



# DLMS INTRODUCTORY TRAINING

## Module 5 – IUID & RFID - Emerging Technologies

DLMS Introductory Training




### Defense Logistics Management Standards (DLMS) Introductory Training



*IUID & RFID - Emerging Technologies*

Module 5 1

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### DLMS Training Catalog

- Module 1 - Introduction to the DLMS
- Module 2 - Electronic Data Interchange (EDI) Basics and ASC X12 EDI Definitions and Concepts
- Module 3 - DLMS Functionality & Transaction Life-Cycle
- Module 4 - DLMS Implementation Convention Content
- Module 5 - IUID & RFID - Emerging Technologies
- Module 6 - Creating/Reengineering DOD Logistics Business Processes
- Module 7 - Enterprise Interoperability Tools
- Module 8 - DoD Activity Address Directory (DoDAAD)
- Module 9 - Supply Discrepancy Reporting (SDR)
- Module 10 - DLMS Functional Financial Transaction (standalone)
- Module 11 - Creating/Reengineering DOD Logistics (standalone)


[www.dla.mil/does/DLMS](http://www.dla.mil/does/DLMS)

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### Module Structure

**Module 5 – IUID & RFID - Emerging Technologies**

- Item Unique Identification (IUID)
- Radio Frequency Identification (RFID)

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### Module 5 Objectives


- IUID and its relationship to the DLMS
- RFID and its relationship to the DLMS
- DLMS Transactions supporting IUID and RFID
- Data integration of Supply and Transportation Information
- Establishing parent/child relationships using DLMS transactions

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### Unique Item Identification (IUID), Radio Frequency Identification (RFID), & DLMS

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### IUID, RFID, & DLMS Relationship

- The IUID is a data set that identifies an instance of an item uniquely from all others even if it is identical to others in all other physical and functional aspects
- RFID is an automatic identification method, consisting of a chip and antenna, relying on storing and remotely retrieving data using devices called RFID tags or transponders.
- The DLMS X12 EDI and DLMS XML provide the capability to integrate the RFID tag contents with the business data and processes in the supply chain

IUID, RFID, and DLMS complement each other in providing business event intelligence across the supply chain

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### IUID-RFID Policy Relationship (Example)

Where required: Passive RFID tags applied at the case, pallet and package layers

Where required: IUID attached or directly marked on items using a data matrix to carry the IUID data elements

RFID Tag (Pallet Layer)

RFID Tag (Case Layer)

RFID Tag (Item Package Layer)

IUID Data Matrix (Item Layer)

DOD AIT CONOPS: <http://www.ustranscom.mil/cmd/associated/ait>

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## Unique Identification (IUID) of Tangible Items

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### DOD Vision for IUID

- Establish a strategic imperative for uniquely identifying tangible items relying to the maximum extent practical on international standards and commercial item markings, while not imposing unique government data requirements.
- Unique identification of tangible items will improve:
  - ✓ Item visibility and tracking across the DOD enterprise
  - ✓ Product life-cycle item management
  - ✓ Financial Accountability and valuation of assets
  - ✓ Clean Audit Opinions on Property, Plant Equipment, and Operating Materials and Supplies
  - ✓ Data quality and interoperability

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### IUID Policy Overview


- DoD Instruction (DoDI) 8320.04, "Item Unique Identification Standards for Tangible Personal Property," was initially issued June 16, 2008 and was significantly updated and reissued on September 3, 2015
- DoDI 8320.04 states that items with a unique item-level traceability requirement at any time in their life cycle shall be marked and managed by UII to include as a minimum:
  - (1) Major end items, (2) Depot level reparable, (3) Nuclear weapons-related materiel, (4) Small arms and light weapons, (5) Items with a classified, sensitive, or pilferable controlled inventory item code, (6) Critical safety items, (7) Items currently serially managed or warrantied, including items in unique item tracking programs, (8) Items that require periodic test, calibration, or safety inspection, (9) Items that require technical directive tracking, (10) Items requiring intensive visibility and management, and (11) Other items, as determined by the requiring activity.
- Under the authority, direction, and control of the USD(AT&L), the ASD(L&MR) develops IUID supply chain policy and coordinates functional business rules and approves requirements for the DOD IUID Registry jointly with the Director, Defense Procurement and Acquisition Policy (DPAP).
- Under the authority, direction, and control of the ASD(L&MR), the Director, DLA will coordinate and publish procedures and transaction exchange formats to incorporate the UII in logistics business processes under the Defense Logistics Management Standards (DLMS) in accordance with DLM 4000.25.

