



Unique Identification (UID)

Capturing business intelligence through technology



» What's New At UID?

The May 2006 edition of our [E-Newsletter](#) is now available. Current and past editions are accessible on the Implementation News page under the Training and Related Links menu.

An updated version of the '[DoD Guide to Uniquely Identifying Items](#)' is now available. Updated on June 1, 2006, this replaces Version 1.5 from June 7, 2005.

A proposed change to the DFARS to revise requirements for reporting of Government property in the possession of DoD contractors was posted March 21, 2006 to Federal Register (<http://www.acq.osd.mil/dpap/dars/dfars/changenotice/2006/20060321/E6-3993.htm>).

The proposed rule replaces existing DD Form 1662 reporting requirements with requirements for DoD contractors to electronically submit, to the Item Unique Identification (IUID) Registry, the IUID data applicable to the Government property in the contractor's possession. This will result in more efficient and accurate reporting of Government property in the possession of contractors. A 30-day comment period will follow. To assist with implementation, Guidance for: [DFARS 252.245-7001, Reports of Government Property](#) has been developed. (March 22, 2006)

The IUID Registry version 3.2 will be available on April 3, 2006 and will include the following new capabilities: Added Roles for Government, Application Program Interfaces, and UII Retrieval from Elements. The following reports will also be available: GFP Summary by Contract and GFP Summary by Contractor

[IUID Tutorial](#)

The benefits of IUID are numerous

IUID is a Department of Defense program that will enable easy access to information about DoD possessions that will make acquisition, repair, and deployment of items faster and more efficient.

- Item visibility regardless of platform or "owner"
- Lower item management costs
- Item data necessary for top-level logistics and engineering analysis
- Accurate sources for property and equipment valuation and accountability
- Improved access to historical data for use during systems design and throughout the life of an item
- Better item intelligence for warfighters for operational planning
- Reduced workforce burden through increased productivity and efficiency
- Improved inventory accuracy

The U.S. Coast Guard is actively exploring the use of Unique Identification for their assets. Read the [Latest News](#) for more information on their program and upcoming 2D Barcoding Symposium.

A new white paper provides an overview and introduction to the IUID Registry: [IUID Registry Brief](#)

The UID Program office has released an updated version of the Program Planning Template, and posted IUID Implementation Plans for the [Patriot/Meads](#) and the [F-35 \(JSF\)](#) programs.

[Mil Std 130 M released, Dec. 2, 2005.](#)

An Overview of the changes has been posted, accessible through the following link: <http://www.ide.wpafb.af.mil/engdat/pubnews.htm>

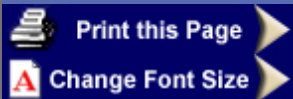
The UID Program office has released an updated version of the [Program Planning Template](#)

The UID Program Office has developed an online tool to facilitate understanding and implementation of IUID. Please visit the new IUID Toolkit at www.IUIDtoolkit.com

[New Video Overview of IUID Policy now available](#)

[DD Form 1662 Transition Instructions \(August 23, 2005\).](#)

[Previous "What's New at UID" items...](#)



» Frequently Referenced Documents

1. [Program Planning Template ver 1.7 \(Nov. 5, 2005\)](#)
2. [IUID toolkit](#)
3. [IUID Tutorial](#)
4. [DD Form 1662 Transition Instructions \(August 23, 2005\)](#)
5. [Tips on Constructing the UII \(May 16, 2006\)](#)
6. [Integrated List of Existing IUID Definitions \(June 8, 2005\)](#)
7. [Contract Pricing and Cost Accounting Compliance Memo](#)
8. [Guides](#)
9. [UID 101](#)
10. [DoD Guide to Uniquely Identifying Items, Version 1.6](#)
11. [Military Standard 130M](#)
12. [Implementation Tools](#)

Looking for information on RFID? Please visit their website at www.dodrfid.org

GSA

GSA has recently added a new [special item number \(617-13\)](#) to Shipping, Packaging, and Packing Supplies, Schedule 81 I B, which enables federal customers to purchase unique identification (UID) and RFID services/products from the schedule.

» What is IUID?

IUID of items is accomplished by marking each qualifying item with a permanent 2-dimensional [data matrix](#). The data matrix is encoded with the [data elements](#) necessary to construct a Unique Item Identifier (UII) which is globally unique and unambiguous. The data elements required to form a UII include the manufacturer's identification (i.e. cage code) and the item's serial number. If the manufacturer serializes within part number, that data element will also be encoded.

Because the data matrix is machine-readable, IUID marking greatly reduces human error and improves the accuracy of inventory and acquisition records.

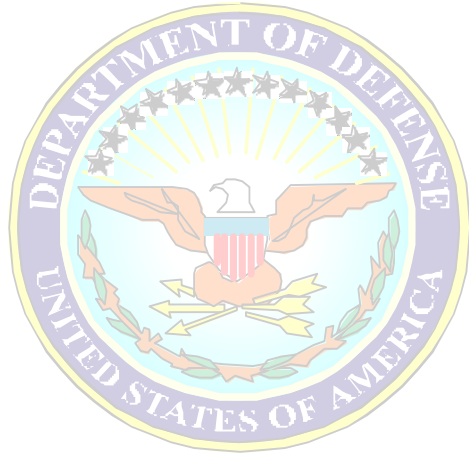
The UIIs are stored in comprehensive [registries](#) which will allow easy access to information such as acquisition cost and life-cycle data. The registries will be maintained by the Defense Logistics Information Service (DLIS).

Every IUID delivery includes the required data elements describing the end item and the "pedigree" of embedded items. This data is captured during the acceptance process via the [Wide Area Workflow \(WAWF\)](#) application, or after acceptance via direct data submission. Items marked with IUIDs accelerate the receipt and acceptance process, allowing DoD to submit payment to its vendors in a timely fashion, thereby saving on late charges.



Questions about IUID? Contact our new **Help Desk!** Call (703) 848-7314 or email info@uniqueid.org

Department of Defense Guide to Uniquely Identifying Items



Assuring Valuation, Accountability and Control of Government Property

Version 1.6
June 1, 2006

Office of the Deputy Under Secretary of Defense
(Acquisition, Technology & Logistics)

Preface

This Version 1.6 of the Guide to Uniquely Identifying Items replaces all previous versions.

Summary of Changes from Version 1.5 (Dated June 6, 2005) to Version 1.6:

a. Terminology and references associated with the DoD Business Enterprise Architecture were updated.

b. A note on using a Contract Data Requirements List for item unique identification (IUID) data was replaced with the appropriate language from Defense Federal Acquisition Regulation Supplement (DFARS) 252.211-7003.

c. Chapter 3 was revised. The new Chapter 3 expands the discussion of IUID requirements. A new Chapter 4 was created from sections of the prior Chapter 3 that address the methodology for uniqueness and relevant implementation considerations. Content changes were incorporated:

- To further clarify IUID requirements of the contract clause DFARS 252.211-7003.
- To provide additional guidance and information regarding unit acquisition cost threshold, DoD serially managed, mission essential, controlled inventory, embedded items and other qualifying reasons for IUID.
- To clarify that legacy items include items undergoing maintenance, repair or overhaul.
- To update the name of EAN.UCC to GS1.
- To provide additional guidance regarding applicability of virtual unique item identifiers (UIIs).
- To clarify and expand references to the enterprise identifier NCAGE.
- To include human-readable information, in addition to other AIT media, as a data source.
- To clarify that the specified Data Matrix type is ECC 200 which uses Reed-Solomon error correction.

- To emphasize that unserialized Global Returnable Asset Identifiers are unacceptable for IUID.
- d. The definition for Military Mission Essentiality replaced the definition for Mission Essential in Appendix A.
- e. Appendix B references were updated. A reminder to check for revisions to documents was added.
- f. Appendix C was updated to version 3.5c of the Business Rules with additional information on use of lot or batch numbers.
- g. Appendix D incorporated the DI 7L and the TEI LTN, and expanded the data element description for 18S, USN and UST in Table 5. Data Qualifiers and replaced Figure 6. Concatenated Unique Item Identifier (UII) Construction to expand the illustration of UIIs by format and construct. The example for using data identifiers in UII Construct #1 was expanded to illustrate the inclusion of discrete data elements with the concatenated UII in accordance with Business Rule #2.
- h. Appendix E was updated.
- i. Changes for compatibility with the changes reflected above, as well as various typographical, grammatical and format corrections, were made throughout.

Table of Contents

<i>Preface</i>	ii
<i>Chapter 1</i> The Environment	1
The Government Property Management Challenge	1
The Definition of Items.....	2
The Objectives	2
Item Management	3
The Players.....	3
Processes, Activities and Actions	5
<i>Chapter 2</i> The Need to Uniquely Identify Items	7
Differentiating Items Throughout the Supply Chain	7
Accounting for Acquired Items	7
Contractor-acquired Property on Cost-Reimbursement Type Contracts	8
Establishing Item Acquisition Cost	8
Using Contract Line Items.....	8
Valuation of Items for the IUID Registry	10
<i>Chapter 3</i> Requirements for Item Unique Identification	12
What is an Item?	12
Deciding What Items are to be Identified as Unique	12
Items Delivered Under Contracts and Legacy Items in Inventory and Operational Use	12
Unit Acquisition Cost Threshold	14
IUID of Items Below the \$5000 Threshold	14
DoD Serially Managed	14
Mission Essential	15
Controlled Inventory	15
Other Compelling Reasons for Items Below the \$5000 Threshold	16
IUID of Embedded Items Regardless of Value	16
Legacy Items in Operational Use and Inventory	17
<i>Chapter 4</i> Determining Uniqueness of Items	19
Defining the Data Elements for the Unique Item Identifier	19
What is the Unique Item Identifier (UII)?	19
The Notion of an Enterprise.....	19
Unique Identification of Items	20
Serialization Within the Enterprise Identifier	20
Serialization Within the Part, Lot or Batch Number.....	21
Issuing Agency Codes for Use in Item Unique Identification	21
Including Unique Item Identifier (UII) Data Elements on an Item	22
Derivation of the Concatenated UII.....	22
Concatenated UII Derivation Process.....	24
Deciding Where to Place Data Elements for Item Unique Identification on Items..	25
DoD IUID Equivalents	25
Compliant Unique Item Identifier.....	25
Considerations for Suppliers.....	26

Deciding When to Place Data Elements on the Item to Derive the Unique Item Identifier.....	27
Use of the Unique Item Identifiers in Automated Information Systems	29
Roles and Responsibilities for Property Records.....	29
<i>Appendix A - Definitions</i>	31
Key Definitions	31
<i>Appendix B - Where Does the Guidance Exist Today?</i>	40
<i>Appendix C - Business Rules (Version 3.5c)</i>	41
What are Business Rules?.....	41
IUID Business Rules.....	41
Contracts and Administration	42
UUI Construction and Physical Marking	42
Items considered part of a new solicitation.....	42
Items in operational use or in inventory	46
Items considered tangible personal property owned by the Government in the possession of a contractor	47
<i>Appendix D -The Mechanics of Item Unique Identification</i>	48
Structuring the Data Elements for Item Unique Identification.....	48
Semantics	48
Syntax	50
Examples of Semantics and Syntax Constructions for Item Unique Identification.....	53
Using ANS MH 10 Data Identifiers.....	53
Using GS1 Application Identifiers.....	56
Historic Use of Text Element Identifiers	58
The Collaborative AIT Solution	59
Using Text Element Identifiers in the Collaborative Solution.....	60
<i>Appendix E -Glossary of Terms</i>	65

Chapter 1

The Environment

THE GOVERNMENT PROPERTY MANAGEMENT CHALLENGE

The Government Accountability Office (GAO) aptly describes the challenge faced by today's managers of Federal Government property: "GAO and other auditors have repeatedly found that the federal government lacks complete and reliable information for reported inventory and other property and equipment, and can not determine that all assets are reported, verify the existence of inventory, or substantiate the amount of reported inventory and property. These longstanding problems with visibility and accountability are a major impediment to the federal government achieving the goals of legislation for financial reporting and accountability. Further, the lack of reliable information impairs the government's ability to (1) know the quantity, location, condition, and value of assets it owns, (2) safeguard its assets from physical deterioration, theft, loss, or mismanagement, (3) prevent unnecessary storage and maintenance costs or purchase of assets already on hand, and (4) determine the full costs of government programs that use these assets. Consequently, the risk is high that the Congress, managers of federal agencies, and other decision makers are not receiving accurate information for making informed decisions about future funding, oversight of federal programs involving inventory, and operational readiness".¹ Further, the Congress has demanded greater fiscal accountability from managers of federal government property.²

¹ GAO-02-447G, Executive Guide, Best Practices in Achieving Consistent, Accurate Physical Counts of Inventory and Related Property, March 2002, page 6.

² Ibid, page 5: The GAO observes that "In the 1990s, the Congress passed the Chief Financial Officers Act of 1990 and subsequent related legislation, the Government Management Reform Act of 1994, the Government Performance and Results Act of 1993, and the Federal Financial Management Improvement Act of 1996. The intent of these acts is to (1) improve financial management, (2) promote accountability and reduce costs, and (3) emphasize results-oriented management. For the government's major departments and agencies, these laws (1) established chief financial officer positions, (2) required annual audited financial statements, and (3) 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 but are challenged to provide useful, reliable, and timely inventory data, which is still not available for daily management needs."

THE DEFINITION OF ITEMS

For the purposes of this guide, an item is a single hardware article or a single unit formed by a grouping of subassemblies, components, or constituent parts.³

THE OBJECTIVES

Department of Defense (DoD) Instruction 5000.64, Defense Property Accountability, requires that accountability records be established for all property (property, plant and equipment) with a unit acquisition cost of \$5,000 or more, and items that are sensitive or classified, or items furnished to third parties, regardless of acquisition cost. Property records and/or systems are to provide a complete trail of all transactions, suitable for audit.⁴

DoD 4140.1-R requires accountability and inventory control requirements for all property and materiel received in the wholesale supply system.

A key component of effective property management is to use sound, modern business practices.

In terms of achieving the desirable end state of integrated management of items, the collective DoD goal shared by all functional processes involved in property management is to uniquely identify items, while relying to the maximum extent possible on international standards and commercial item markings and not imposing unique Government requirements. 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 Business Enterprise Architecture (BEA)⁵, to include improved data quality and global interoperability and rationalization of systems and infrastructure.
- Improved item management and accountability.

³ DFARS 252.211-7003(a).

⁴ The Instruction states that property accountability systems and records should include data elements such as part number, national stock number, serial numbers, bar codes, or other unique identifiers (e.g., hull, building, aircraft tail numbers, vehicle registration, disposal turn-in document number, as may be appropriate and necessary).

⁵ On March 15, 2006, the DoD Business Transformation Agency (BTA) released the Business Enterprise Architecture (BEA 3.1), which defines the processes, roles, data structures, information flows, business rules, and standards required to guide improvements in the Core Business Missions (CBMs) of the Department.

- Improved asset visibility and life cycle management.
- Clean audit opinions on item portions⁶ of DoD financial statements.

