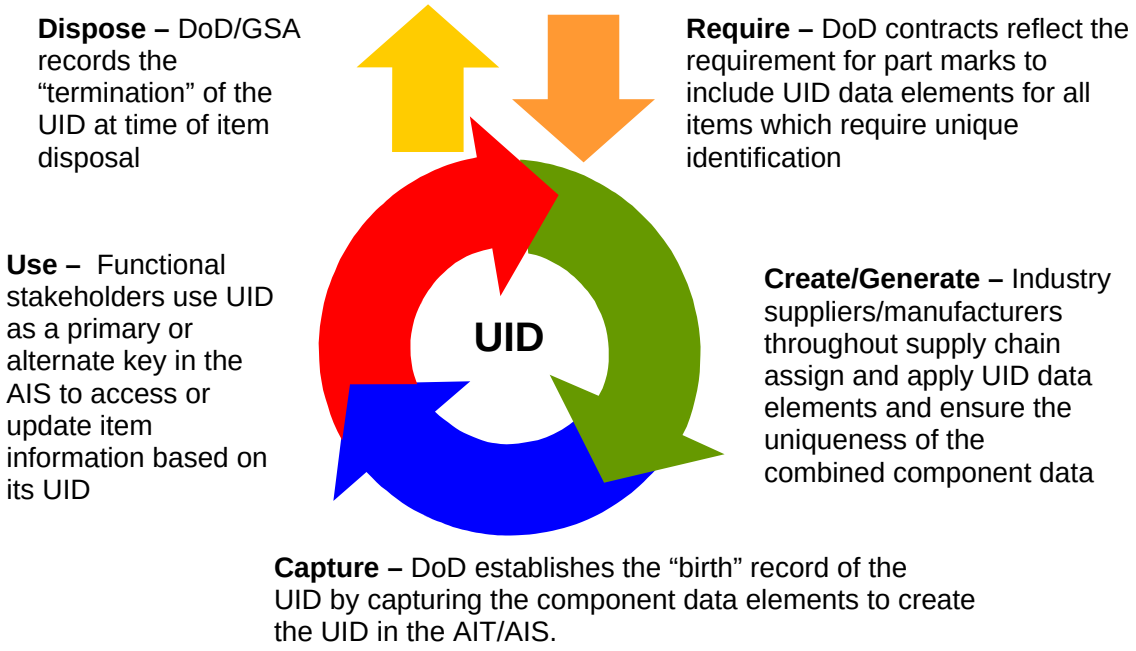


Figure: 2 – The Unique Identification (UID Lifecycle)

What Items To UID

The unique identification of items is driven by an integrated set of logistics, acquisition and financial requirements to track and identify item information. Figure 3 contains a decision tree defining the business rules for determining what items should be uniquely identified. The DoD program office issuing the solicitation is responsible for identifying items for UID.