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### Radio Frequency Identification (RFID)

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### Types of RFID Used in DOD

- **Active RFID - Longer range**
  - ✓ Continuously powered tag; internal power source
  - ✓ Low-level RF signal received by the tag
  - ✓ High-level RF signal back to the reader/interrogator
  - ✓ Usually used for longer tag read distances
  - ✓ Can store 128KB of data, to include tag number
- **Passive RFID – Shorter range**
  - ✓ No internal power source; collects energy from reader
  - ✓ Needs powerful RF signal from reader
  - ✓ Low RF strength signal returned from tag
  - ✓ Preferred for uses when tag and interrogator are close
  - ✓ Stores small amount of data (e.g., tag number)

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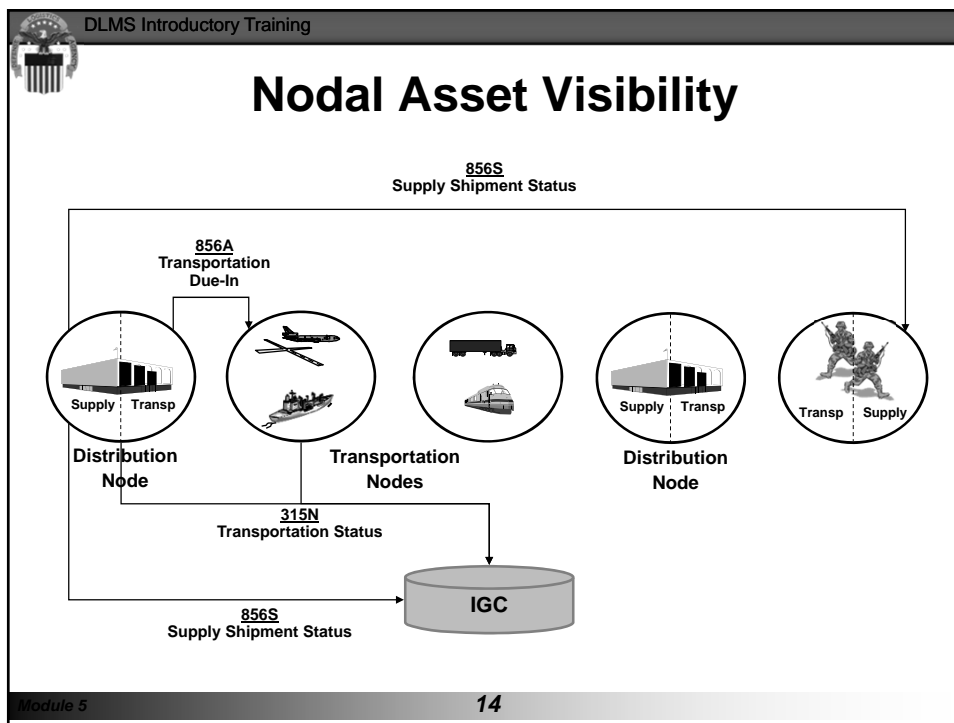
### pRFID - Optimize the Supply Chain

DOD is an early adopter of passive pRFID technology

- Implement passive RFID Business Rules - 1 Jan 05
  - ✓ Passive tagging of materiel shipped to DOD
- Initial DOD capability to read passive RFID tags and use data
- Published DFARS Rule requiring application of passive RFID
- Integrated passive RFID data into the DOD Business Enterprise Architecture (e.g., DLMS)
- USTRANSCOM is the DOD functional proponent for AIT
- The latest policy and information on DOD's RFID implementation can be found at:
  - <http://www.acq.osd.mil/log/sci/ait.html>
  - <http://www.ustranscom.mil/cmd/associated/ait/>