ITEM MANAGEMENT

The acquisition, production, maintenance, storage, and distribution of items require complete and accurate asset records to be effective, and to ensure mission readiness. Such records are also necessary for operational efficiency and improved visibility, as well as for sound financial management. Physical controls and accountability over items reduce the risk of (1) undetected theft and loss, (2) unexpected shortages of critical items, and (3) unnecessary purchases of items already on hand.

THE PLAYERS

The principal functional stakeholders in item management are Engineering Management; Acquisition Management; Property, Plant and Equipment Accountability; Logistics Management and Accountability, and Financial Management. Asset visibility is crosscutting to these five functions. Their interests involve the following:

Engineering Management. DoD Directive 5000.1, Defense Acquisition System, requires that acquisition programs be managed through the application of a systems engineering approach that optimizes total system performance and minimizes total ownership costs. A modular, open-systems approach is employed, where feasible. For purposes of item management, engineering plays a crucial role in the documentation of technical data that defines items and the configuration management of these items throughout their useful life.

Acquisition Management. The Federal Acquisition Regulation (FAR) Part 45, Government Property, prescribes policies for furnishing Government property to contractors including the use, maintenance, management and reporting of Government-furnished property and contractor-acquired property, and for the return, delivery, or disposal of Government-furnished property and contractor-acquired property.

⁶ These financial statement portions are (1) Property, Plant and Equipment and (2) Operating Materials and Supplies.

Property, Plant and Equipment Accountability.

DoD Instruction 5000.64⁷ provides a comprehensive framework for DoD property accountability policies, procedures, and practices; and assists DoD property managers, accounting and financial officers, and other officials in understanding their roles and responsibilities relating to property accountability. It establishes accountability policy for property, plant, and equipment (PP&E); and contains concepts useful for asset management throughout the Department, particularly for property in the possession of individual military units and end-users. It excludes property and materiel for which accountability and inventory control requirements are prescribed in DoD 4140.1-R and DoD 4000.25-2-M.⁸

Logistics Management and Accountability. DoD

Directive 4140.1, Materiel Management Policy, specifies policies for materiel management. It is the Department's policy that:

- Materiel management is responsive to customer requirements during peacetime and war.
- Acquisition, transportation, storage, and maintenance costs are considered in materiel management decisions.
- Standard data systems are used to implement materiel management functions.
- The secondary item inventory is sized to minimize the Department's investment while providing the inventory needed to support peacetime and war requirements
- Materiel control and asset visibility are maintained for the secondary item inventory.

DoD 4000.25-M, Defense Logistics Management System (DLMS) Manual, prescribes logistics management policy, responsibilities, procedures, rules, and electronic data communications standards for the conduct of logistics operations in the functional areas of supply, transportation, acquisition (contract administration), maintenance, and finance.⁹

⁷It integrates the broad requirements of the Federal Property and Administrative Services Act of 1949, as amended (Act of 30 June 1949, 63 Stat. 372), and the Chief Financial Officers (CFO) Act of 1990 into an overarching property accountability policy for property, plant and equipment. Complements the accounting and financial reporting requirements contained in DoD 7000.14-R.

⁸ Military Standard Transaction Reporting and Accounting Procedures (MILSTRAP).

⁹The DLMS is a system governing logistics functional business management standards and practices rather than an automated information system.

Financial Management. DoD Instruction 7000.14, Defense Financial Management Regulation, specifies that all DoD Components shall use a single DoD-wide financial management regulation for accounting, budgeting, finance, and financial management education and training. That regulation is DoD 7000.14-R. It directs financial management requirements, systems, and functions for all appropriated, non-appropriated, working capital, revolving, and trust fund activities. In addition, it directs statutory and regulatory financial reporting requirements.

Joint Total Asset Visibility. Joint total asset visibility is the capability that provides Combatant Commanders, the Military Services, and the Defense Agencies with timely and accurate information on the location; movement; status; and identity of units, personnel, equipment, and supplies.¹⁰

PROCESSES, ACTIVITIES AND ACTIONS

Item management involves many functional processes, activities and actions, all focused on operations involving items. These operations must be integrated and flow smoothly so that the needs of warfighters for items are satisfied when and where they occur. The functional processes, activities and actions impacting item management are arrayed in Table 1 in summary format to show how they are related and dependant.

¹⁰ “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 materiel 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.

Functional Processes	Activities	Actions
Fund	Requirements	Identify needs
Acquire	Engineering Materiel Management Cataloging	Assign part number Request part number Assign stock number
Produce & Accept	Process Control	Apply & inspect item marking
Transport	Transportation	Track items
Stock	Stocking	Stock, locate and retrieve items Control item inventory
Order	Requisitioning	Request item supply
Supply	Shipping	Locate and ship items
Use	Receipt	Receive, install and use items
Repair	Maintenance	Restore reparable items
Rebuild	Overhaul	Refurbish items
Decommission	Demilitarization	Remove ownership markings, leave the Unique Identification data elements
Dispose	Disposal	Sell/recycle scrap Destruction and/or abandonment
Pay	Requirements	Settle invoices
Account	Inventories Financial Statements	Manage & control Property valuation

Table 1. Functional Processes Impacting Item Management

Chapter 2

The Need to Uniquely Identify Items

DIFFERENTIATING ITEMS THROUGHOUT THE SUPPLY CHAIN

The Department must, of necessity, uniquely identify the items to which it takes title to provide for better asset accountability, valuation and life cycle management. Unique identification provides the Department the opportunity to differentiate an individual item from all others. Unique identification of items provides the Department with the source data to facilitate accomplishment of the following:

- Improve the acquisition of equipment and performance based logistics services for the warfighter,
- Capture timely, accurate and reliable data on items (i.e., equipment, reparables, materials, and consumables),
- Improve life-cycle asset management, and
- Track items in the Department and industry systems for operational, logistic¹¹ and financial accountability purposes.

ACCOUNTING FOR ACQUIRED ITEMS

Accountability of items begins when hardware (equipment and reparables), and supplies (materials and consumables) are acquired through purchase, lease, or other means, including transfer or fabrication, whether the hardware and supplies are already in existence or must be created, developed, demonstrated and evaluated.¹² 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 over \$5,000 or more, and items that are classified or sensitive, or items located at third parties, regardless of acquisition cost.¹³ Property accountability records and systems should follow DoD Instruction 5000.64 exactly: to include the use of part number, cost, national stock number, serial numbers, bar codes, or other unique identifiers (e.g., hull, building numbers, aircraft tail numbers, vehicle registration, disposal turn-

¹¹ DoD 4140.1-R, May 2003, chapter 5, section C5.7.3, addresses Unique Item tracking policy for logistics.

¹² See American Society for Testing and Materials Standard E-2135-02, Standard Terminology for Property and Asset Management.

¹³ DoDI 5000.64, August 13, 2002, op. cit., paragraph 5.3.1.

in document number, as may be appropriate and necessary), as well as other data elements.¹⁴

For materiel covered under DoD 4140.1-R, accountability records are established for all materiel received, regardless of cost.¹⁵

CONTRACTOR-ACQUIRED PROPERTY ON COST-REIMBURSEMENT TYPE CONTRACTS

Title to property whose cost is reimbursable to the contractor passes to and vests in the Government upon: (1) Delivery to the contractor of an item purchased by the contractor and reimbursed as a direct cost under the contract, (2) Issuance of the property for use in contract performance; (3) Commencement of processing of the property or use in contract performance; or (4) Reimbursement of the cost of the property by the Government, whichever occurs first. The Government acquires title to all property purchased or fabricated by the contractor and may take title to Production Special Tooling in accordance with the contract clauses. However, if such items are to be delivered to the Government, they must be delivered under a contract line item or subline item.

ESTABLISHING ITEM ACQUISITION COST

It is essential that contracts contain specific arrangements to capture the acquisition cost of all delivered items because the acquisition cost will form the basis for the entries made in the Department's financial statements and will determine the degree to which those statements comply with the requirements of the Federal Accounting Standards Advisory Board (FASAB). Ideally, acquisition cost for items would be recorded at the time these items are delivered to the Government.

Using Contract Line Items.

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

CLINs, and SLINs are established when the contract is structured prior to award and must be included for all items for which the Government will take delivery, either during the performance or at the completion of the contract. The estimated acquisition cost of property will be identified upon delivery.

¹⁴ Ibid, paragraph 5.3.3 contains the list of all data elements.

¹⁵ See Section C5.3, Item Accountability, Control and Stewardship, DoD 4140.1-R.

Table 2 shows the preferred approach for identifying the acquisition cost of items delivered under a contract is for the items to be separately priced under CLINs or SLINs. Informational subline items are used to capture the acquisition cost for items to be delivered when separately priced CLINs or SLINs are not practicable. Informational SLINs used only for identification of acquisition cost have to be clearly marked as such so they are not confused with delivery, acceptance, and payment requirements of the contract. When the acquisition costs for like items differ, separate informational SLINs must be used to identify the acquisition cost for each of the items with a different acquisition cost.

Deliverable	UII or IUID Equivalent Required	Unit Acquisition Cost (or price) Required	Valuation Method (Contract type)
CLIN/SLIN Items requiring UII or IUID Equivalent (Includes items delivered separately as spares).	Yes. All items valued over \$5K/unit value. Use DoD decision tree to determine requirements under \$5K per unit value.	Yes	Fixed Price- use CLIN/SLIN values. Cost Type-use contractor estimated costs. DoD will address delta \$ from final total price.
Sub items requiring UII or IUID Equivalent contained within CLIN/SLIN delivered items. (LRU/Spares)	Yes. Application of maintenance plan (e.g. lowest repairable or replaceable unit by DoD); No dollar threshold for applicability. ¹⁶	No	N/A
Other commercially marked items not requiring IUID. (CLIN/SLIN)	No. The DoD shall accept existing commercial markings.	Yes – All delivered items must be valued per unit.	Fixed Price- use CLIN/SLIN values Cost Type-use contractor estimated costs. DoD will address delta \$ from final total price.

Table 2. Contract Requirements – Identifying Unit Acquisition Cost

The Contracting Officer will modify a contract to establish separate CLINs/SLINs prior to delivery of items that were not identified as contract deliverables at the time of contract award.

¹⁶DFARS 252.211-7003 requires a contract attachment to list embedded DoD serially managed subassemblies, components, and parts that are to be uniquely identified. The IUID data are reported at the time of delivery, either as part of, or associated with the Material Inspection and Receiving Report.

Valuation of Items for the IUID Registry

Both the unique identification and the value of items that will be delivered under the contract need to be reflected in the Department’s property accountability and management information systems. According to DoD Instruction 5000.64, acquisition cost should be the basis for valuation of property.

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

For cost type contracts, the acquisition cost for items to be delivered is the Contractor’s estimated cost at the time the item is delivered.

The acquisition cost of components within delivered items need not be identified. Figure 1 contains an illustration of how CLINs/SLINs would be valued based on whether or not they are delivered separately. It shows the relationships between the components of the supply chain, the items qualifying for unique identification, and the delivery of the concatenated UII and CLIN/SLIN valuation.

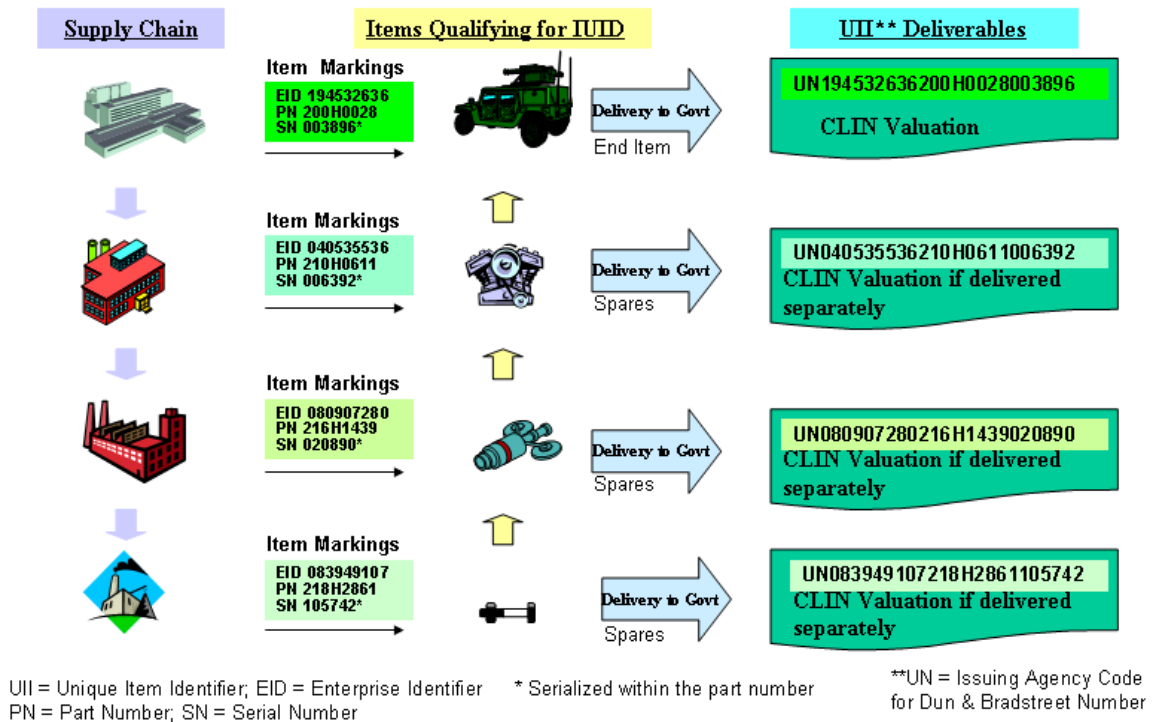


Figure 1. Valuation of Contract Line/Subline Item Numbers

A delivered item may be composed of embedded items, such as subassemblies, components and parts. The prime contractor will pass down appropriate specifications, including the IUID marking requirements, to the tiered vendors for subcontracted subassemblies, components and parts.

Spares may be purchased directly from the vendors or through the prime. IUID-qualifying spare items (subassemblies, components and parts) have to be marked appropriately with the UII data elements.

So, when the prime delivers the complete item—that is one UII. The spares are delivered with their own UIIs. The prime will also be required to mark and register UII data elements for those DoD serially managed embedded items and their parent items in the delivered item.

Chapter 3

Requirements for Item Unique Identification

WHAT IS AN ITEM?

As stated earlier in this guide, an item is a single hardware article or a unit formed by a grouping of subassemblies, components or constituent parts.¹⁷ In this definition, hardware is a generic term dealing with physical items as distinguished from a capability or function, such as equipment, tools, implements, instruments, devices, sets, fittings, trimmings, assemblies, subassemblies, components and parts.¹⁸

DECIDING WHAT ITEMS ARE TO BE IDENTIFIED AS UNIQUE

Items Delivered Under Contracts and Legacy Items in Inventory and Operational Use

The unique identification of items is driven by an integrated set of logistics, acquisition and financial requirements to identify and track item information. Figure 2 contains a decision tree for deciding what items should be uniquely identified for DoD purposes. The decision tree is a graphic representation of the text in DFARS 211.274-2. These criteria apply whether the items are delivered under contract or they are existing legacy items in inventory, in use, or undergoing maintenance, repair or overhaul. Items being delivered under contract must include the contract clause Defense Federal Acquisition Regulation Supplement (DFARS) 252.211-7003 to invoke the IUID requirement. The unique identification of existing legacy items must be implemented separately. The program manager is responsible for having the appropriate items uniquely identified.