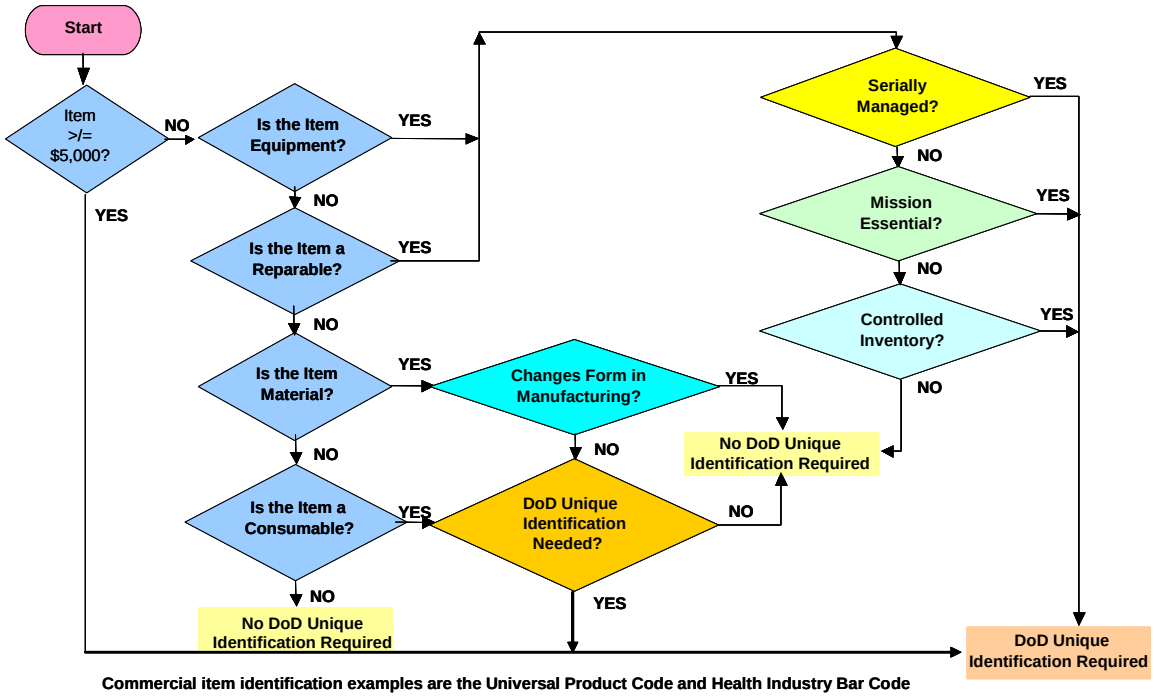


Figure 3. The Decision Tree to Uniquely Identifying Items Under $5000

All solicitations, contracts or delivery orders for tangible items delivered to the Government will require unique item identification or a DoD recognized unique identification equivalent, if:

1. Unit acquisition cost is over $5,000.
2. Serially managed.
3. Mission essential.
4. Controlled inventory.
5. A consumable item or material where permanent identification is necessary.

As illustrated in the decision tree in Figure 3, all end items unit acquisition cost of $5,000 and over require a UID. If the Government's unit acquisition cost is under $5,000, the DoD program office must first decide whether or not the end item is equipment, reparable, material or consumable?

1. If the item is equipment or a reparable and determined to be serially managed, mission essential, or controlled inventory then the item will require a UID.

2. If the item is a material that does not change form or if it is a consumable item, then the requiring activity determines if a UID is required.

Guidance regarding the identification of embedded items is continuing to be developed. Please refer to www.osd.acq.mil/uid for additional guidance.

Who is responsible for determining what items require a UID?

Answer

The contracting office issuing the solicitation should reference DFARS 252.211.7003 and define and list the items requiring identification and/or valuation.

The portion of the clause addressing the decision tree is DFARS 252.211.7003 ©

(c) *Unique item identification.*

(1) The Contractor shall provide DoD unique item identification, or a DoD recognized unique identification equivalent, for—

(i) All items for which the Government's unit acquisition cost is $5,000 or more; and

(ii) The following items for which the Government's unit acquisition cost is less than $5,000:

Contract Line, Subline, or Exhibit Line Item Number — Item Description

Note Contracting Office Must Fill In

Unique Identification Mark

2D Data Matrix

Unique identification is a set of data for assets that is globally unique and unambiguous, ensures data integrity and data quality throughout life, and supports multi-faceted business applications and users. The technology used to mark an item is 2D Data Matrix ECC 200 Symbol.

Data Matrix is a two-dimensional barcode which can store from 1 to about 2,000 characters. The symbol is square or rectangular and can range from 0.001 inch per side up to 14 inches per side.

Data Matrix supplements the first and second generation bar codes used to track packages by expanding automated data collection into the manufacturing, operations, repair and overhaul environments. The Data Matrix can be applied in three ways as long as it remains permanent through the life and not damaged or destroyed in use:

1. Embedded directly to the item surface;
2. Through a plate affixed to the item surface; or

3. Attaching a label.

Some of the benefits of using 2D Data Matrix Technology verses a standard barcode are as follows:

- Can contain 100 times the data as the same space in a barcode;
- Can be read omni-directionally;
- Can be damaged but still return accurate data;
- Can be scaled up or down to fit within available marking space.