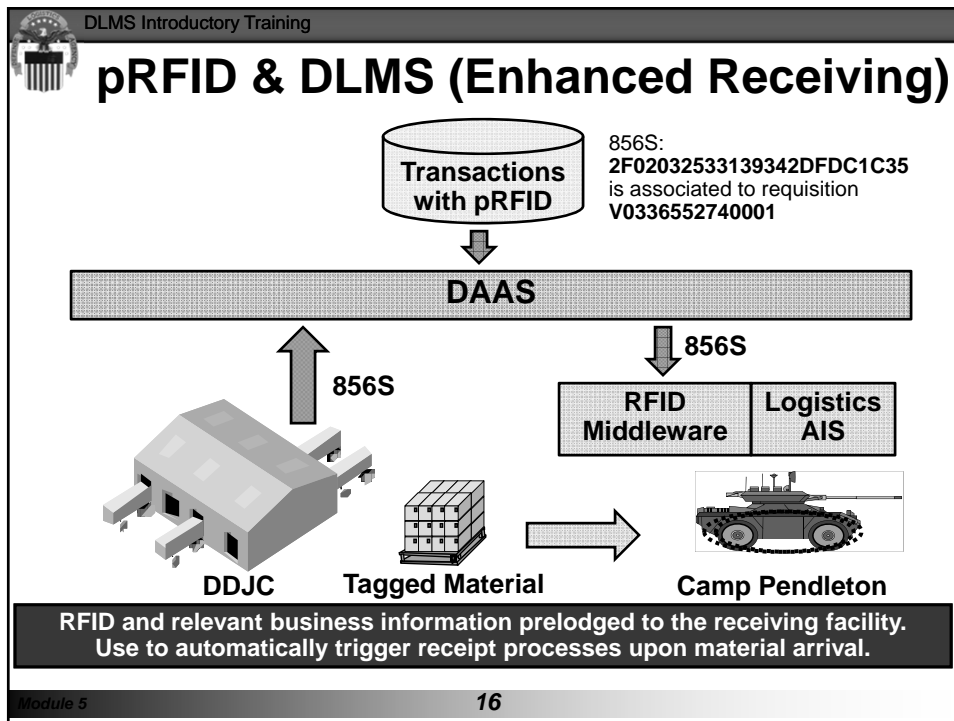
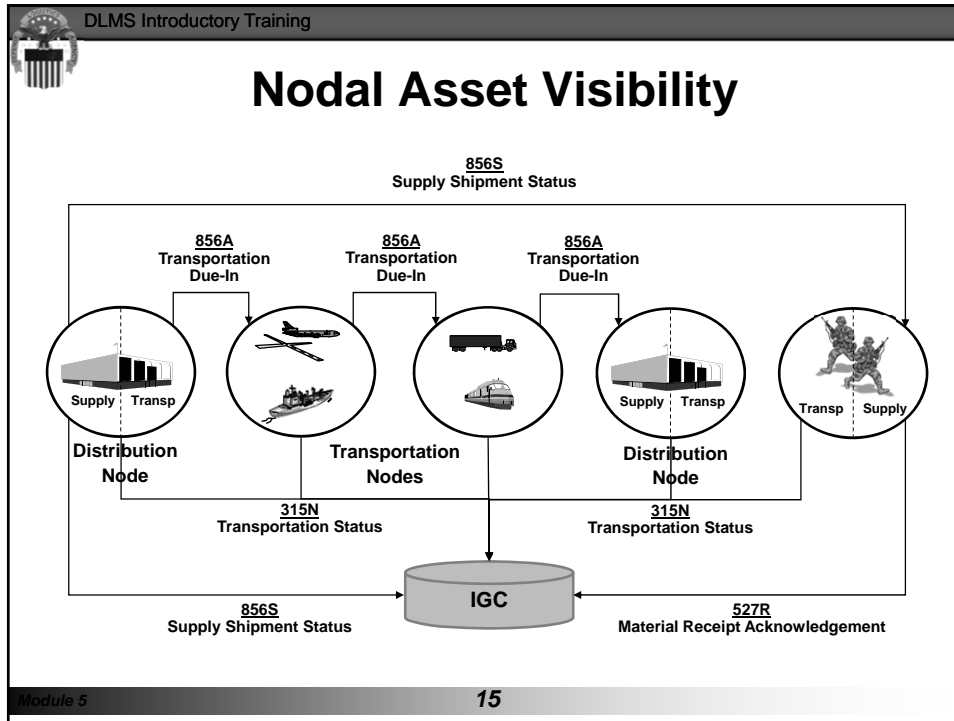
- Hands-Off Data Capture
  - Improve Data Accuracy
    - Improve Logistics Processing Time
    - Improve Manpower Utilization
    - Enhance Interoperability with Industry