¹⁷ DFARS 252.211-7003(a).

¹⁸ Joint Publication 1-02, DoD Dictionary.

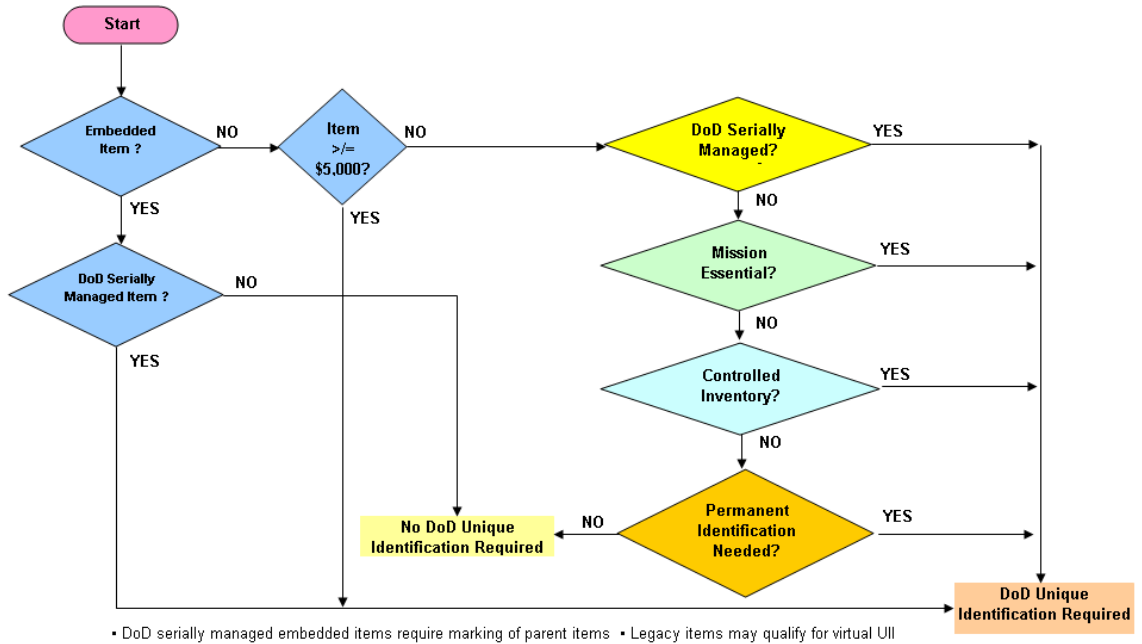


Figure 2. Uniquely Identifying Items Delivered Under Contract and Legacy Items in Inventory or Use

Items will require item unique identification, or a DoD recognized unique identification equivalent, for all property items delivered to the Government under contract or in inventory or use if one or more of the following criteria apply (each discussed separately):

- (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*¹⁹ as DoD serially managed, mission essential or controlled inventory;
- (3) When the Government’s unit acquisition cost is less than \$5,000 and the requiring activity determines that permanent identification is required;
- (4) Regardless of value, (i) any DoD serially managed subassembly, component, or part embedded within an item and, (ii) the parent item (as defined in DFARS 252.211-7003(a)) that contains the embedded subassembly, component or part.

¹⁹ The requiring activity will make this determination and list the items in the DFARS 252.211-7003 contract clause. For legacy items, the requiring activity will make this determination in order to identify items for legacy item unique identification .

UNIT ACQUISITION COST THRESHOLD

The first criterion establishes the \$5,000 value as the unit acquisition cost threshold for item unique identification. All items at this threshold or above are required to have unique identification in accordance with the threshold requirement for establishing property records. Items under \$5,000 are not required by DoD Instruction 5000.64 to have property records unless they are sensitive items or classified items or items located at third parties. Similarly, a program manager must examine the other UID criteria to determine if items below the \$5000 threshold require unique identification.

UID OF ITEMS BELOW THE \$5000 THRESHOLD

There are three fundamental characteristics listed in the second criterion to be considered in determining unique identification requirements for items whose unit acquisition cost is less than \$5000. They are *DoD serially managed*, *mission essential* and *controlled inventory*.

DoD Serially Managed

A distinction must be made between “serialized items” and “DoD serially managed” items when uniquely identifying embedded items in an item. 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, *which is designated by a DoD or Service Item Manager* to be uniquely tracked, controlled or managed in maintenance, repair and/or supply by means of its serial number²⁰.

DoD serially managed items require UIIs. Serial numbers may be unique within a product or company, but UIIs are globally unique. This permits an item to be uniquely distinguishable in different databases.

A broad variety of items fall into the DoD serially managed category through programs for serial number tracking, serialized item management,

²⁰ 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.

and unique item tracking. Examples of DoD serially managed items may include repairable items down to and including sub-component repairable 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.²¹

Mission Essential

Item essentiality is a measure of an item's military worth in terms of how its failure would affect the ability of a weapon system, end item, or organization to perform its intended functions. Military mission essentiality is the composite effect of an item on the overall military mission based on the most critical significant application of the item.²² The primary use of military mission essentiality is in supply chain management for determining resource allocations, determining degree of management intensity, and communicating essentiality among the DoD Components. An assessment of mission essentiality should include item essentiality and the degree to which it impacts on the overall military mission.

Class VII Major End Items that are deemed mission essential shall require IUID. For mission essential items in other classes of supply, the program/item manager may elect not to require IUID for an item provided that the item does not qualify for IUID under separate criteria.²³ Before excluding items from IUID, program managers must consider whether the use of IUID for an item would cost effectively enhance supply chain management and communication, and when appropriate, seek the advice of affected communities and users. This determination should be available for review by the milestone decision authority.

Controlled Inventory

The DoD employs item accountability, control, and stewardship procedures to ensure that assets are protected against waste, loss, negligence, unauthorized use, misappropriation, and compromise.²⁴ Controlled inventory items are 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. They include 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

²¹ DUSD(Logistics & Material Readiness) Memorandum, September 4, 2002, Serialized Item Management

²² DoD 4140.1-R

²³ Mission essential items that are also controlled inventory items may be excluded if the controlled inventory exclusion is also determined to be appropriate.

²⁴ DoD 4140.1-R

small arms); pilferable items (items having a ready resale value or application to personal possession, which are especially subject to theft)²⁵; and safety controlled items.

For controlled inventory items, the program/item manager may elect not to require IUID for an item that is adequately controlled by other means, provided that the item does not qualify for IUID under separate criteria.²⁶ Before excluding an item from the Controlled Inventory criterion, program/item managers shall determine whether controlled inventory items are adequately controlled by existing specified inventory controls, such as the tracking of lot/batch numbers or enhanced physical security. In making this determination, program/item managers must examine the controls in place for effectiveness and compliance with other directives, search out concurrences for the chosen course of action from among the affected communities including users, document the determination and make it known to the milestone decision authority.

OTHER COMPELLING REASONS FOR ITEMS BELOW THE \$5000 THRESHOLD

This criterion provides the authority for the requiring activity to specify items for unique identification based on other rationale. Some items that are under the \$5000 threshold and do not qualify for IUID under the stated criteria may benefit from permanent unique identification. The requiring activity that deems it appropriate to provide permanent unique identification for items may require IUID. Government property that will be placed in service in the possession of contractors is an example of items that should be marked with UIIs at the time of acquisition.

IUID OF EMBEDDED ITEMS REGARDLESS OF VALUE

Embedded items include subassemblies, components, or parts that are integral to the item being delivered. The embedded items that are serially managed by DoD require IUID. These items must be listed in the contract in order to clearly indicate which items are to be marked. This criterion is applied without regard to the value of the embedded item.

Each uniquely identified embedded item is contained within a higher assembly known as its parent item²⁷. The parent item of a DoD serially managed embedded item is also required to have a UII. This criterion is applied without regard to the value of the parent item.

²⁵ DoD 4100.39-M, Volume 10, Table 61

²⁶ Controlled inventory items that are also mission essential items may be excluded if the mission essential exclusion is also determined to be appropriate.

²⁷ *Parent item* means the item assembly, intermediate component, or subassembly that has an embedded item with a unique item identifier or DoD recognized IUID equivalent.

The supply management and repair concepts for embedded items and parent items may dictate that multiple tiers of embedded items and parent items are needed for complex systems.

LEGACY ITEMS IN OPERATIONAL USE AND INVENTORY

Program and item managers will prepare implementation plans for implementation of IUID on legacy items in operational use, including items undergoing maintenance, repair or overhaul, and in inventory. Only those legacy items determined in these implementation plans to meet the IUID criteria specified in Figure 2 above will require UII marking. All Government property in the contractor's possession will require assignment and registration of a UII, in accordance with the government property accounting rules.

When applying item unique identification to legacy items already in the inventory and operational use²⁸, all items that meet the IUID criteria should be assigned a UII and marked. If serialized items can be uniquely identified by their existing serial numbers and marking, virtual unique item identifiers (UIIs) can be assigned, based on all qualifying criteria, not just DoD serially managed items (see the decision tree in Figure 3).

A virtual UII enables the database entry of a UII and its associated pedigree data, while postponing the physical marking of the legacy item²⁹ with a two-dimensional data matrix symbol to a more advantageous time based on logistic and economic considerations. In addition to legacy items already in the inventory and operational use, DoD resident equipment³⁰ and spares in the possession of contractors may also be assigned virtual UIIs until physical marking of the items is accomplished. The use of virtual UIIs is described in the latest version of the *Guidelines for the Virtual Unique Item Identifier (UII)*.³¹

²⁸ This is required by USD(AT&L) Memorandum, dated December 23, 2004, subject: Policy for unique identification (UID) of Tangible Personal Property Legacy Items in Inventory and Operational Use, Including Government Furnished Property (GFP), available for download at <http://www.acq.osd.mil/dpap/UID/policy.htm>.

²⁹ Virtual UIIs are not used for new items. New items must conform to DFARS 252.211-7003.

³⁰ Resident equipment is government owned property that is usually stationary within a contractor's facility.

³¹ This guide is available for download at <http://www.acq.osd.mil/dpap/UID/guides.htm>.

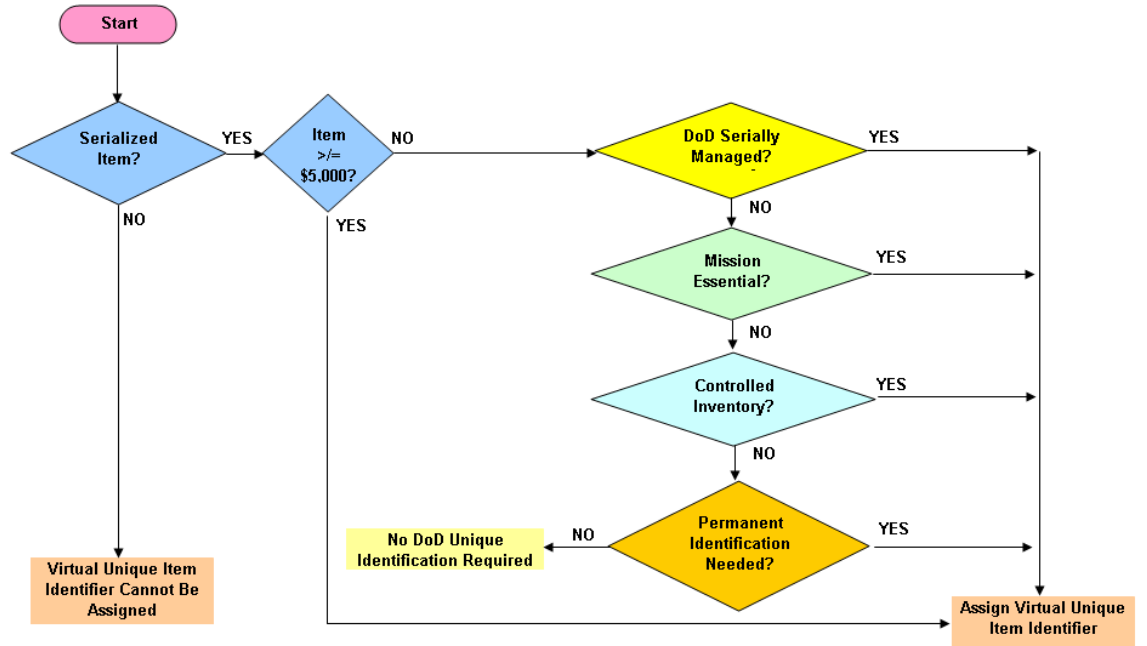


Figure 3. Assigning Virtual Unique Item Identifiers to Legacy Items in Operational Use and Inventory

Chapter 4

Determining Uniqueness of Items

DEFINING THE DATA ELEMENTS FOR THE UNIQUE ITEM IDENTIFIER

What is the Unique Item Identifier (UII)?

The unique item identifier (UII) is defined in two separate contexts:

1. DoD UII Data Set. A UII is a set of data elements marked on an item in a Data Matrix EC200 symbol 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). In addition to the two constructs comprising multiple data elements, the UII data set may be a fully concatenated UII in a single data element, such as would be defined by the use of data qualifiers 25S or UID, or a DoD recognized IUID equivalent, such as would be defined by the use of data qualifiers I, 22S, 8002, 8003, or 8004.

2. Use. 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 concatenated UII Constructs #1 and #2, or the DoD recognized IUID equivalents of Global Individual Asset Identifier (GIAI), Global Returnable Asset Identifier (GRAI) when assets are serialized, Vehicle Identification Number (VIN), or Electronic Serial Number ((ESN), for cell phones only).

The Notion of an Enterprise

The first requirement is enterprise identification. An enterprise is the entity responsible for assigning a UII to an item. For purposes of unique item identification, an enterprise identifier will define each entity location that has its own unique, separate and distinct operation. An enterprise may be an entity such as a manufacturer, supplier, depot, program management office or a third party. An enterprise identifier is a code uniquely assigned to an enterprise by a registered issuing agency. An issuing agency is an organization responsible for assigning a non-repeatable identifier to an enterprise [e.g., Dun & Bradstreet’s Data Universal Numbering System

(DUNS) Number, GS1 Company Prefix (formerly Uniform Code Council (UCC)/EAN International (EAN) Company Prefix), Allied Committee 135 Commercial and Government Entity (NCAGE/CAGE) Number, Department of Defense Activity Address Code (DoDAAC), or the Coded Representation of the North American Telecommunications Industry Manufacturers, Suppliers, and Related Service Companies (ANSI T1.220 Number)].

Unique Identification of Items

The other key aspect of constructing a UII is the unique identification of each item that the enterprise produces. Unique item identification depends upon a combination of data elements, which is determined by how the enterprise serializes items. There are two acceptable methods of serialization – (1) Serialization within the enterprise identifier, and (2) Serialization within the part, lot or batch number. Serialization within the enterprise identifier occurs when each item is assigned a serial number that is unique among all the items identified under the enterprise identifier and is never used again. The enterprise is responsible for ensuring unique serialization within its enterprise identifier. Serialization within the part, lot or batch number occurs when each item of a particular part, lot or batch number is assigned a unique serial number within the original part, lot or batch number assignment. The enterprise is responsible for ensuring unique serialization within the original part, lot or batch number.