Data Matrix symbols require a 2D scanner; they cannot be read using an ordinary linear barcode laser scanner.

The data matrix will contain data represented in a uniquely identified code assigned to an individual item. The code can represent an already existing commercial item marking or can be constructed using DoD acceptable identification requirements.

Commercial Identifiers

The policy relies to the maximum extent practical on DoD recognized equivalent commercial item markings and does not impose unique government data requirements. Generally, a commercial identifier can be considered for use as a DoD UID equivalent if it meets 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 ANSI MH10.8.2, Data Identifier and Application Identifier Standard.

Some examples of commercial unique identifiers meeting these criteria that are recognized as unique identification equivalents are

1. The EAN.UCC Global Individual Asset Identifier (GIAI) for serially-managed assets,
2. The EAN.UCC Global Returnable Asset Identifier (GRAI) for returnable assets,
3. The ISO Vehicle Identification Number (VIN) for vehicles, and
4. The Electronic Serial Number (ESN) for cellular telephones only.

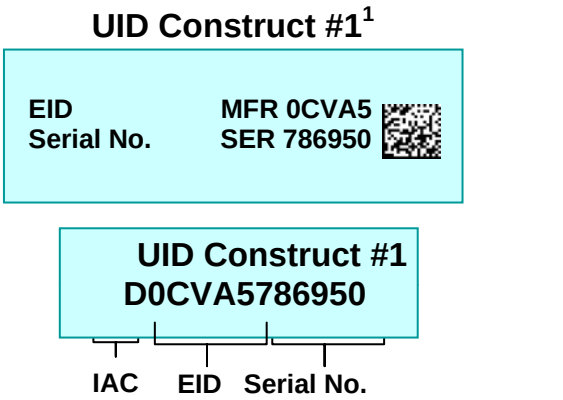
Constructed Unique Identification

If no DoD recognized commercial unique identifier standard exists then a UID may be constructed in conformance with the DoD's "collaborative solution". The collaborative solution is a method for creating interoperability among the data semantics of perData Identifiers, Application Identifiers and Text Element Identifiers used by ANSI MH10.8.2, EAN.UCC and Air Transport Association

(ATA) respectively. This is accomplished by embedding the data semantics in ISO 15434 syntax. Serialization can be accomplished in one of the following two ways:

1. Unique Identification Construct 1, Serialization within the Enterprise
2. Unique Identification Construct 2, Serialization within the Original Part Number

Construct 1: Serialization within the Enterprise Identifier

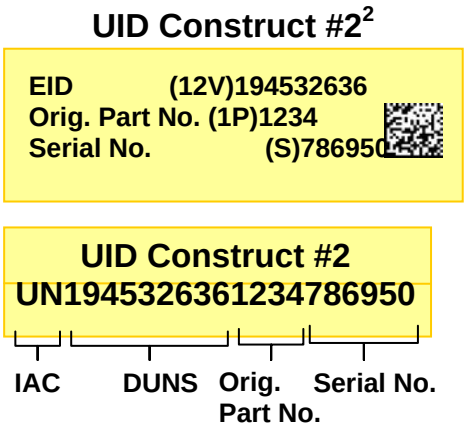


[1] This example uses ATA Text Element Identifiers

For items that are serialized within the enterprise identifier, unique identification is achieved by a combination of the issuing agency code, enterprise identifier and the serial number, which must be unique within the enterprise identifier. The unique serial number within the enterprise identifier is a combination of numbers or letters assigned by the enterprise to an item that provides for the differentiation of that item from any other like or unlike item and is never used again within the enterprise identifier. The data elements of enterprise identifier and unique serial number within the enterprise identifier provide the permanent identification for the life cycle of the item.