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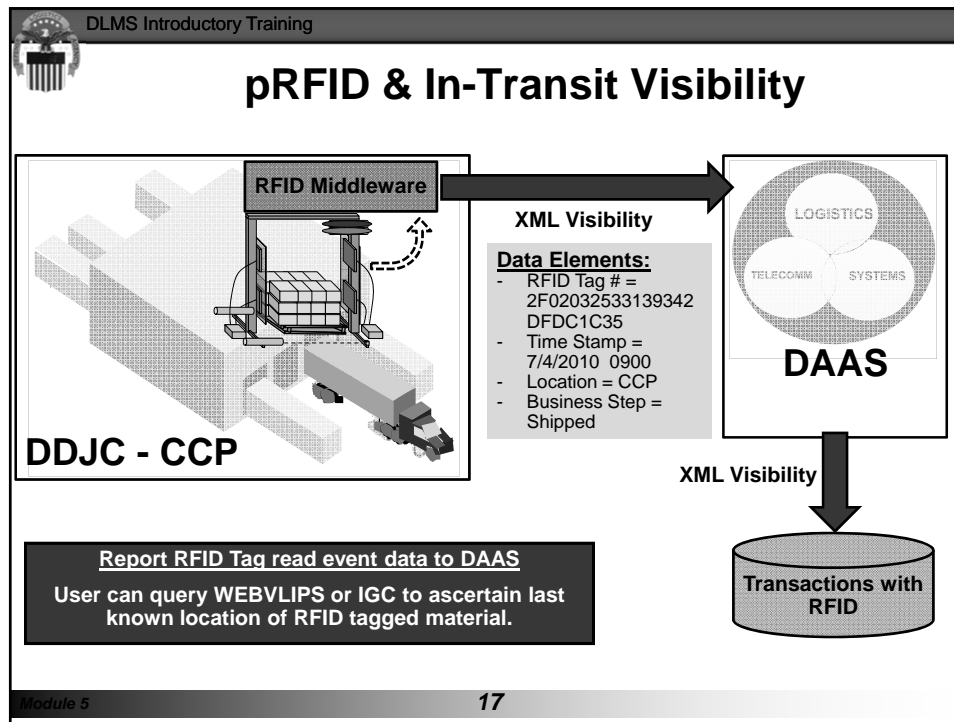
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### IUID, pRFID & DLMS Operating In Concert Can Significantly Enhance DOD Supply Chain Processes


- Establish initial acquisition cost and subsequent valuations
- Identify a particular item requiring maintenance
- Identify particular problem items to be singled out for removal or upgrade
- Ensure that exact items are returned to the customer
- Locate items for expedited processing
- Maintain a record of items where DOD ownership has ended
- Track a particular item through the entire Supply Chain

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### DLMS Transactions Supporting IUID

DLMS IMPLEMENTATION CONVENTION	
140A	Small Arms Reporting
180M	Material Returns Reporting
511M	Requisition Modification
511R	Requisition
527D	Due-in, Advance Receipt, Due Verification
527R	Receipt
527R	Material Receipt Acknowledgement
842A/W	Supply Discrepancy Report Submission
842S/Q	Storage Quality Control Report
842S/R	Storage Quality Control Report Reply
842P	Product Quality Deficiency Report
846R	Location Reconciliation Request
856	Advance Ship Notice
856R	Shipment Status Materiel Return
856S	Shipment Status
861	Acceptance Report
867I	Issue
870M	Material Returns Supply Status
870S	Supply Status
940R	Material Release
945A	Material Release Advice
947I	Inventory Adjustment