Serialization Within the Enterprise Identifier

For items that are serialized within the enterprise identifier, the concatenated UII is a combination of the issuing agency code³², 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 (e.g., a manufacturer or vendor) 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.³³

³² The issuing agency code, or IAC, is that assigned by the Registration Authority for ISO/IEC 15459-2, Registration Procedures. The current Registration Authority of ISO/IEC 15459-2 is NEN–Nederlands Normalisatie-instituut. The IAC represents the agency that issued the enterprise identifier. The IAC can be derived from the data qualifier for the enterprise identifier and is not marked on the item.

³³ When a UII is encoded in a single data element, such as 25S or UID, the concatenation of the enterprise identifier and unique serial number is accomplished prior to encoding.

Serialization Within the Part, Lot or Batch Number

For items that are serialized within the part, lot or batch number, the concatenated UII is a combination of the issuing agency code, the enterprise identifier, the original part, lot or batch number, and the serial number. The original part number is a combination of numbers and letters assigned by the enterprise (e.g., a manufacturer or vendor) at asset creation to a class of items with the same form, fit, function, and interface. Lot or batch number means 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. The serial number within the part, lot or batch number is a combination of numbers and letters assigned by the enterprise (e.g., a manufacturer or vendor) to an item that provides for the differentiation of that item from any other like item. The data elements of enterprise identifier, original part, lot or batch number and serial number within the original part, lot or batch number provide the permanent identification for the life cycle of the item.³⁴

Issuing Agency Codes for Use in Item Unique Identification

Table 3 contains a list of issuing agency codes (IACs). At the current time, IACs exist for the six most commonly used enterprise identifiers. These IACs are “0 through 9” for the GS1 Company Prefixes assigned by GS1³⁵, “LB” for ANSI T1.220 numbers, “UN” for the DUNS assigned by Dun & Bradstreet, “D” for the CAGE assigned by Allied Committee 135, “LH” for the EHIBCC assigned by the European Health Industry Business Communications Council, and “LD” for the Department of Defense Activity Address Code (DoDAAC).

³⁴ Each of the UII’s three component data elements, less the IAC, is separately encoded within the data matrix symbol.

³⁵ GS1 was formerly EAN.UCC. Both brand names may be encountered in reference to GS1 System standards, specifications and related terminology during an indeterminate transition period.

Issuing Agency Code	Issuing Agency	Enterprise Identifier
0 - 9	GS1 Global Office ³⁶	GS1 Company Prefix
LB	Telcordia Technologies, Inc	ANSI T1.220
UN	Dun & Bradstreet	DUNS
D	Allied Committee 135	CAGE
LH	European Health Industry Business Communications Council	EHIBCC
LD	Department of Defense	DoDAAC

Table 3. Issuing Agency Codes

INCLUDING UNIQUE ITEM IDENTIFIER (UII) DATA ELEMENTS ON AN ITEM

Derivation of the Concatenated UII

The concatenated UII for an item can be derived from the data elements included on the item by using a business rule (See Appendix C). The automatic identification technology (AIT) device³⁷ machine-reads the data elements on the item and can output the concatenated³⁸ UII. Therefore, it is not necessary to include the concatenated UII on the item as a separate data element. It is only required that the data elements required to derive the concatenated UII (enterprise identifier, serial number and, for Construct #2 additionally, original part, lot or batch number) be included on each item.³⁹ The UII component data elements, at a minimum, shall be contained in a Data Matrix ECC 200 symbol encoded in the syntax of

³⁶ Formerly EAN-International.

³⁷ Such devices are readers, scanners and interrogators.

³⁸ Concatenate means to link together in a series or chain.

³⁹ Specific data qualifiers are permitted for concatenated UIIs in a single data element. See Appendix D, Table 5.

ISO/IEC 15434 and using the semantics of ISO/IEC 15418⁴⁰ or ATA Common Support Data Dictionary (CSDD). Data may also be contained in human-readable information and/or other AIT media (e.g., contact memory buttons, linear bar codes, radio frequency identification, etc.) in addition to the Data Matrix ECC 200 symbol. Table 4 shows how the UII is constructed from the data elements placed on the item and the business rule. When deriving the concatenated UII, the data qualifiers are omitted from the concatenated UII.

	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, GS1). The IAC can be derived from the data qualifier for the enterprise identifier and is not separately 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 4. Unique Item Identifier (UII) Construct Business Rule

Thus, there are two constructs for determining the concatenated UII for an item, depending upon whether the enterprise serializes items within the enterprise identifier or within the original part, lot or batch number. Although not used to determine the concatenated UII, other data elements, such as the current part number, may also be placed on the item. It may be beneficial for an enterprise to select one of the two constructs for

⁴⁰ See Appendix D, The Mechanics of Unique Item Identification, for a detailed explanation of encoding the Data Matrix. The full titles of the standards are: ISO/IEC International Standard 15434, Information Technology–Syntax for High Capacity Automatic Data Capture Media and ISO/IEC International Standard 15418, Information Technology–EAN/UCC Application Identifiers and FACT Data Identifiers and Maintenance (Note that ISO/IEC 15418 refers the user to ANS MH10.8.2 for technical content.)

exclusive use, rather than attempting to use both constructs within the same enterprise identifier.

Concatenated UII Derivation Process

Figure 4 depicts how the UII for an item is derived and the business rule for generating the UII from the data elements placed on the item⁴¹. The AIT reader device will machine-read the data elements and output the concatenated UII for onward transmission to the appropriate automated information system (AIS). The decisions of which construct to use (see Table 4) to uniquely identify items, and use of the data qualifiers and associated business rules, are made by the enterprise assigning serialization to the item.

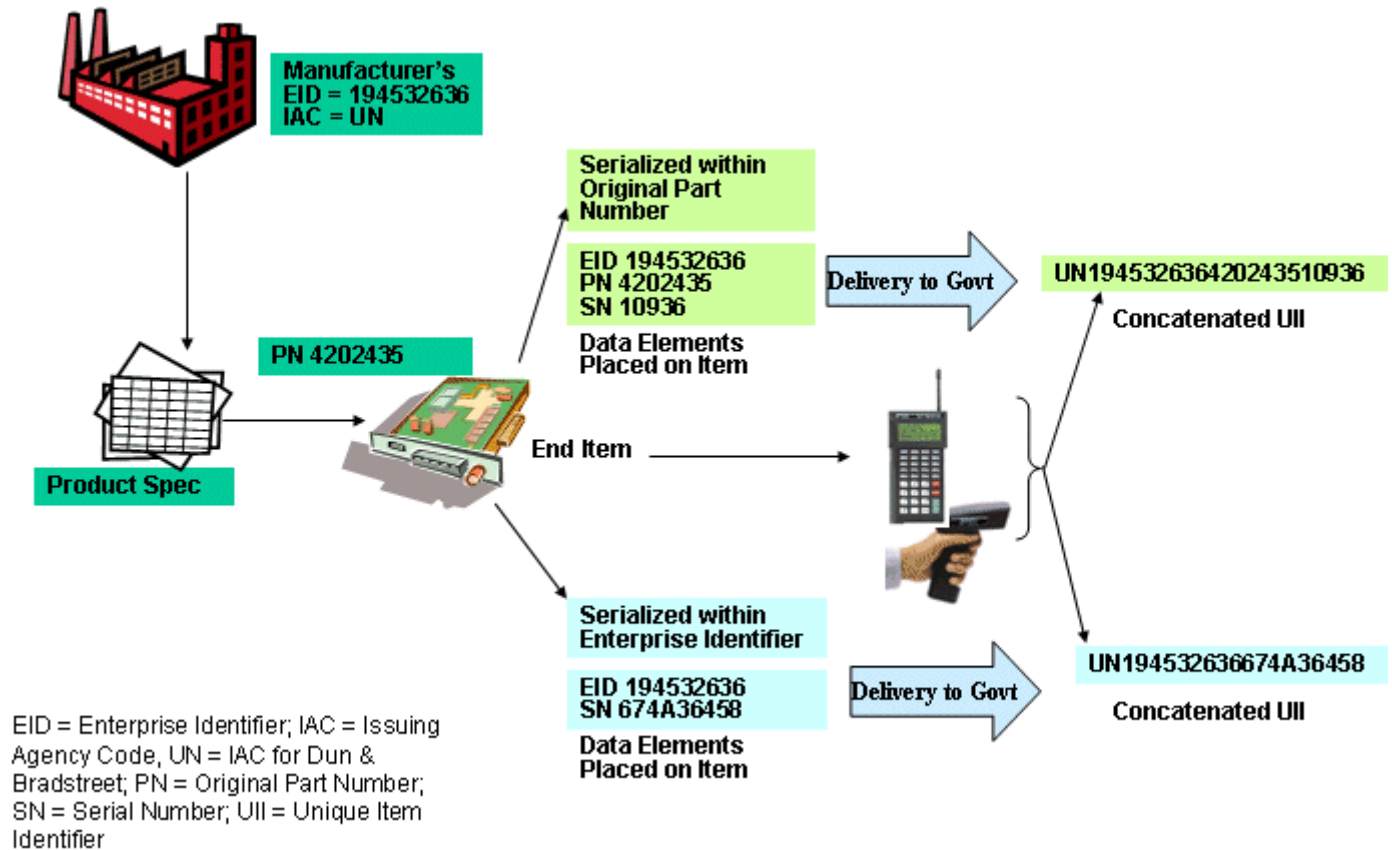


Figure 4. Concatenated UII Determination Process

⁴¹ The identification of the agency issuing the enterprise identifier, or the issuing agency code (IAC), is derived by the AIT device from the data qualifier for the enterprise identifier. The IAC is not placed on the item.

Deciding Where to Place Data Elements for Item Unique Identification on Items

The UII data elements (enterprise identifier, serial number and, for Construct #2 only, original part, lot or batch number) will be placed on qualifying items in accordance with the standard practice of MIL-STD-130, Identification Marking of U.S. Military Property. Commercial-off-the-shelf items that qualify for IUID marking, which are incorporated into end items, will be marked so that a concatenated UII can be derived.

DoD IUID EQUIVALENTS

Generally, a commercial identifier can be considered for use as a DoD IUID equivalent⁴² 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, lot or batch number, (3) Must have an existing Data Identifier (DI) or Application Identifier (AI) listed in ANS MH10.8.2, Data Identifier and Application Identifier Standard. In addition, the item marks must comply with Business Rule #14 for Data Matrix ECC 200 symbol marking and Business Rule #17 which requires that DoD IUID equivalents comply with the IUID minimum data carrier requirements.

The DoD recognizes four commercial unique identifiers as item unique identification equivalents. They are:

1. Global Individual Asset Identifier (GIAI) for serially-managed assets.
2. Global Returnable Asset Identifier (GRAI) for returnable assets which must contain a unique serial number for DoD IUID equivalent application. Other variations of the GRAI are unacceptable.
3. ISO Vehicle Identification Number (VIN) for vehicles.
4. Electronic Serial Number (ESN) for cellular telephones only.

Compliant Unique Item Identifier

For DoD purposes, a compliant UII is either a Construct #1, Construct #2, Global Individual Asset Identifier (GIAI), Global Returnable Asset Identifier⁴³ (GRAI), Vehicle Identification Number (VIN), or Electronic Serial Number ((ESN), for cell phones only), whose data element(s) are encoded in a Data Matrix ECC200 symbol using the ISO/IEC 15434 syntax with ISO/IEC 15418 or ATA CSDD semantics.

⁴² Subject to DoD approval.

⁴³ The Global Returnable Asset Identifier (GRAI) must contain a unique serial number for DoD IUID equivalent application. Other variations of the GRAI are unacceptable for IUID.

Considerations for Suppliers

The implementation of IUID requirements means that qualifying items must be marked with machine-readable information (MRI). The Government requiring activity determines an item qualifies for unique identification if it meets the requirements of DFARS 211.274, Item Identification and Valuation. The Government requiring activity identifies these qualifying items in paragraph (c)(1) of DFARS Clause 252.211-7003. The supplier shall place UII data elements (enterprise identifier, serial number and, for serialization within the part, lot or batch number only, original part, lot or batch number) in MRI media on items requiring marking, based on the criteria provided in the latest revision of MIL-STD-130, Identification Marking of U.S. Military Property. The DoD minimum MRI requirement is the Data Matrix ECC200 symbol. It is to be applied either through labeling or direct part marking.

The implementation of part marking to uniquely identify items with MRI may require changes in the supplier's manufacturing and maintenance processes if these processes have not already been enabled to mark items with MRI. If item designs are final and do not enable MRI marking, changes to enable MRI marking must be incorporated in the engineering drawings and technical data that define the item⁴⁴. Figure 5 illustrates some considerations faced by suppliers in developing a compliant approach to DoD IUID requirements using MRI part marking.

⁴⁴ For guidelines on engineering and technical documentation changes to support IUID, see the latest version of the *Guidelines for Engineering, Manufacturing and Maintenance Documentation Requirements for Item Unique Identification (IUID) Implementation*, at <http://www.acq.osd.mil/dpap/UIID/guides.htm>.

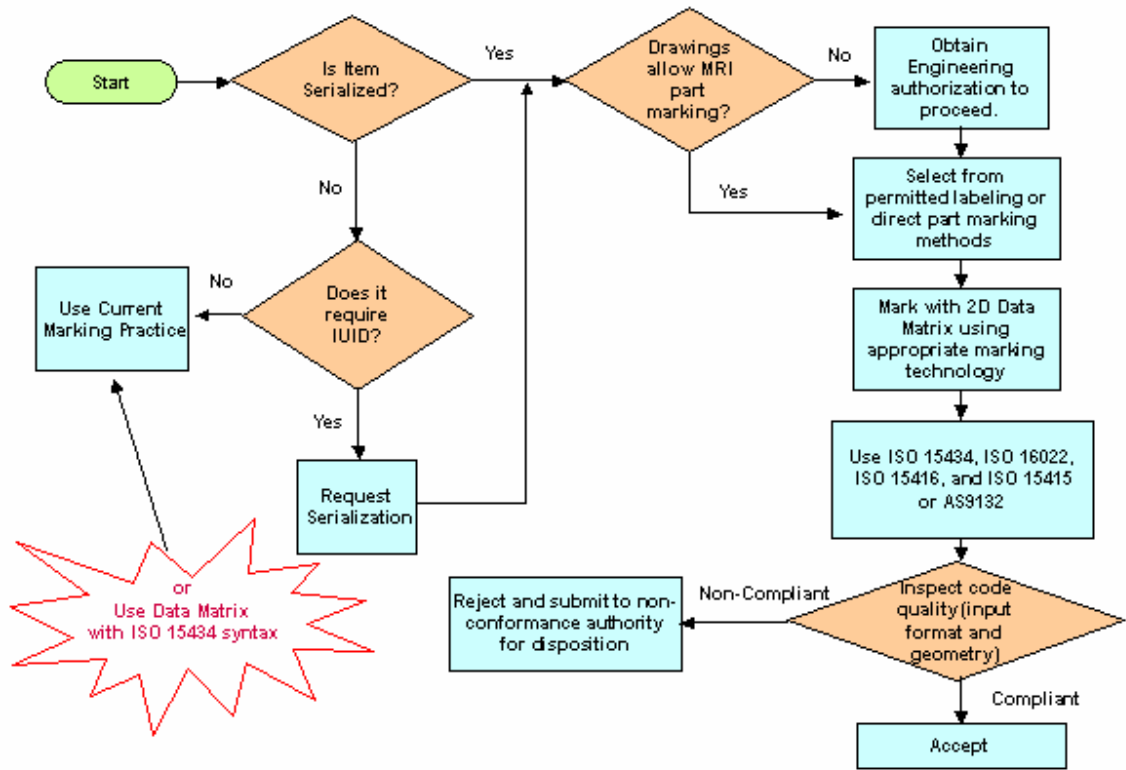


Figure 5. Supplier Considerations in Machine-Readable Information Part Marking

Deciding When to Place Data Elements on the Item to Derive the Unique Item Identifier

Strategies that produce the greatest business advantage for the items at the lowest cost and in the shortest possible time should be considered. The question of how this could be done leads to a conclusion that the probable scenario would be a mixture of *vendor-applied-at-source*, *opportunity-based*, *seek-and-apply*, and *gated* strategies⁴⁵. Requiring vendor-applied-at-source on future contracts for new equipment, major modifications, and procurements of end items and spares is important for sustainment, but has limited impact on a retrospective application program.