Construct 2: Serialization Within the Part Number

For items that are serialized within the part number, unique identification is achieved by a combination of the issuing agency code, enterprise identifier, the original part number, and the serial number. The original part number is a combination of numbers and letters assigned by the enterprise at asset creation to a class of items with the same form, fit, function, and interface. The serial number within the part number is a combination of numbers and letters assigned by the enterprise to an item that provides for the differentiation of that item from any other like item. The data elements of enterprise identifier, original part number and serial number within the original part number provide the permanent identification for the life cycle of the item.



[2] This example uses MH10.8.2 Data Identifiers.

Issuing Agency Codes for Use in Unique Identification

Table 1 contains a list of ISO issuing agency codes (IACs) assigned. At the current time, IACs exist for five most commonly used enterprise identifiers.

Issuing Agency Code	Issuing Agency	Enterprise Identifier
0 - 9	EAN-International	EAN.UCC
LB	Telcordia Technologies, Inc	ANSI T1.220
UN	Dun & Bradstreet	DUNS
D	Allied Committee 135	CAGE
LH	European Health Industry Business Communications Council	EHIBCC

Table 1: Issuing Agency Codes

Table 2 reveals how unique identification is constructed from the elements placed on the item and the business rules. When deriving the concatenated unique identification, the data qualifiers are eliminated from the final number. 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.

	UID Construct #1	UID Construct #2
Based on current enterprise configurations	**If items are serialized within the Enterprise**	**If items are serialized within Part Number**
UID is derived by concatenating the data elements IN ORDER:	**Issuing Agency Code* Enterprise ID Serial Number**	**Issuing Agency Code* Enterprise ID Original Part Number Serial Number**
Data Identified on Assets Not Part of the UID (Separate Identifier)	**Current Part Number****	**Current Part Number****

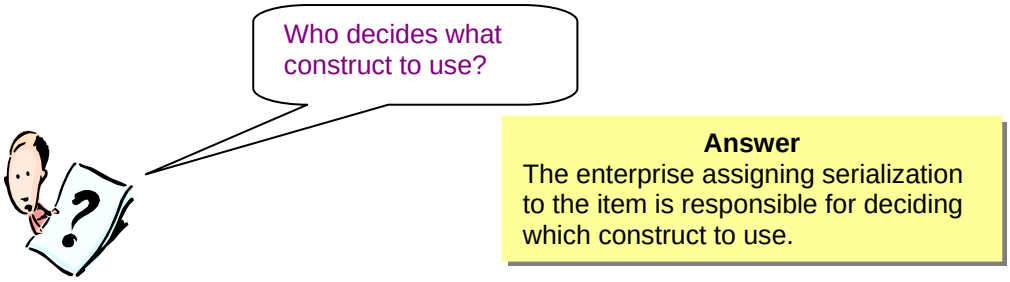
*The Issuing Agency Code (IAC) represents the registration authority that issued the enterprise identifier (e.g., Dun and Bradstreet, EAN.UCC). The IAC can be derived from the data qualifier for the enterprise identifier and does not need to be marked on the item.

**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.

Table 2. Unique Identification (UID) Construct Business Rule

Data elements for unique identification (enterprise identifier, serial number and, for Construct 2 only, original part number) will be placed on qualifying items in accordance with the standard practice of MIL-STD-130, Identification Marking of U.S. Military Property. For a greater understanding of the marking methods, please refer to the **UID Guide to Uniquely Identifying Items v1.4.**

An end item may include embedded items, such as subassemblies, components and parts. The prime contractor will pass down appropriate specifications, including the UID marking requirements, to the tiered vendors for subcontracted subassemblies, components and parts. Spares may be purchased directly from the vendors or through the prime contractor. UID-qualifying spare items (subassemblies, components and parts) have to be marked appropriately with the UID data elements. So, when the prime delivers the end item—that is one UID. The spares are delivered with their own UIDs. The Government will of ask the prime to deliver a list of all UIDs for UID-qualifying embedded items in the end item.



