

The Language of Item Unique Identification (IUID) (February 10, 2006)

WHAT IS THE LANGUAGE OF IUID?

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

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

Table 1

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

WHAT DOES A DoD UNIQUE ITEM IDENTIFIER (UII) MARK LOOK LIKE?

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

HOW IS THE DoD UII MARK READ?

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

HOW DO YOU BUILD A DoD UII?

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

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

Table 2

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

Semantics Translation Between Data Identifiers (DI), Application Identifiers (AI), and Text Element Identifiers (TEI)

Enterprise ID	DI	AI	TEI
CAGE/NCAGE	17V		CAG, MFR or SPL
DUNS	12V		DUN
EAN.UCC	3V	95	EUC
Serial No. w/in Enterprise Identifier			SER or UCN
Serial No. w/in Original Part No.	S	21	SEQ
Original Part No.	1P	01	PN0
Unique Identifier (With IAC)	25S	8004	
Item Identifier (Without IAC)	18S		UID, USN or UST
Current Part No.	30P	240	PNR

Table 3

HOW ARE THE BUILDING BLOCKS' DATA ELEMENTS PUT TOGETHER?

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

Figure 1 shows examples of the data elements and Data Identifiers that are placed on the item within the Data Matrix symbol. The ISO/IEC 15434 syntax encoded in the data matrix, using ISO/IEC 15418 (MH10.8.2 Data Identifiers), for Construct #1 is $[\]>^R_s06^G_s18S0CVA5786950^R_s^E_oT$. For Construct #2, the encoded syntax is $[\]>^R_s06^G_s12V194532636^G_s1P1234^G_sS786950^R_s^E_oT$. The figure further shows how the AIT devices would output the data elements in a concatenated UII according to the syntax instructions. Notice that the UII data elements contained in the Data Matrix symbol can also be included on the item in human readable form.

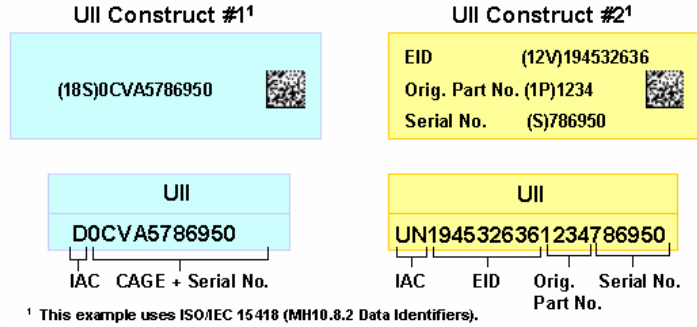


Figure 1

Figure 2 shows an example of the data elements and Application Identifiers that are placed on the item within the Data Matrix symbol. When using EAN.UCC Application Identifiers (ISO/IEC 15418) for purposes of unique identification, enterprises must use the General EAN.UCC Specifications to construct the unique identifier. Within the General EAN.UCC Specifications, the Global Individual Asset Identifier (GIAI) is considered a IUID equivalent. The application identifier (8004) indicates that the data field contains a GIAI. The GIAI is made up of the EAN.UCC Company Prefix and an individual asset reference number. This is equivalent to the UII Construct #1. The data is encoded as follows under Format 05 for Application Identifiers of the ISO/IEC 15434 syntax: $[] >^R_s 05^G_s 8004 06141411A0B9C3D6^R_s E_{OT}$. For Construct #2, the encoded syntax is $[] >^R_s 05^G_s 0100614141999996^G_s 211A0B9C3D6^R_s E_{OT}$. The figure further shows how the AIT devices would output the data elements in a concatenated UII according to the syntax instructions.

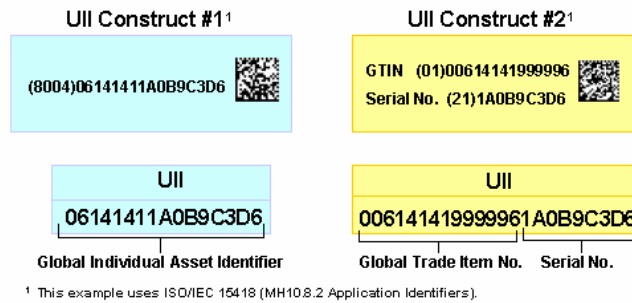


Figure 2

Figure 3 shows examples of the data elements and Text Element Identifiers that are placed on the item within the Data Matrix symbol. The ISO/IEC 15434 syntax encoded in the data matrix, using the DD format of the DoD collaborative solution, for Construct #1 would be $[] >^R_s DD^G_s MFR 0CVA5^G_s SER 786950^R_s E_{OT}$. For Construct #2, the encoding would be $[] >^R_s DD^G_s MFR 0CVA5^G_s PNO 1234^G_s SER 786950^R_s E_{OT}$. The figure further shows how the AIT devices would output the data elements in a concatenated UII according to the syntax instructions.

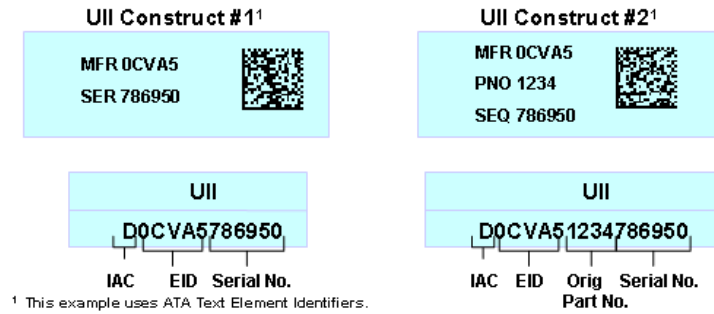


Figure 3

RECOGNIZED DoD IUID EQUIVALENTS

A commercial identifier can be considered for use as a DoD IUID equivalent if it meets all of these criteria: (1) Must contain an enterprise identifier, (2) Must uniquely identify an individual item within an enterprise identifier, product or part number, and (3) Must have an existing Data Identifier (DI) or Application Identifier (AI) listed in American National Standard (ANS) MH10.8.2, Data Identifier and Application Identifier Standard. The commercial unique identifiers meeting these criteria that the Department recognizes as IUID equivalents are the EAN.UCC Global Individual Asset Identifier (GIAI) for serially-managed assets, the EAN.UCC Global Returnable Asset Identifier (GRAI) for serialized returnable assets, the ISO Vehicle Identification Number (VIN) for vehicles, and the Electronic Serial Number (ESN) for cellular telephones only.

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