Vendor-Applied-at-Source

Vendor-applied-at-source provides a relatively cheap and unobtrusive application option for future purchases; however, it will not provide the speed of response necessary to successfully implement a retrospective application program for legacy items.

⁴⁵ See Ronald W. Durant and Owen R. Thompson, “Concept of Operations for AIT in an Automated Maintenance Environment for Army Weapon Systems”, Executive Summary and Report (Volume 2), AR130T1, March 2002.

Opportunity-Based Item Application

Opportunity-based, or trigger event, item application can be done in the field or factory, wherever it is convenient to gain access to items either on an end item or available in a storage facility. Projected situations or processes where a trigger event occurs include, but not limited to:

(a) Change in location where the item is taken out of service at one accountable entity and moved to another accountable entity to begin service. The item may be marked during this movement process either at the origin or destination, depending on the availability of marking equipment.

(b) Change in status where the item is taken out of service and placed in maintenance or returned to inventory. Maintenance status may include phase maintenance, scheduled servicing, depot rebuild or overhaul processes, and work-order processes during modification. The item should be marked while in maintenance or upon receipt at the inventory point.⁴⁶

(c) Change in program where the item is shifted from control of one program to another program. The item may be marked by either the losing or gaining program upon the transfer of accountability.⁴⁷

(d) Change in organizational alignment where the item is moved from the custody of one organization to the custody of another organization, such as transfer of Government property from the custodian back to the DoD. The item should be marked by the organization that is losing custody, unless there is a previous agreement with the receiving organization.

Seek-and-Apply

The seek-and-apply strategy can be used for particular items held within service, either at the end item or in storage. This strategy is dependent on establishing the location and availability of items before deployment of application equipment and teams. The location of items can be determined through the supply chain management information systems and inventory control systems. This approach is dependent upon good legacy data, and will demand greater overhead of coordinated effort to effect access to the assets. By concentrating application efforts, the advantage is faster fielding of configuration management for specific items.

⁴⁶ This also applies to contractual maintenance arrangements; but it does not apply to normal contractor maintenance and calibration efforts.

⁴⁷ This does not apply if the item is under control and accountability of the same entity.

Gated

The interception of items as they transit specific gates within the supply chain can ensure no item enters service without the data elements needed to construct a unique identification. Having identified an item at the gate which requires a unique identification, the situation can be resolved by either diverting the item back to the sender for application, provision of an application capability at the specific supply gate, or diversion of the item to a centralized application facility.

USE OF THE UNIQUE ITEM IDENTIFIERS IN AUTOMATED INFORMATION SYSTEMS

In the Service or Agency material management and supporting automated information systems (AISs) (developed or maintained in compliance with BEA requirements), once the concatenated unique item identifier (UII) is created from the separate data elements placed on the item, the concatenated UII shall not be parsed to determine the original elements, since parsing and recombination of the elements will invariably result in the introduction of errors in the concatenated UII; however the concatenated UII, the enterprise identifier, the serial number and, in the case of Construct #2, the original part, lot or batch number will be captured separately at the time of initial Government receipt and acceptance. The concatenated UII shall be a common data element for item traceability in all computational functions including inventory acceptance, item accountability, storage, issue, receipt, valuation, maintenance, and disposal.

ROLES AND RESPONSIBILITIES FOR PROPERTY RECORDS

DoD Instruction 5000.64⁴⁸ provides a comprehensive framework for DoD property accountability policies, procedures, and practices; and assists DoD property managers, accounting and financial officers, and other officials in understanding their roles and responsibilities relating to property accountability. It establishes accountability policy for property, plant, and equipment (PP&E); and contains concepts useful for asset management throughout the Department, particularly for property in the possession of individual military units and end-users. Section 5.3 addresses accountability records. It excludes property and materiel for

⁴⁸It integrates the broad requirements of the Federal Property and Administrative Services Act of 1949, as amended (Act of 30 June 1949, 63 Stat. 372), and the Chief Financial Officers (CFO) Act of 1990 into an overarching property accountability policy. Complements the accounting and financial reporting requirements contained in DoD 7000.14-R.

which accountability and inventory control requirements are prescribed in DoD 4140.1-R and DoD 4000.25-2-M.⁴⁹

⁴⁹ Military Standard Transaction Reporting and Accounting Procedures (MILSTRAP).


Appendix A - Definitions

Key Definitions

Word or Phrase	Definition	Source
Automatic identification device	A device, such as a reader or interrogator, used to retrieve data encoded on machine-readable media.	DFARS 252.211-7003
Compliant unique item identifier	For DoD purposes, a compliant UII is either a Construct #1, Construct #2, Global Individual Asset Identifier (GIAI), Global Returnable Asset Identifier ⁵⁰ (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
Concatenate	To link together in a series or chain.	Merriam-Webster Online Dictionary
Concatenated unique item identifier	<ol style="list-style-type: none"> 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 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 original part, lot or batch number. 	DFARS 252.211-7003

⁵⁰ The Global Returnable Asset Identifier (GRAI) must contain a unique serial number for DoD IUID equivalent application. Other variations of the GRAI are unacceptable for IUID.

Word or Phrase	Definition	Source
Controlled inventory	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.	DoD 4140.1-R DoD 4100.39-M
Custodian	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
Data carrier	The medium selected to record, transport or communicate data. For item unique identification purposes, the data carrier is the Data Matrix symbol.	The American Heritage Dictionary

Word or Phrase	Definition	Source
Data Matrix	<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 item marking applications using a wide variety of printing and marking technologies. The data matrix symbol looks like this:</p>  <p>The Data Matrix ECC 200 which uses Reed-Solomon error correction is the specified symbol for UII.</p>	ISO/IEC 16022 Information technology - International Symbology Specification - Data Matrix
Data qualifier	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.	DFARS 252.211-7003
DoD item unique identification ⁵¹	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 ⁵² . The Data Matrix contents may be either a Unique Item Identifier (Construct #1 or Construct #2) or a DoD recognized IUID equivalent.	DFARS 252.211-7003

⁵¹ Formerly known as DoD unique item identification.

⁵² Text Element Identifiers are taken from the Air Transport Association Common Support Data Dictionary.

Word or Phrase	Definition	Source
DoD serially managed items	<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 number⁵³</p>	DUSD (Logistics & Material Readiness) Memorandum, September 4, 2002, Serialized Item Management
DoD recognized unique identification equivalent	<p>A unique identification method for items that is in commercial use and has been recognized by DoD. The IUID equivalents are the Global Individual Asset Identifier (GIAI), Global Returnable Asset Identifier⁵⁴ (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 ECC 200 symbol encoded with ISO 15434 syntax and semantics of ISO 15418 in order to be compliant with DoD IUID policy.</p>	DFARS 252.211-7003
Enterprise	The entity (e.g., a manufacturer or vendor) responsible for assigning unique item identifiers to items.	DFARS 252.211-7003

⁵³ 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.

⁵⁴ The Global Returnable Asset Identifier (GRAI) must contain a unique serial number for DoD IUID equivalent application. Other variations of the GRAI are unacceptable for IUID.

Word or Phrase	Definition	Source
Enterprise identifier	A code that is uniquely assigned to an enterprise by a registered issuing agency.	DFARS 252.211-7003
Equipment	<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>	DoD 4140.1-R
Innate serialized identity	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.	Adapted from the definition of “innate” and “serial” in the American Heritage Dictionary and the definition of “unique item identifier” listed below.
Issuing agency	An organization responsible for assigning a non-repeatable identifier to an enterprise (i.e., Dun & Bradstreet's Data Universal Numbering System (DUNS) Number, GS1 (formerly Uniform Code Council (UCC)/EAN International (EAN)) Company Prefix, or Allied Committee 135 Commercial and Government Entity (NCAGE/CAGE) Code).	DFARS 252.211-7003
Issuing agency code	A code that designates an agency with authority to issue unique enterprise identifiers.	DFARS 252.211-7003

Word or Phrase	Definition	Source
Item	A single hardware article or unit formed by a grouping of subassemblies, components, or constituent parts.	DFARS 252.211-7003
Item essentiality	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.	DoD 4140.1-R AP1.1.65
Item identification	Sufficient data to establish the essential characteristics of an item that give the item its unique character and differentiate it from other supply items.	DoD 4140.1-R AP1.1.66
Legacy items	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)
Lot/Batch number	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.	DFARS 252.211-7003
Machine-readable media	An automatic information technology media, such as bar codes, contact memory buttons, radio frequency identification, or optical memory cards.	DFARS 252.211-7003
Marking	The application of legible numbers, letters, labels, tags, symbols, or colors to ensure proper handling and identification during shipment and storage.	DoD 4140.1-R
Military Mission Essentiality	A code indicating the composite effect of an item on the overall military mission based on the most critical significant application of the item. It shall be used in determining resource allocations, determining degree of management intensity, and communicating essentiality among the DoD Components.	DoD 4140.1-R

Word or Phrase	Definition	Source
Operating materials and supplies	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. (See FMR, Volume 4, Chapter 4, Operating Materials and Supplies and Stockpile Materials, January 1995.)	DoD 7000.14-R
Original part number	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.	DFARS 252.211-7003
Parent item	The item assembly, intermediate component or subassembly that has an embedded item with a unique item identifier or DoD recognized unique identification equivalent.	DFARS 252.211-7003
Personal property	Property of any kind or any interest therein, except real property.	JCS DoD Dictionary
Pilferable items	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)	DoDI 5000.64 E2.1.12.3 DoD 4100.39-M
Property accountability record	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.	DoD 4140.1R AP1.1.111
Registration authority	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.	DFARS 252.211-7003 ISO/IEC 15459

Word or Phrase	Definition	Source
Sensitive items	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)	DoDI 5000.64 E2.1.12.2
Serialization within the enterprise identifier	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.	DFARS 252.211-7003
Serialization within the part, lot or batch number	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.	DFARS 252.211-7003

Word or Phrase	Definition	Source
Unique item identifier	<p>The unique item identifier (UII) is defined in two separate contexts:</p> <ol style="list-style-type: none"> 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). 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 concatenated 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). 	DFARS 252.211-7003
Unique item identifier type	<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 http://www.acq.osd.mil/dpap/UII.</p>	DFARS 252.211-7003
Unit acquisition cost	<ol style="list-style-type: none"> 1. For fixed-price type line, subline, or exhibit line items, the unit price identified in the contract at the time of delivery; and 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. 	DFARS 252.211-7003
Virtual unique item identifier	<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 - Where Does the Guidance Exist Today?

Document Reference	Document Name
DFARS 252.211-7003	Defense Federal Acquisition Regulation Supplement
MIL-STD-129	Military Marking for Shipment & Storage
MIL-STD-130	Identification Marking of US Military Property
DoD 4140.1-R	DoD Supply Chain Material Management Regulation
DoDI 5000.2	Operation of the Defense Acquisition System
DoDI 5000.64	Defense Property Accountability
DoD 7000.14-R	Financial Management Regulations
CJCSI 3170.1C	Requirements Generation System
DCMA One Book	DCMA reference material for contractors
DoD MIL-HDBK-61A (SE)	Configuration Management Guidance
EIA Standard 836	Configuration Management Data Exchange & Interoperability
ANSI/EIA 649	National Consensus Standard for Configuration Management
ISO/IEC 15418	Information technology—EAN/UCC Application Identifiers and FACT Data Identifiers and Maintenance
ISO/IEC 15434	Information technology—Transfer Syntax for High Capacity ADC Media
ISO/IEC 15459-2	Information technology—Part 2: Registration Procedures
ISO/IEC 16022	Information technology—International symbology specification — Data Matrix
ISO/IEC 15415	Information technology—Automatic identification and data capture techniques—Bar code print quality test specification — Two-dimensional symbols
SAE AS9132	Data Matrix (2D) Coding Quality Requirements for Parts Marking
ATA CSDD	Common Support Data Dictionary
ANS MH10.8.2	Data Identifier and Application Identifier Standard
<i>These documents may have been revised since publication of this guide. Check for the latest version of the reference.</i>	

Appendix C - Business Rules (Version 3.5c)

WHAT ARE BUSINESS RULES?

A Business Rule is a statement that defines or constrains some aspect of the business. It is intended to assert business structure or to control or influence the behavior of the business. Typical Business Rules include definitions of terms, facts relating terms to each other, constraints, and derivations.

IUID BUSINESS RULES

The following section includes the Business Rules for IUID. The Business Rules for IUID are divided into the following implementation categories:

- Contracts and Administration
- Accounting and Finance
- Unique Item Identifier (UII) Construction and Physical Marking for:
 - Items considered part of a new solicitation after January 1, 2004 (i.e., New Items)
 - Items existing under contract, in operational use, or in inventory (i.e., Legacy Items)
 - Items considered tangible personal property owned by the Government in possession of a contractor after January 1, 2005 (i.e., Property Management Items)
- Automated Information System (AIS) Technical Interface

As the IUID implementation progresses, the UID Joint Requirements Implementation Board (JRIB) fully anticipates that there will be additions to these Business Rules and possibly slight modifications. The IUID Business Rules should be considered a work in progress that may not be finalized until the IUID effort is fully implemented.

CONTRACTS AND ADMINISTRATION

1. Within the same Contract Line Item Number (CLIN), there is no need for a contractor to segregate the same items delivered against different Accounting Classification Reference Numbers (ACRN).
2. For FAR Part 12 contracts and subcontracts:
 - o The Government can mark the item, or
 - o The Government can request the contractor mark the item.
3. Foreign Military Sales (FMS) contracts are not exempt from IUID.