DoD program offices and industry partners continue to share best practices on UID part marking that minimizes financial and physical impact. The UID Program Office has ongoing working groups that meet with DoD stakeholders in order to share approaches. For more information, please go to www.acq.osd.mil/uid.

Reader Technology

As stated earlier, the data matrix symbol requires a 2D scanner; they cannot be read using an ordinary linear barcode laser scanner. Automatic Identification Technology (AIT) is the basic building block in the Defense Department's efforts to provide timely asset visibility. AIT gives the Department the capability to document and control items over the UID Lifecycle.

The AIT reader will accurately and reliably machine read the data elements and output a UID. The data will be transmitted to a DoD automated information

system. The data can then be used as a primary or alternate key across DoD databases.

Accounting and Valuation of Items

The first part of this guide focused on the UID program, implementation and item marking. The final section of this guide will focus on the accounting and valuation process. The purposes of the DFARS clause is to both uniquely identify and value items to provide better asset accountability and valuation through the UID life cycle mentioned in Figure 2 on page 8. A number of DoD Directives provide internal guidance on DoD Program responsibilities related to properly accounting and valuating items. The DoD Directives can be found in Appendix A.

Accountability of items begins when equipment, reparable, materials and consumables are acquired through purchase, lease, or other means.

1. DoD Instruction 5000.64 requires that accountability records be established for all property (i.e., property, plant and equipment) purchased, having a unit acquisition cost of $5,000 or more, and items that are classified or sensitive, or items located at third parties, regardless of acquisition cost.
2. For material covered under DoD 4140.1-R publication, accountability records are established for all material received, regardless of cost.

All property delivered to the Government must be delivered on a contract line item, subline item or exhibit line item. The acquisition cost of each item entering the Government property inventory is captured on the contract line item (CLIN), subline (SLIN), or exhibit line (ELIN) item.

Both the unique identification and value of items delivered under the contract need to be reflected in the DoD property accountability and management information systems. The valuation of property is addressed in DoD Instruction 5000.64 and states that unit acquisition cost should be the basis for valuation of property. The contract type determines the proper method of calculating acquisition cost.

1. For fixed price contracts, the unit acquisition cost for items to be delivered is the fixed price paid by the Government.

2. For cost type contracts, the unit acquisition cost for items to be delivered is the contractor's estimated cost at the time the item is delivered.

For a greater understanding of the valuation methods, please refer to the **UID Guide to Uniquely Identifying Items v1.4.**

Wide Area Work Flow and the UID Registry

Wide Area Work Flow-Receipt and Acceptance (WAWF-RA) will be the standardized data capture mechanism for transmitting UID data from contractors to DoD for new acquisitions of tangible items. WAWF-RA is a Paperless Contracting DoD-wide application designed to eliminate paper from the receipt and acceptance process of the DoD contracting lifecycle. A secure, web-based application, WAWF-RA enables authorized Defense contractors and DoD personnel to create, capture, and process receipt, acceptance, and payment-related documentation and to access contract related documents electronically. The UID-capable version of WAWF-RA (v3.0.4) was placed in production in May 2004 and is in the pilot phase for UID capture with several vendors. The UID capture function of WAWF-RA will soon be available to all vendors.

For more information on WAWF, please visit the WAWF training site at http://www.wawftraining.com.

Wide Area Work Flow is a means of transmitting UID data elements into the UID Registry. The UID registry is the ultimate repository where all UID data will be captured. The UID registry will serve as an acquisition gateway to:

- Identify what the item is;
- Identify who owns the item originally;
- Identify the initial value of the item;
- Identify procuring activity and acceptance timing;
- Intersect with other systems (e.g., property management, logistics, inventory management)

Data Elements in the UID Registry

The contractor, at time of delivery, is responsible for providing the following information:

(1) Item Description
(2) Unique identification, consisting of—
  (i) Concatenated DoD unique item identification; or
  (ii) DoD recognized unique identification equivalent
(3) Unique item identifier type
(4) Issuing agency code (if DoD unique item identifier is used)
(5) Enterprise identifier (if DoD unique item identifier is used)
(6) Original part number
(7) Serial number
(8) Unit of measure
(9) Government's unit acquisition cost
(10) Ship-to code
(11) Contractor's CAGE code or DUNS number
(12) Contract number
(13) Contract line, subline, or exhibit line item number

(14) Acceptance code
(15) Shipment Date

Most of those data elements listed will be captured in the UID Registry.