*NOTE: Logistics IUID business requirements are under development through a series of IUID Workshops; business rules for implementation will be documented, staffed, and finalized through the DLMS configuration management process. Some transactions on this list may be removed if there is no business requirement.*

Current list of transactions available under [http://www.dla.mil/HO/InformationOperations/DLMSO/other\\_activities/IUID/](http://www.dla.mil/HO/InformationOperations/DLMSO/other_activities/IUID/)

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### DLMS Supporting Passive RFID


- **856**      **Advance Shipping Notice**
- **856R**    **Shipment Status Material Returns**
- **856S**    **Shipment Status**
- **XML**     **Reader Registration**
- **XML**     **Visibility Response**
- **XML**     **Visibility**

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### Example of Providing In The Box Visibility via 856 ASN

- Provide receiving activity with in the box visibility of an incoming shipment at the time of shipment.
- Computer system supporting the packing/shipping function builds out the 856 ASN.
- As the packer scans items and the Box & Pallet RFID Tags the system builds the Loops.
- The system receiving the 856 ASN decomposes the hierarchical structure to convey in the box information for use upon physical receipt.



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### Illustrative Example of IUID and pRFID Transmissions via 856 ASN

**The 856 ASN uses a hierarchical structure to convey information and establish relationships:**

- Between the shipment/contract and the individual line items which compose the shipment
- Between the CLIN and the uniquely identified items associated with the CLIN
- Between the tagged containers (case or pallet) and the number of items and the UIIs of uniquely identified items they contain
- Between tagged containers (cases on a pallet)

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### IUID and RFID in 856 ASN

The HL loops are defined as Shipment (DD 250 level) (HL03=S) Address (HL03=V), Line Item (HL03=I), IUID (HL03=D), embedded UII (HL03=E), and pRFID (HL03=P)

- The IUID loop includes:
  - ✓ The SLN segment with IUID pedigree information: acquisition cost, unique item identifier (UII) type, enterprise identifier and original part number, when applicable
  - ✓ A separate REF with the UII and serial number for each item with the same pedigree in the SLN
- pRFID loop includes:
  - ✓ The REF with the RFID tag value and a separate REF for each UII, when applicable -- it tells you which items are in which container
  - ✓ The Destination Quantity (SDQ) with the CLIN and the Quantity of that line item packed under the RFID to which the SDQ is associated -- it tells you how many of which CLIN are identified to which RFID tag

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### Multiple CLINs in Multiple Cases with Multiple CLINs per Case and Multiple Cases per CLIN on a Pallet

One Shipment Sitting on an RFID Tagged Pallet Containing

- Four different Items with the notional FSNs:
  - ABC quantity of 4
  - DEF quantity of 4
  - GHI quantity of 2
  - JKL quantity of 2
- Each of the 12 items has a UII
- The Items are Packed in Four Boxes each with an RFID Tag

Question: In advance of the Physical Receipt or upon Receipt Without Opening the Boxes, How Can We Determine:

- Which UIIs are on which item &
- Which items are in which Box?

The diagram shows a pallet with four boxes. The boxes are labeled RFID #1, RFID #2, RFID #3, and RFID #4. The pallet itself is labeled RFID #5.

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### Multiple CLINs in Multiple Cases with Multiple CLINs per Case and Multiple Cases per CLIN on a Pallet

```

ST*856*0001^
BSN*00*DIS0001*20040720*1130*0001*AS^
HL*1**V*1^
HL*2*1*S*1^
HL*3*2*I*1^
LIN*0001*VP*ABC^
SN1**4*EA^
HL*4*3*D*0^
SLN*1**O*1*...D^
REF*U3*(UII1)^
REF*U3*(UII2)^
REF*U3*(UII3)^
REF*U3*(UII4)^
HL*5*2*I*1^
LIN*0002*VP*DEF^
SN1**4*EA^
HL*6*5*D*0^
SLN*1**O*1*...D^
REF*U3*(UII5)^
REF*U3*(UII6)^
REF*U3*(UII7)^
REF*U3*(UII8)^
HL*7*2*I*1^
LIN*0003*VP*GHI^
SN1**2*EA^
HL*8*7*D*0^
SLN*1**O*1*...D^
REF*U3*(UII9)^
REF*U3*(UII10)^
HL*9*2*I*1^
LIN*0004*VP*JKL^
SN1**2*EA^
HL*10*9*D*0^
SLN*1**O*1*...D^
REF*U3*(UII11)^
REF*U3*(UII12)^
    
```