UII CONSTRUCTION AND PHYSICAL MARKING

Items considered part of a new solicitation

Creating and Generating the Concatenated Unique Item Identifier

1. The concatenated UII shall be derived from its discrete, component data elements. The concatenated UII is not required to be marked on the item as a separate data element.
2. 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.
3. Data qualifiers (semantics) will define each machine-readable data element marked on the item.⁵⁵
4. If an enterprise serializes items within the enterprise identifier, the concatenated UII shall be derived by combining the following data elements, in order:
 - The issuing agency code (IAC), which shall be derived from the data qualifier for the enterprise identifier if it is not already provided⁵⁶
 - The enterprise identifier, which shall be marked on the item
 - The serial number, which shall be marked on the item
(*Note: This is referred to as UII Construct #1.*)
5. If an enterprise serializes items within original part, lot or batch numbers, the concatenated UII shall be derived by combining the following data elements, in order:

⁵⁵ See the *DoD Guide to Uniquely Identifying Items (Appendix D)* for a list of IUID data qualifiers.

⁵⁶ Enterprise identifiers that are assigned by GS1 contain the IAC prefix. The IAC should not be repeated when forming the concatenated UII.

- The IAC, which shall be derived from the data qualifier for the enterprise identifier if it is not already provided⁵⁷
 - The enterprise identifier, which shall be marked on the item
 - The original part, lot or batch number, which shall be marked on the item
 - The serial number, which shall be marked on the item
(Note: This is referred to as UII Construct #2.)
6. The IAC shall be derived from the data qualifier for the enterprise identifier if it is not already provided⁵⁸. The IAC is not required to be separately marked on the item.⁵⁹
 7. A specific set of data qualifiers will identify which UII Construct should be used to build the concatenated UII or if the concatenated UII is already marked on the item.⁶⁰
 8. If UII Construct #2 is used, the enterprise must maintain the original part number on the item for the life of the item.
 9. The enterprise is responsible for ensuring that the serial number is unique within the enterprise identifier (for UII Construct #1) or unique within the original part, lot or batch number (for UII Construct #2).
 10. The enterprise is responsible for ensuring that the original part number is not duplicated within the enterprise. If the lot /batch number is used to create the UII then the combination of the lot/batch and serial number must be unique within the enterprise.
 11. The concatenated UII will not change over the life of the item. Therefore, the component data elements of the concatenated UII will not change over the life of the item.
 12. The enterprise identifier of the enterprise that assigned the serial number to the item is the only enterprise identifier in the UII machine-readable code that can use a UII data qualifier for enterprise identifier. Other enterprise identifiers may be contained within the machine-readable code as long as they do not use an EID data qualifier from Table 5.
 13. Data elements not required to construct the concatenated UII shall remain discrete but may be contained within the same mark or media as the UII-required elements, as long as all the data elements contained in the mark or media are properly identified with a data qualifier. The UII data elements should appear first in the sequence.
 14. The UII component data elements, at a minimum, shall be contained in a Data Matrix ECC 200 symbol, as required by the latest revision of MIL-STD-130.⁶¹

⁵⁷ See footnote 56.

⁵⁸ See footnote 56.

⁵⁹ See the *DoD Guide to Uniquely Identifying Items (Table 3)* for a list of IACs.

⁶⁰ See the *DoD Guide to Uniquely Identifying Items (Appendix D)* for more details on these data qualifiers.

⁶¹ See *MIL-STD-130* for additional information on DoD-approved data carriers.

Data may also be contained in human-readable information and/or other AIT media (e.g., contact memory buttons, linear bar codes, radio frequency identification, etc.) in addition to the Data Matrix. The physical marks that contain the UII-required elements shall remain legible until the item is destroyed.

15. Where space is available, human readable information for UII data elements should be marked on the item.
16. High capacity Automatic Identification Technology (AIT) media shall utilize DoD-accepted syntax.
17. There are identification numbers used in the commercial sector that will be considered IUID equivalents. IUID equivalents shall comply with the IUID Business Rule #14 for minimum data carrier requirements.⁶²

Parent-Child Relationships

18. DFARS 211.274-2(a)(4) requires the unique identification, regardless of value, of (i) any DoD serially managed subassembly, component, or part embedded within a delivered item and, (ii) the parent item that contains the embedded subassembly, component or part. For purposes of complying with this requirement, the parent item for the embedded item UII or DoD recognized IUID equivalent will be the higher assembly, intermediate component or subassembly that is itself DoD serially managed.

Metadata Requirements

19. The concatenated UII is a non-parsable field, not to exceed 78 characters in length. Overhead characters, such as syntax and data qualifiers, are eliminated from the string when the concatenated UII is constructed. The source protocols for specific data qualifiers may be more restrictive than the allowable field lengths of these rules. Refer to ANS MH 10.8.2 for AIs and DIs, and to ATA CSDD for TEIs, for specific limitations on field lengths and usage.⁶³
 - The IAC string of characters will not exceed 3 characters.
 - The enterprise identifier string of characters will not exceed 13 characters, excluding the data qualifier.
 - The original part, lot or batch number string of characters (including special characters) will not exceed 32 characters, excluding the data qualifier.

⁶² See the *DoD Guide to Uniquely Identifying Items* for a list of approved IUID equivalents.

⁶³ For example, serial number strings are not to exceed 30 characters however DI S is unlimited in field length, AI 21 is limited to 20 characters, and TEI SER is limited to 15 characters in accordance with their respective protocols.

- The serial number string of characters (including special characters) will not exceed 30 characters, excluding the data qualifier.⁶⁴
 - The sum of the maximum number of characters for possible concatenated UII data elements is 78. The use of shorter field lengths is encouraged for original part, lot or batch numbers and serial numbers where feasible.
20. The concatenated UII string of data must have worldwide uniqueness (non-repeatable).
21. When constructing the concatenated UII:
- Any spaces contained in the component data elements will be deleted
 - All special characters will be deleted from the enterprise identifier
 - All special characters, except for dashes (-) and forward slashes (/) will be deleted from the original part number and serial number
 - The concatenated UII may only contain uppercase English alphabet characters A through Z, numeric characters 0 through 9, and the special characters “-” and “/”

Capturing the Unique Item Identifier

22. For activities after initial delivery, in support of the product life cycle, any entity that collects data about the item must be capable of associating the data with the concatenated UII in accordance with program requirements.
23. If the UII data matrix symbol is unreadable and other AIT media is present, these can be used in a back-up mode to derive the UII. If only the human readable data qualifiers and data elements are adjacent to the symbol, the data elements shall be manually input to derive the concatenated UII using existing Business Rules.
24. Discovery of a duplicate concatenated UII will occur when the Government attempts to register the concatenated UII in the IUID Registry. If a true duplicate exists, the Government will work with the appropriate enterprise(s) to resolve the duplication.
25. In a database, once the concatenated UII is derived, it shall not be parsed to determine the original elements.
26. A database shall be capable of using the concatenated UII or the combination of its component data elements to retrieve the data record associated with the item represented by the concatenated UII.

⁶⁴ Leading zeroes in serial numbers are significant characters in the serial number string and in the concatenated UII. Avoiding the use of leading zeroes when creating serial numbers may preclude errors in data entry or data processing applications that do not recognize significant leading zeroes.

Using the Unique Item Identifier

27. The concatenated UII shall not be transferred from one item to another item once assigned and shall not be reused.

Items in operational use or in inventory

28. If an item is missing data elements required to construct the concatenated UII, use the following Rules to create substitute numbers:
 - If the enterprise identifier is missing, use the enterprise identifier of the activity that will physically mark the item. The serial number must comply with Rule #9.
 - If the original part, lot or batch number is missing or cannot be determined, obtain a part, lot or batch number from the in-service engineer or other appropriate authority. (See Business Rule #30)
 - If the serial number is missing, assign a serial number locally or centrally. In this case, the enterprise identifier for the item must be changed to represent the activity that assigned the serial number. The serial number must comply with Rule #9.
29. For legacy items that cannot be uniquely identified using UII Construct #1 or #2 or a DoD recognized IUID equivalent (serialization was not unique within enterprise identifier or original part, lot or batch number), re-serialization to conform to Construct #1 or #2 is preferred.
30. If the original part, lot or batch number cannot be precisely determined, use the following method for establishing an original part, lot or batch number for the purposes of building the concatenated UII:
 - First, use the part, lot or batch number at the time of acquisition, if it can be determined.
 - Second, use the part, lot or batch number marked on the part at the time the UII is created.

Although this may result in the current part, lot or batch number being used as the original part, lot or batch number, the data qualifier for the UII data element must be the original part, lot or batch number (i.e., 1P, PNO, 01, 1T, LTN, LOT, BII, or 10). If the lot /batch number is used to create the UII then the combination of the lot/batch and serial number must be unique within the enterprise. See Business Rule #10.

31. If the item is unidentifiable, a concatenated UII should not be assigned.
32. Once the contract is modified to include the IUID requirements:
 - If the contract is for delivery of new items to the Government, follow IUID Business Rules for items considered part of a new solicitation.

- If the contract is for support involving existing inventory items, the Program Manager will determine whether to follow existing Business Rules for new solicitations, items under contract, items in existing inventory, or some combination thereof.

Items considered tangible personal property owned by the Government in the possession of a contractor

33. Tangible personal property items owned by the Government in the possession of a contractor may use the asset identification number used to track the item as the item's serial number within enterprise identifier.
34. Tangible personal property items owned by the Government in the possession of a contractor will use the enterprise identifier of the enterprise maintaining the serial number of the item.
35. A concatenated UII should be created for tangible personal property items owned by the Government in the possession of a contractor by using UII Construct #1, Construct #2, or a DoD recognized IUID equivalent.
36. A UII is not required to be physically marked on tangible personal property items owned by the Government in the possession of a contractor unless the item is moved or delivered to a different location with a different enterprise identifier.⁶⁵
37. Tangible personal property initially furnished to the contractor by the Government will use the UII provided by the Government. If none is provided, establish a UII using the criteria in Rules 33-35.
38. Tangible personal property will also require markings or labels indicating Government ownership.

⁶⁵ For instructions on assignment of virtual UIIs, see the the latest version of the *DoD Guidelines for the Virtual Unique Item Identifier*, available at <http://www.acq.osd.mil/dpap/UID/guides.htm>.

Appendix D -The Mechanics of Item Unique Identification

STRUCTURING THE DATA ELEMENTS FOR ITEM UNIQUE IDENTIFICATION

This Appendix explains how data elements are currently structured using semantics and syntax. The concepts of semantics and syntax, which are used to identify and structure data so it can be read by any AIT device, are explained. Examples of current structures in industrial use are presented for American National Standard (ANS) MH 10.8.2 Data Identifiers (Tables 6 and 7) and GS1⁶⁶ Application Identifiers (Tables 8 and 9). The historic use of Air Transport Association Common Support Data Dictionary Text Element Identifiers (TEIs) is discussed. Since Data Identifiers (ISO/IEC 15434 Format 06) and Application Identifiers (ISO/IEC 15434 Format 05) are already approved by ISO, they are compliant with the collaborative solution. Tables 10, 11 and 12 represent how TEIs would be used in the collaborative solution.

Semantics

For the unique item identifier (UII) data elements to be “machine-readable” by any AIT device, they must be identified by some means such that the reader device can recognize, through its resident software, what data element it is reading. This is accomplished by employing the concept of “semantics”, which is literally “the meaning of language”. For the purposes of constructing machine-readable data elements, semantics take the form of data qualifiers. These data qualifiers⁶⁷ have to define each data element placed on the item. Specific data qualifiers are used to tell the AIT devices whether to derive the unique identification by using Construct #1, Construct #2, an already constructed UII format, or an IUID Equivalent. Table 5 shows the different data qualifiers for each of the data elements that are used for determining uniqueness.

⁶⁶ Formerly EAN.UCC.

⁶⁷ There are three types of data qualifiers being used: Data Identifiers (DIs) (Format 06), Application Identifiers (AIs) (Format 05), and, within the aerospace industry, Text Element Identifiers (TEIs). ISO/IEC International Standard 15418, Information Technology–EAN/UCC Application Identifiers and FACT Data Identifiers and Maintenance, governs DIs and AIs. Air Transport Association (ATA) Common Support Data Dictionary (CSDD) defines TEIs. ISO/IEC International Standard 15434, Information Technology–Syntax for High Capacity Automatic Data Capture Media, contains formats for using DIs and AIs in syntax encoding. DoD has submitted a request to add TEIs to ISO/IEC 15434.

Data Element	DI (Format 06) ISO/IEC 15434	AI (Format 05) ISO/IEC 15434	TEI ATA CSDD
Enterprise Identifier CAGE/NCAGE DUNS GS1 Company Prefix DoDAAC Other Agencies	 17V 12V 3V 7L 18V ⁶⁸	 95	 CAG, MFR or SPL ⁶⁹ DUN EUC
Serial Number within Enterprise Identifier			SER or UCN ⁷⁰
Serial Number within Original Part Number	S	21	SEQ
Original Part Number	1P	01	PNO
Lot/Batch Number	1T	10	LOT, LTN or BII
Concatenated UIIs	25S ⁷¹ I ⁷² 22S ⁷³	8002 ⁷⁴ 8003 ⁷⁵ 8004 ⁷⁶	UID
UII not including the IAC (CAGE + Serial Number within CAGE)	18S ⁷⁷		USN or UST ⁷⁸
Current Part Number⁷⁹	30P	240	PNR

Table 5. Data Qualifiers

⁶⁸ Data identifier 18V is the concatenation of the Issuing Agency Code (IAC) + Enterprise Identifier (EID). This data identifier would be used for all other EIDs, which were assigned by an issuing agency that has an assigned IAC but does not have their own specific EID data identifier.

⁶⁹ MFR – Manufacturer CAGE Code. Identifies the manufacturer, government agency or other organization controlling the design and the part number assignment of the subject part. SPL – Supplier CAGE Code. Identifies the organization assigning a Unique Component Identification Number (UCN), where the organization is not the manufacturer, government agency, or other organization controlling the design of the serialized component.

⁷⁰ SER – Part Serial Number (Serial Number within Enterprise). The SER is the manufacturer’s serialized identity for an individual part, component or component end item. UCN – Unique Component Identification Number. The UCN is the permanent tracking identity assigned to an in-service part in lieu of the manufacturer’s serial number.

⁷¹ 25S is a data identifier defined as the identification of a party to a transaction (as identified by data identifier 18V), followed by a supplier assigned serial number (For UII purposes, this has to be unique serialization within the EID that assigns the UII data elements). Thus, for UII purposes, 25S must represent the following string of concatenated elements – IAC + EID + Unique serial number within the EID, which directly corresponds to a concatenated UII using Construct #1.

⁷² DI I identifies a U. S. Vehicle Identification Number – VIN.

⁷³ DI 22S identifies a cellular mobile telephone electronic serial number.

⁷⁴ AI 8002 identifies a cellular mobile telephone electronic serial number.

Syntax

The machine-readable symbology for UII is the Data Matrix ECC 200 (ISO/IEC 16022), which uses Reed-Solomon error correction. The symbol is a two-dimensional representation of ASCII characters. To permit translation of the encoded string of ASCII characters, the characters are ordered according to the precise rules of ISO/IEC International Standard 15434, Information Technology–Syntax for High Capacity ADC⁸⁰ Media—the “syntax.”⁸¹ Each data string is assembled beginning with a message header consisting of the compliance indicator and a record separator. The compliance indicator is the ASCII code for the three characters [,), and > which are assembled in that order—[>]. The record separator that follows the compliance indicator is also an ASCII-coded character but it does not have a printable representation. The convention for depicting the record separator uses R_S to represent the single ASCII-coded character. Because the record separator also appears at the end of the formatted data in the data string, it is known as the format trailer character. There are two other ASCII-coded characters that are used in UII encoding that do not have printable representations. They are the data element separator— G_S —and the message trailer character— E_{OT} . The hexadecimal and decimal codes for ASCII encoding for R_S , G_S and E_{OT} can be obtained from ISO/IEC 15434.