Summary

This Guide provides a broad overview of the UID Program. It is designed to expose DoD program offices and contractors to the implementation process and enhance understanding of the:

- Legislative and Regulatory Relationship;
- DoD Business Transformation Process;
- UID Policy;
- UID Implementation;
- Business Rules;
- Marking;
- Valuation Process;
- Wide Area Work Flow; and
- UID Registry.

While overhauling DoD business processes will be challenging, DoD is committed to this transformation to provide the warfighter and key decision makers with the information they need when they need it.

Transformation is not an event – it is a process. There is no point at which the Defense Department will move from being "untransformed" to "transformed." Our goal is to set in motion a process and a culture that will keep the United States several steps ahead of potential adversaries.

Secretary Rumsfeld
May 14, 2003

The desirable end state that DoD envisions through DoD's Business Enterprise Architecture is the integration of item data across DoD, Federal and industry asset management systems, as to include improved data quality and global interoperability and rationalization of systems and infrastructure.
Unique identification of items will help achieve that goal by:

- Improved item management and accountability.
- Improved asset visibility and life cycle management.
- Clean audit opinions on item portions - Property, Plant and Equipment; Inventory; and Operating Materials and Supplies - of DoD financial statements.

With ongoing cooperation between DoD program offices and contractors, strides are continually being made to ease the transition. For further information or questions, please visit our website at www.acq.osd.mil/uid or e-mail us at info@uniqueid.org.

UID background materials, previous UID policy memos, and implementation guidelines are available at www.acq.osd.mil/uid.

Appendix A: Referenced Directives for the UID Program

The DoD Directives System was established to provide a single, uniform system of DoD issuances and directive-type memorandums used to convey DoD policies, responsibilities, and procedures. The DoD Directives System provides for the orderly processing, approval, publication, distribution, internal review, and records management of DoD Directives, DoD Instructions, and DoD Publications. The DoD Directives System also includes the Office of the Secretary of Defense (OSD) Federal Register System.

DoD Directive:

Type	Number	Date	Changes	SUBJECT	OPR
DODD	5000.1	5/12/2003		THE DEFENSE ACQUISITION SYSTEM	USD(AT&L) 703-697-7261

Defense Instructions:

Type	**Number**	**Date**	**Changes**	**Subject**	**OPR**
DODI	5000.64	8/13/2002		DEFENSE PROPERTY ACCOUNTABILITY	USD(AT&L) 703-697-7261
DODI	7000.14	11/15/1992		DOD FINANCIAL MANAGEMENT POLICY AND PROCEDURES	USD(C) 703-697-8364

DoD Publications:

TYPE	NUMBER	DATE	CHANGES	SUBJECT	OPR
DOD	4140.1-R	5/2003		DOD SUPPLY CHAIN MATERIAL MANAGEMENT REGULATION	USD(AT&L) 703-697-7261
DOD	4000.25-M	3/2003		DEFENSE LOGISTICS MANAGEMENT SYSTEM (DLMS)	USD(AT&L) 703-697-7261
DOD	4000.25-2-M	9/2001		MILITARY STANDARD TRANSACTION REPORTING AND ACCOUNTING PROCEDURES (MILSTRAP)	USD(AT&L) 703-697-7261

Appendix B: Industry References

ATA Spec 2000 Chapter 9	www.airlines.org
ATA CSDD	www.airlines.org
ANSI MH10.8.2	www.ihs.com
ISO 15434	www.iso.com
EAN.UCC	www.ean-ucc.org