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### Multiple CLINs in Multiple Cases with Multiple CLINs per Case and Multiple Cases per CLIN on a Pallet

```

ST*856*0001^
BSN*00*DIS0001*20040720*1130*0001*AS^
HL*1**V*1^
HL*2*1*S*1^
HL*3*2*I*1^
LIN*0001*VP*ABC^
SN1**4*EA^
HL*4*3*D*0^
SLN*1**O*1*...D^
REF*U3*(UII1)^
REF*U3*(UII2)^
REF*U3*(UII3)^
REF*U3*(UII4)^
HL*5*2*I*1^
LIN*0002*VP*DEF^
SN1**4*EA^
HL*6*5*D*0^
SLN*1**O*1*...D^
REF*U3*(UII5)^
REF*U3*(UII6)^
REF*U3*(UII7)^
REF*U3*(UII8)^
HL*7*2*I*1^
LIN*0003*VP*GHI^
SN1**2*EA^
HL*8*7*D*0^
SLN*1**O*1*...D^
REF*U3*(UII9)^
REF*U3*(UII10)^
HL*9*2*I*1^
LIN*0004*VP*JKL^
SN1**2*EA^
HL*10*9*D*0^
SLN*1**O*1*...D^
REF*U3*(UII11)^
REF*U3*(UII12)^
    
```

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### Multiple CLINs in Multiple Cases with Multiple CLINs per Case and Multiple Cases per CLIN on a Pallet

ST\*856\*0001^  
 BSN\*00\*DIS0001\*20040720\*1130\*0001\*AS^  
 HL\*1\*\*V\*1^  
 HL\*2\*1\*S\*1^  
 HL\*3\*2\*I\*1^  
 LIN\*0001\*VP\*ABC^  
 SN1\*\*4\*EA^  
 HL\*4\*3\*D\*0^  
 SLN\*1\*\*O\*1\*...D^  
 REF\*U3\*(UII1)^  
 REF\*U3\*(UII2)^  
 REF\*U3\*(UII3)^  
 REF\*U3\*(UII4)^  
 HL\*5\*2\*I\*1^  
 LIN\*0002\*VP\*DEF^  
 SN1\*\*4\*EA^  
 HL\*6\*5\*D\*0^  
 SLN\*1\*\*O\*1\*...D^  
 REF\*U3\*(UII5)^  
 REF\*U3\*(UII6)^  
 REF\*U3\*(UII7)^  
 REF\*U3\*(UII8)^  
 HL\*7\*2\*I\*1^  
 LIN\*0003\*VP\*GHI^  
 SN1\*\*2\*EA^  
 HL\*8\*7\*D\*0^  
 SLN\*1\*\*O\*1\*...D^  
 REF\*U3\*(UII9)^  
 REF\*U3\*(UII10)^  
 HL\*9\*2\*I\*1^  
 LIN\*0004\*VP\*JKL^  
 SN1\*\*2\*EA^  
 HL\*10\*9\*D\*0^  
 SLN\*1\*\*O\*1\*...D^  
 REF\*U3\*(UII11)^  
 REF\*U3\*(UII12)^

HL\*11\*2\*P\*1^  
 REF\*JH\*(RFID#5)^

RFID #1  
 HL\*12\*11\*P\*0^  
 REF\*JH\*(RFID#1)^  
 REF\*U3\*\*(UII1)^  
 REF\*U3\*\*(UII2)^  
 REF\*U3\*\*(UII3)^  
 REF\*U3\*\*(UII9)^  
 SDQ\*ZZ\*\*0001\*3\*0003\*1^