The message header is followed by a two-character format code to identify the semantics of the formatted data elements. The format code, the data qualifiers and the data values in the remainder of the data string are separated using the data element separator— G_S —between each element of the formatted data. The formatted data is terminated using the format trailer character— R_S —after the last data element, and the data string is terminated using the message trailer character— E_{OT} —to indicate the end.

⁷⁵ AI 8003 identifies a GRAI.

⁷⁶ 8004 is the application identifier for the Global Individual Asset Identifier (GIAI). The GIAI is up to 30 characters and is a combination of the GS1 Company Prefix and an Individual Asset Reference, which is assigned by the holder of the GS1 Company Prefix.

⁷⁷ In the case where the EID is the CAGE Code, data identifier 18S may be used. 18S is defined as the concatenation of the CAGE Code (EID) + Unique serial number within the CAGE Code. This is UII Construct 1. This data element does not contain the IAC, which must be added.

⁷⁸ USN – The concatenation of MFR + SER. UST – The concatenation of SPL + UCN. These elements do not contain the IAC, which must be added.

⁷⁹ The current part number is not part of the UII. It is an additional data element that may be encoded in the ISO 15434 syntax and placed on the item in a separate data matrix symbol, or, in the case of severe space limitations, it may be encoded in the same data matrix along with the UII data elements (see MIL-STD-130).

⁸⁰ ADC – Automatic Data Capture.

⁸¹ Syntax—the way words are put together to form constructions, such as phrases and sentences. This standard defines the manner in which the data is transferred to the high capacity ADC media from a supplier’s information system and the manner in which the data is transferred to the recipient’s information system.

The Mechanics of Unique Item Identification

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 define the unique identification for the item.

Figure 6 shows how the concatenated UII is constructed within Format Codes 05, 06 and DD with the various data qualifiers. High capacity AIT devices shall conform to ISO/IEC 15434. This is crucial to unique item identification, since the process of identifying and concatenating the data elements must be unambiguous⁸².

⁸² Enterprises may have a mark on the item such as a design authority, etc., but that mark will need a different enterprise identifier (EID) data qualifier than the EID data qualifier used for the UII. See business rule number 12 in Appendix C.

	Required Data Elements	Resultant Concatenated UII
Format Code 05 <i>Construct 1</i> <i>(use UII equivalents)</i> <i>Construct 2</i>	8004 8003 8002 01 & 21 95, 10 & 21	Constructed UII equivalent (GIAI) Constructed UII equivalent (GRAI) Constructed UII equivalent (ESN) 01 + 21 95 + 10 + 21
Format Code 06 <i>Construct 1</i> <i>Construct 2</i>	18S 25S 22S I 3V, 1P & S 17V, 1P & S 12V, 1P & S 7L, 1P & S 18V, 1P & S <i>Substitute 1T in place of 1P if serialization within the lot/batch number applies</i>	D + 18S 25S Constructed UII equivalent (ESN) Constructed UII equivalent (VIN) 3V + 1P + S D + 17V + 1P + S UN + 12V + 1P + S LD + 7L + 1P + S 18V + 1P + S
Format Code DD <i>Construct 1</i> <i>Construct 2</i>	MFR & SER CAG & SER DUN & SER EUC & SER SPL & UCN CAG & UCN DUN & UCN EUC & UCN USN UST UID MFR , PNO & SEQ CAG , PNO & SEQ DUN , PNO & SEQ EUC , PNO & SEQ SPL , PNO & SEQ <i>Substitute LOT , LTN or BII in place of PNO if serialization within the lot/batch number applies</i>	D + MFR + SER D + CAG + SER UN + DUN + SER EUC + SER D + SPL + UCN D + CAG + UCN UN + DUN + UCN EUC + UCN D + USN D + UST UID D + MFR + PNO + SEQ D + CAG + PNO + SEQ UN + DUN + PNO + SEQ EUC + PNO + SEQ D + SPL + PNO + SEQ

Figure 6. Concatenated Unique Item Identifier (UII) Construction

EXAMPLES OF SEMANTICS AND SYNTAX CONSTRUCTIONS FOR ITEM UNIQUE IDENTIFICATION

Using ANS MH 10 Data Identifiers

Construct #1 – Serialization within the Enterprise Identifier. Table 6 shows an example, using the data from Figure 4, of how the data elements would have to be encoded with data identifiers on the AIT media placed on or with the item for UII Construct #1.

Data Element	Data Identifier Format 06	Data Element Value	Encoded Data Element on AIT Media
Concatenated unique item identifier (including the IAC)	25S	UN077991289 674A36458	25SUN077991289 674A36458
Concatenated unique item identifier (not including the IAC)	18S	0CVA5674A3 6458	18S0CVA5674A3 6458
Enterprise Identifier DUNS CAGE	12V 17V	077991289 0CVA5	12V077991289 17V0CVA5
Serial Number within Enterprise	S	674A36458	S674A36458

Table 6. Example of the Use of Data Identifiers in Construct #1 (Format 06 of ISO/IEC 15434)

The data elements represented by the data qualifiers 12V, 17V and S are not used by the AIT device to form the concatenated UII. The data elements are required in accordance with Business Rule #2 for discrete data elements so that the enterprise identifier and serial number can be read by the AIT device without parsing the concatenated UII string or accessing the IUID Registry.

The UII data elements would be encoded as follows using Format 06 for Data Identifiers of the ISO/IEC 15434 syntax:

$[D]^R_s 06^G_s 25SUN077991289674A36458^G_s 12V077991289^G_s S674A36458^R_s E_{OT}$

or

$[D]^R_s 06^G_s 18S0CVA5674A36458^G_s 17V0CVA5^G_s S674A36458^R_s E_{OT}$

Where:

The Mechanics of Unique Item Identification

[>^R_S = The Message Header consisting of a three-character compliance indicator and the Format Trailer Character ^R_S to indicate the end of a data format envelope

06 = A Format Header which indicates Data Identifiers are being used

^G_S = A Data Element Separator used between data fields

25S = Data Identifier for the unique identification including the IAC (IAC + Enterprise Identifier + Serial Number)

18S = Data Identifier for unique identification not including the IAC and using CAGE as the Enterprise Identifier (CAGE + Serial Number)

UN077991289674A36458 = Concatenated UII including the IAC—As defined by the data identifier 25S (the IAC (UN) and DUNS Enterprise Identifier (077991289) and the Serial Number (674A36458))

0CVA5674A36458 = Concatenated UII not including the IAC—As defined by the data identifier 18S (the CAGE Enterprise Identifier (0CVA5) and the Serial Number (674A36458))

12V = Data Identifier for DUNS Code

077991289 = DUNS Code

17V = Data Identifier for CAGE Code

0CVA5 = CAGE Code

S = Data Identifier for Serial Number

674A36458 = Serial Number within the enterprise

^E_{oT} = A Message Trailer which identifies the end of the message within the data stream

When the AIT device reads the data qualifier for the enterprise identifier, it must have what agency (that is, the Issuing Agency Code) issued the enterprise identifier available in its software. The AIT device can then attach the Issuing Agency Code (IAC) to the beginning of the UII concatenation.

When the AIT device reads the data qualifier for 25S, it will recognize that the data following the 25S is a concatenated UII for Construct #1, including the IAC. When the AIT device reads the data qualifier for 18S, it will recognize that the data following the 18S is a concatenated UII for Construct #1, not including the IAC and will add the IAC for CAGE to form the full concatenated UII.

For this example using ANS MH 10.8.2 Data Identifiers in Format 06 of ISO/IEC 15434, the concatenated UII output from the AIT device, once the overhead and syntax are stripped away, would be **UN077991289674A36458** or **D0CVA5674A36458**.

Construct #2 – Serialization within the Original Part, Lot or Batch Number. Table 7 shows an example, using the data from Figure 4, of how the data elements would have to be encoded with data identifiers on the AIT media placed on or with the item for UII Construct #2.

Data Element	Data Identifier Format 06	Data Element Value	Encoded Data Element on AIT Media
Enterprise Identifier • DUNS	12V	077991289	12V077991289
Original Part Number	1P	4202435	1P4202435
Serial Number within Original Part Number	S	10936	S10936

Table 7. Example of the Use of Data Identifiers in Construct #2 (Format 06 of ISO/IEC 15434)

Recalling that the UII data elements are to be concatenated in the order Issuing Agency Code/Enterprise Identifier/Original Part, Lot or Batch Number/Serial Number for an enterprise that serializes within the part, lot or batch number, the UII data elements would be encoded as follows using Format 06 for Data Identifiers of the ISO/IEC 15434 syntax:

$$[]>^R_s 06^G_s 12V077991289^G_s 1P4202435^G_s S10936^R_s E_{oT}$$

Where:

$[]>^R_s$ = The Message Header consisting of a three-character compliance indicator and the Format Trailer Character R_s to indicate the end of a data format envelope

06 = A Format Header which indicates Data Identifiers are being used

G_s = A Data Element Separator used between data fields

12V = Data Identifier for DUNS Code

077991289 = DUNS Code

1P = Data Identifier for Part Number assigned by supplier (Original)

4202435 = Original Part Number

S = Data Identifier for Serial Number

10936 = Serial Number within original part number

E_{oT} = A Message Trailer which identifies the end of the message within the data stream

When the AIT device reads the data qualifier for the enterprise identifier, it will have what agency (that is, the Issuing Agency Code) issued the

enterprise identifier available in its software. The AIT device can then attach the Issuing Agency Code (IAC) to the beginning of the UII concatenation. In this example the IAC for Dun & Bradstreet is “UN”.

For this example using ANS MH 10 Data Identifiers in Format 06 of ISO/IEC 15434, the concatenated UII output from the AIT device, once the overhead and syntax are stripped away and the IAC has been added, would be **UN077991289420243510936**.

Using GS1 Application Identifiers

Construct #1 – Serialization within the Enterprise Identifier. When using GS1⁸³ Application Identifiers for purposes of unique identification, enterprises must use the General GS1 Specifications⁸⁴ to construct the DoD IUID equivalent or the UII data elements. Table 8 shows an example of the use of application identifiers in the context of the General GS1 Specifications for UII Construct #1.

Data Element	Application Identifier Format 05	Data Element Value	Encoded Data Element on AIT Media
Concatenated unique item identifier, including the IAC ⁸⁵	8004	06141411A0B9C3D6	800406141411A0B9C3D6

Table 8. Example of the Use of Application Identifiers for Construct #1 (Format 05 of ISO/IEC 15434)

For unique item identification, the Global Individual Asset Identifier (GIAI) is considered by the Department to be an IUID equivalent⁸⁶. The data elements considered components of the IUID equivalent (i.e., GS1 Company Prefix, Individual Asset Reference Number) are not required to be marked on the item, unless specifically required by the contract.⁸⁷

Using the General GS1 Specifications, the minimum DoD IUID equivalent data elements would be encoded as follows under Format 05 for Application Identifiers of the ISO/IEC 15434 syntax:

⁸³ Formerly EAN.UCC.

⁸⁴ See http://www.uc-council.org/ean_ucc_system/index.cfm for information about the GS1 System (formerly EAN.UCC System).

⁸⁵ Within the General GS1 Specifications, the Global Individual Asset Identifier (GIAI) is considered an IUID equivalent. The application identifier (8004) indicates that the data field contains a GIAI. The GIAI is made up of the GS1 Company Prefix and an individual asset reference number. The holder of the GS1 Company Prefix determines the structure and numbering of the individual asset reference number.

⁸⁶ A DoD recognized IUID equivalent means a unique item identification method that is in commercial use that can be used to uniquely identify DoD items that are purchased from commercial industries that use the unique identification equivalents.

⁸⁷ This is an exception to IUID Business Rule #2. See Appendix C.

$[D]>^R_s 05^G_s 800406141411A0B9C3D6^R_s E_{oT}$

Where:

$[D]>^R_s$ = The Message Header consisting of a three-character compliance indicator and the Format Trailer Character R_s to indicate the end of a data format envelope

05 = A format header which indicates application identifiers are being used

G_s = A Data Element Separator used between data fields

8004 = Application Identifier for Global Individual Asset Identifier (GIAI)

06141411A0B9C3D6 = GIAI, which is composed of the GS1 Company Prefix including the IAC as the leading character (**06141411**) and the Individual Asset Reference Number (**1A0B9C3D6**)

E_{oT} = A Message Trailer which identifies the end of the message within the data stream

For this example using Application Identifiers in Format 05 of ISO/IEC 15434, the DoD IUID equivalent output from the AIT device, using the GIAI as the IUID equivalent, stripping away the overhead and syntax, would be **06141411A0B9C3D6**⁸⁸.

Construct #2 – Serialization within the Part, Lot or Batch Number.

Table 9 shows an example of the use of application identifiers in the context of the General GS1 Specifications for UII Construct #2. In this construct, the GTIN™ is treated as the part number.

Data Element	Application Identifier Format 05	Data Element Value	Encoded Data Element on AIT Media
Part Number	01	00614141999996	0100614141999996
Serial Number	21	1A0B9C3D6	211A0B9C3D6

Table 9. Example of the Use of Application Identifiers for Construct #2 (Format 05 of ISO/IEC 15434)

Using the General GS1 Specifications, the minimum UII data elements would be encoded as follows under Format 05 for Application Identifiers of the ISO/IEC 15434 syntax:

$[D]>^R_s 05^G_s 0100614141999996^G_s 211A0B9C3D6^R_s E_{oT}$

Where:

⁸⁸ Since the IAC is the first digit of the Company Prefix, it is not necessary to add it in forming the concatenated UII.

[>^R_S = The Message Header consisting of a three-character compliance indicator and the Format Trailer Character ^R_S to indicate the end of a data format envelope

05 = A format header which indicates application identifiers are being used

^G_S = A Data Element Separator used between data fields

01 = Application Identifier for the GTIN™

00614141999996 = The GTIN™, which is composed of the GS1 Company Prefix including the IAC as the leading character (**0614141**) and the Product Number (**99999**), a **check digit (6)** and leading zeros to a fixed length of 14 digits

21 = Application Identifier for serial number

1A0B9C3D6 = The serial number

^E_T = A Message Trailer which identifies the end of the message within the data stream

For this example using Application Identifiers in Format 05 of ISO/IEC 15434, the concatenated UII output from the AIT device, stripping away the overhead and syntax would be **006141419999961A0B9C3D6**⁸⁹.

Historic Use of Text Element Identifiers

Text Element Identifiers (TEIs)⁹⁰ are the preferred approach of the aerospace industry. The aerospace industry uses CAGE Code (TEI = MFR)⁹¹ to identify the manufacturer with serial number (TEI = SER) to provide unique identity of the item. The aerospace industry philosophy is no duplication of serial numbers within an enterprise, regardless of the product, so that a simple combination of enterprise identifier and serial number provides unique identification of that item forever. As revisions are implemented that change the form, fit or function of the part, the aerospace industry changes the part number (TEI = PNR) to reflect those changes. This is called “rolling the part number.”

As aerospace moved TEIs into broader multi-industry use, they determined a need to establish additional TEIs for DUNS Number (TEI = DUN), UCC Company Prefix (TEI = EUC), Serial Number within Part Number (TEI = SEQ), Original Part Number (TEI = PNO), and concatenated UII (TEI = UID) to encode text element identifiers other

⁸⁹ Since the IAC is the first digit of the Company Prefix, it is not necessary to add it in forming the concatenated UII.

⁹⁰ All TEIs are four characters in length, consisting of three letters followed by a space.

⁹¹ CAGE Code is also indicated by TEI = CAG. An enterprise identified by CAG need not be the manufacturer.

than Manufacturer (TEI = MFR), Serial Number (TEI = SER) and Current Part Number (TEI = PNR)⁹². It was also determined that they needed a separator that would not be used within data, as opposed to the “/” used in ATA Spec 2000, Chapter 9. Finally, it was determined that an unambiguous header/trailer was needed to identify that the data fields represented were in Text Element Identifier form.

The needed non-data separator and unambiguous header/trailer were available in ISO/IEC 15434; Syntax for High Capacity ADC Media, and this gave rise to the Collaborative Solution.

The Collaborative AIT Solution

The DoD has approved the use of ISO/IEC 15418 and ISO/IEC 15434 in its acquisitions. The DoD has established the collaborative solution “DD” format to enable the use of text element identifiers (TEIs) using the syntax of ISO/IEC 15434 until such time as the TEIs needed for unique identification are incorporated as approved semantics in ISO/IEC 15418. Although DoD has approved the use of ISO/IEC 15434, the collaborative solution “DD” format can be used to accommodate the use of only those TEIs needed for unique identification in the ISO/IEC 15434 syntax.⁹³

DoD is seeking approval of the International Organization for Standardization to add a new format to ISO/IEC 15434 to support TEIs. The Department values the formal ISO approval process and has submitted a proposal to the U. S. Technical Advisory Group to the ISO/IEC JTC1/SC 31 seeking approval of a new format for the TEI addition. That approval process is lengthy, and, in the interim, a collaborative solution is necessary to create a near-term interoperable environment for IUID enhancements to business intelligence to support coalition operations. This solution uses the structure of ISO/IEC 15434 as the IUID syntax standard and the business rules in Appendix C. If approved, the new format shall be used and replace the interim “DD” format described in this guidance. Items that are marked with the “DD” format code will not have to be remarked once a permanent ISO/IEC 15434 format code is assigned to TEIs. In addition, in support of the IUID collaborative solution, the Air Transport Association (ATA) Spec 2000

⁹² On October 26, 2004, the Air Transport Association (ATA) Spec2000 Coordinating Group approved the following Text Element Identifiers (TEIs) for usage: PNO (Original Part Number), SEQ (Serial Number within Original Part Number) and UID (Unique Item Identifier). The PNO and SEQ TEIs will allow for the use of UII Construct 2 (i.e., serialization within original part number).

⁹³ ISO/IEC 15434, Syntax for High Capacity ADC Media, specifies a two-digit format header. Numbers 01-09 and 11 are assigned. Numbers 00, 10 and numbers 12-99 are reserved for future use. This means that a format header for text element identifiers of the collaborative solution cannot be assigned a two-digit number without SC 31 approval, since all two digit numbers have been reserved. To enable the collaborative solution utilizing the ISO/IEC 15434 syntax, the Department will use a special DoD-specific format header, designated as “DD”, to indicate TEIs are being used in the collaborative solution.

International Coordinating Group has approved the use of ISO/IEC 15434 syntax with TEIs as an alternative item marking method. Valid TEIs include only those approved by ATA for incorporation in the ATA Common Support Data Dictionary (CSDD) including those not yet published.

Using Text Element Identifiers in the Collaborative Solution

Construct #1 – Serialization within the Enterprise Identifier by Manufacturer. Table 10 shows an example of the use of TEIs in the collaborative solution for UII Construct #1 when the manufacturer serializes the item.

Data Element	TEIs ⁹⁴	Data Element Value	Encoded Data Element on AIT Media
Enterprise Identifier • CAGE	MFR	0CVA5	MFR 0CVA5
Serial Number within Enterprise Identifier	SER	674A36458	SER 674A36458

Table 10. Example of the Use of TEIs in the Collaborative Solution for UII Construct #1, Manufacturer Serialization (DoD Format “DD”)

Recalling that the UII is to be concatenated in the order Issuing Agency Code/Enterprise Identifier/ /Serial Number for an enterprise that serializes within the enterprise identifier, the UII data elements would be encoded as follows using an interim, DoD-specific, Format DD (see note below) for TEIs utilizing the ISO/IEC 15434 syntax:

$$[]>^R_s DD^G_s MFR\ 0CVA5^G_s SER\ 674A36458^R_s E_o_T$$

Where:

$[]>^R_s$ = The Message Header consisting of a three-character compliance indicator and the Format Trailer Character R_s to indicate the end of a data format envelope

DD = A special DoD-specific format header, which indicates TEIs are being used in the collaborative solution

G_s = A Data Element Separator used between data fields

MFR = TEI for Manufacturer CAGE code

0CVA5= CAGE Code

⁹⁴ All TEIs are four characters in length, consisting of three letters followed by a space.

SER = TEI for Serial Number within the Enterprise Identifier

674A36458 = Serial Number within Enterprise Identifier

^Eo_T = A Message Trailer which identifies the end of the message within the data stream

When the AIT device reads the data qualifier for the enterprise identifier, it will have what agency (that is, the Issuing Agency Code) issued the enterprise identifier available in its software. The AIT device can then attach the Issuing Agency Code (IAC) to the beginning of the UII concatenation. In this example the IAC for CAGE is “D”.

For this example using Format DD for TEIs in the ISO/IEC 15434 syntax, the concatenated UII output from the AIT device, once the overhead and syntax are stripped away and the IAC has been added, would be **D0CVA5674A36458**.

Construct #1 – Serialization within the Enterprise by an Organization other than the Manufacturer. Table 11 shows an example of the use of TEIs in the collaborative solution for UII Construct #1 when serialization is done by an organization other than the manufacturer of the item.

Data Element	TEIs ⁹⁵	Data Element Value	Encoded Data Element on AIT Media
Enterprise Identifier • CAGE	SPL	0F3N5	SPL 0F3N5
Serial Number within Enterprise Identifier, other than Manufacturer	UCN	10936	UCN 10936

Table 11. Example of the Use of TEIs in the Collaborative Solution for UII Construct #1, Enterprise other than Manufacturer (DoD Format “DD”)

Recalling that the UII is to be concatenated in the order Issuing Agency Code/Enterprise Identifier/Serial Number for an enterprise that serializes within the enterprise, the UII data elements would be encoded as follows using an interim, DoD-specific, Format DD (see note below) for TEIs utilizing the ISO/IEC 15434 syntax:

$$[] > ^R_s DD^G_s SPL\ 0F3N5^G_s UCN\ 10936^R_s E\ o_T$$

Where:

⁹⁵ All TEIs are four characters in length, consisting of three letters followed by a space.

[>^R_S = The Message Header consisting of a three-character compliance indicator and the Format Trailer Character ^R_S to indicate the end of a data format envelope

DD = A special DoD-specific format header, which indicates TEIs are being used in the collaborative solution

^G_S = A Data Element Separator used between data fields

SPL = TEI for CAGE code, Enterprise other than Manufacturer

0F3N5 = CAGE Code

UCN = TEI for Unique Component Number assigned by Enterprise other than the Manufacturer

10936 = Unique Component Number

^E_{OT} = A Message Trailer which identifies the end of the message within the data stream

When the AIT device reads the data qualifier for the enterprise identifier, it will have what agency (that is, the Issuing Agency Code) issued the enterprise identifier available in its software. The AIT device can then attach the Issuing Agency Code (IAC) to the beginning of the UII concatenation. In this example the IAC for CAGE is “D”.

For this example using Format DD for TEIs in the ISO/IEC 15434 syntax, the concatenated UII output from the AIT device, once the overhead and syntax are stripped away and the IAC has been added, would be **D0F3N510936**.

Construct #2 – Serialization within the Original Part, Lot or Batch Number. Table 12 shows an example of the use of TEIs in the collaborative solution for UII Construct #2 when the manufacturer serializes the item within the original part number.

Data Element	TEIs ⁹⁶	Data Element Value	Encoded Data Element on AIT Media
Enterprise Identifier • CAGE	CAG ⁹⁷	0CVA5	CAG 0CVA5
Original Part Number	PNO	4202435	PNO 4202435
Serial Number within Original Part Number	SEQ	674A36458	SEQ 674A36458

Table 12. Example of the Use of TEIs in the Collaborative Solution for UII Construct #2, Original Part Number Serialization (DoD Format “DD”)

Recalling that the UII is to be concatenated in the order Issuing Agency Code/Enterprise Identifier/Original Part Number/Serial Number for an enterprise that serializes within the original part number, the UII data elements would be encoded as follows using an interim, DoD-specific, Format DD (see note below) for TEIs utilizing the ISO/IEC 15434 syntax:

$[>^R_S DD^G_S CAG\ 0CVA5^G_S PNO\ 4202435^G_S SEQ\ 674A36458^R_S E_{OT}$

Where:

$[>^R_S$ = The Message Header consisting of a three-character compliance indicator and the Format Trailer Character R_S to indicate the end of a data format envelope

DD = A special DoD-specific format header, which indicates TEIs are being used in the collaborative solution

G_S = A Data Element Separator used between data fields

CAG = TEI for Manufacturer CAGE code

0CVA5 = CAGE Code

PNO = TEI for Original Part Number

4202435 = Original Part Number

SEQ = TEI for Serial Number within the Original Part Number

674A36458 = Serial Number within the Original Part Number

E_{OT} = A Message Trailer which identifies the end of the message within the data stream

⁹⁶ All TEIs are four characters in length, consisting of three letters followed by a space.

⁹⁷ The TEI of MFR may also be used to designate the manufacturer

The Mechanics of Unique Item Identification

When the AIT device reads the data qualifier for the enterprise identifier, it will have what agency (that is, the Issuing Agency Code) issued the enterprise identifier available in its software. The AIT device can then attach the Issuing Agency Code (IAC) to the beginning of the UII concatenation. In this example the IAC for CAGE is “D”.

For this example using Format DD for TEIs in the ISO/IEC 15434 syntax, the concatenated UII output from the AIT device, once the overhead and syntax are stripped away and the IAC has been added, would be **D0CVA54202435674A36458**

Appendix E -Glossary of Terms

ACRN	Accounting Classification Reference Number
ADC	Automatic Data Capture
AIS	Automated Information System
AIT	Automatic Identification Technology
ANS	American National Standard
ANSI	American National Standards Institute
ANSI/EIA	American National Standards Institute/Electronic Industries Alliance
ANSI T1.220 Number	North American Telecommunication Industry Manufacturers, Suppliers, and Related Service Companies
ASC	Accredited Standards Committee
ATA	Air Transport Association
BEA	Business Enterprise Architecture
BII	Text Element Identifier for Batch Number
CAG	Text Element Identifier for CAGE
CAGE	Commercial And Government Entity
CDRL	Contract Data Requirements List
CFO	Chief Financial Officers
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
CLEI	COMMON LANGUAGE® Equipment Identification
CLIN	Contract Line Item Number
CSDD	Common Support Data Dictionary published by the ATA
D	Issuing Agency Code for CAGE Codes
DCMA	Defense Contract Management Agency
DFARS	Defense Federal Acquisition Regulation Supplement
DLMS	Defense Logistics Management System
DoD	Department of Defense
DoDAAC	Department of Defense Activity Address Code
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DUN	Text Element Identifier for DUNS Number
DUNS® Number	Dun & Bradstreet Data Universal Numbering System number
EAN	European Article Numbering
EAN.UCC	European Article Numbering Uniform Code Council

EHIBCC	European Health Industry Business Communications Council
EIA	Electronic Industries Alliance
EID	Enterprise Identifier
ESN	Electronic Serial Number
EUC	Text Element Identifier for GS1 Company Prefix
FAR	Federal Acquisition Regulation
FASAB	Federal Accounting Standards Advisory Board
FMR	DoD Financial Management Regulation
FMS	Foreign Military Sales
GAO	Government Accountability Office
GIAI	Global Individual Asset Identifier
GRAI	Global Returnable Asset Identifier
GS1	Global Commerce Standards Organization formerly known as EAN.UCC
GTIN™	Global Trade Item Number™
HIBCC	Health Industry Business Communications Council
IAC	Issuing Agency Code
ID	Identification
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
ISO/IEC 15418	Information technology—EAN/UCC Applications Identifiers and FACT Data Identifiers and Maintenance
ISO/IEC 15434	Information technology—Transfer Syntax for High Capacity ADC Media
ISO/IEC 15459-2	Information technology—Unique Identifiers—Part 2: Registration Procedures
IUID	Item Unique Identification
JCS	Joint Chiefs of Staff
JRIB	Joint Requirements Implementation Board
JTC 1	ISO/IEC Joint Technical Committee One
LB	Issuing Agency Code for ANSI T1.220 Numbers
LD	Issuing Agency Code for DoDAAC Numbers
LH	Issuing Agency Code for EHIBCC Numbers
LOT	Text Element Identifier for Lot Number within the Original Part Number
LTN	Text Element Identifier for Lot Number within the Enterprise
MFR	Text Element Identifier for CAGE Code of the Manufacturer
MIL HDBK	Military Handbook
MIL STD	Military Standard

MILSTRAP MH 10	Military Standard Transaction Reporting and Accounting Procedures The US Technical Advisory Group to ANSI
NATO	North Atlantic Treaty Organization
NCAGE	NATO Commercial And Government Entity
NEN	Nederlands Normalisatie-instituut
OEM	Original Equipment Manufacturer
OSD	Office of the Secretary of Defense
PNO	Text Element Identifier for Original Part Number
PP&E	Property, Plant and Equipment
SC 31	ISO Sub Committee 31 (Automatic Data Capture)
SER	Text Element Identifier for Serial Number assigned by the Manufacturer
SEQ	Text Element Identifier for Serial Number assigned within the Original Part Number
SLIN	Sub Line Item Number
SPL	Text Element Identifier for CAGE Code of Enterprise other than the Manufacturer
TC	ISO Technical Committee
TEI	Text Element Identifier
TG	US TAG Technical Group
UCC	Uniform Code Council
UCN	Text Element Identifier for Unique Component Number assigned by Enterprise other than the Manufacturer
UID	Unique Identification; Text Element Identifier for Concatenated Unique Item Identifier
UII	Unique Item Identifier
UN	Issuing Agency Code for DUNS Numbers
USD (AT&L)	Undersecretary of Defense for Acquisition, Technology and Logistics
USN	Text Element Identifier of Universal Serial Number formed by Concatenating MFR+SER
UST	Text Element Identifier of Universal Serial Tracking Number formed by Concatenating SPL+UCN
US TAG	U.S. Technical Advisory Group
VIN	Vehicle Identification Number
WG	ISO Working Group