RFID #3  
 HL\*14\*11\*P\*0^  
 REF\*JH\*(RFID#3)^  
 REF\*U3\*\*(UII5)^  
 REF\*U3\*\*(UII6)^  
 REF\*U3\*\*(UII7)^  
 SDQ\*ZZ\*\*0002\*3

RFID #2  
 HL\*13\*11\*P\*0^  
 REF\*JH\*(RFID#2)^  
 REF\*U3\*\*(UII4)^  
 REF\*U3\*\*(UII10)^  
 SDQ\*ZZ\*\*0001\*1\*0003\*1^

RFID #4  
 HL\*15\*11\*P\*0^  
 REF\*JH\*(RFID#4)^  
 REF\*U3\*\*(UII8)^  
 REF\*U3\*\*(UII11)^  
 REF\*U3\*\*(UII12)^  
 SDQ\*ZZ\*\*0002\*1\*0004\*2^

RFID #5

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## Module 5 Quiz

**Question 1: Which of the following is a key advantage associated implementing and integrating IUID into supply chain processes?**

- Enhance Total Asset Visibility; Improve Life-Cycle Item Management and Accountability; Improve Data Quality and Interoperability
- Clean Audit Opinions on Property, Plant & Equipment, Operating Materials and Supplies
- Both a & b

**Question 2: What benefits does RFID provide to DOD?**

- Hands-off data capture
- Improve Data Accuracy
- Improve Logistics Processing Time
- All of the above

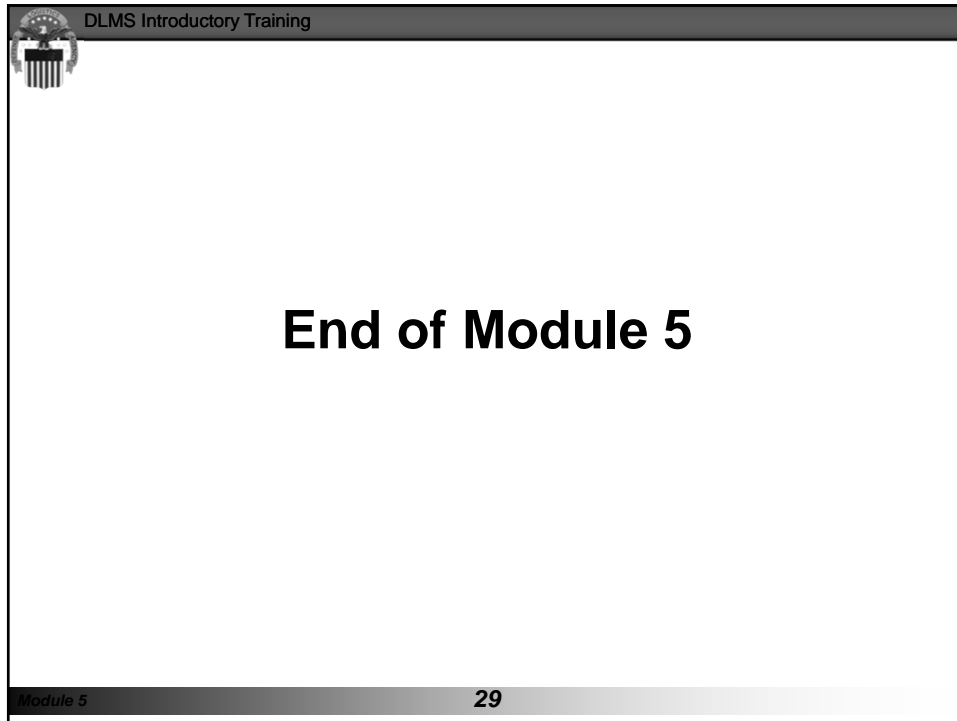
**Question 3: To improve material visibility across the supply chain which of the following technologies does DOD need to implement?**

- IUID
- RFID
- DLMS
- All the above


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**End of Module 5**

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This is a screenshot of a presentation slide. The slide has a dark grey header bar at the top with the text "DLMS Introductory Training" and a logo on the left. The main content area is white and contains the text "End of Module 5" in a large, bold, black font. At the bottom, there is a dark grey footer bar with the text "Module 5" on the left and "29" on the right.