

# IMPLEMENTATION OF ITEM UNIQUE IDENTIFICATION IN DOD LOGISTICS PROCESSES—AN UPDATE



March 11, 2011

Prepared by the  
Logistics Item Unique Identification Task Force



## **Preface**

This document integrates the latest logistics data, refines the assumptions, and revises the cost estimates stated in the opening summary of the Logistics IUID Task Force report, *Implementation of Item Unique Identification*, 8 June 2010. In addition, the Acquisition Logistics Planning (ALP) Node Working Group refined its assumptions and revised the cost estimates stated in Appendix D of the initial IUID Task Force report. These updates should be used as supplements to the original report, but should not be considered a complete replacement. Where there are differences between the updates and the original documents, the updates take precedence.



## Contents

### Implementation of Item Unique Identification in DOD Logistics Processes—An Update

Background

Initial Task Force Estimates

What Has Changed?

*Table 1. Initial and Revised Costs*

### Attachment: Acquisition Logistics Planning Node IUID Cost Analysis—Revised

Summary

*ALP Table 1. Updated Assumptions*

Estimated Costs

Non-Recurring IUID Implementation Planning Costs

*ALP Table 2. Non-Recurring Costs*

Recurring IUID Implementation Planning Costs

*ALP Table 3. Recurring Costs*

Total IUID Implementation Costs

*ALP Table 4. Annual Costs*

APPENDIX A. Assumptions and Calculations

*ALP Table A-1. Assumptions*

*ALP Table A-2. Non-Recurring Cost Calculations*

*ALP Table A-3. Recurring Cost Calculations*

APPENDIX B. Applicable Governing Policies



## Background

The Logistics Item Unique Identification (IUID) Task Force formed in July 2009 at direction of the Joint Logistics Board (JLB) to assess item unique identification (IUID) implementation across DoD. The task force reported its assessment results to the JLB on 25 May 2010 and published *Implementation of Item Unique Identification in DoD Logistics Processes* in June 2010.<sup>1</sup> In that initial report, the task force identified a rough order of magnitude (ROM) cost estimate of \$12.4 billion to implement IUID and comply with the then-current policy for the DoD. In the same report, the task force recommended a value-based adjustment to item marking policy<sup>2</sup> that would reduce the implementation cost estimate to \$7.1 billion.

In response to the 25 May 2010 JLB direction that the task force further refine its estimating approach, obtain more data, and conduct additional analysis, this update to the task force report further reduces the DoD's estimated implementation cost to \$3.2 billion (ROM).

## Initial Task Force Estimates

Cost-effective integration of IUID can improve DoD logistics and provide substantial benefits. Initially, the task force identified investment costs of \$7 billion and benefits of \$3–5 billion annually. The \$7 billion investment cost estimate was based on a targeted IUID-managed population of roughly 60 million items within 252,095 national inventory item numbers (NIIN).

Payback was expected in 5–8 years.

## What Has Changed?

After refining its assessment methods, obtaining more data, and conducting further analysis, the task force now estimates the required IUID implementation investment as \$3.2 billion. See Table 1 for cost reduction details.

The new cost estimate was primarily the result of changes in acquisition logistics planning (ALP) node factors. The ALP Node Working Group determined that many IUID items have data plates that can accommodate an IUID image. This greatly reduces the engineering analyses required. The ALP working group also changed the average time it estimated for requirements determination (identifying what to mark and manage) and changed the time horizon for IUID-specific technical data package (TDP) updates. These changes resulted in a \$3.6 billion reduction in the ALP node non-recurring engineering estimate. See the revised ALP node report (attached) for details.

The task force noted another significant change in the cost to mark items. Because the ALP working group determined that many IUID items have data plates, the task force was able to refine its approximation for the time and labor needed to mark items—applying a mark to a data plate versus direct part marking—and, therefore, reduced the associated estimated cost by \$350 million.

---

<sup>1</sup> Logistics Item Unique Identification Task Force, *Implementation of Unique Identification in DoD Logistics Processes*, 8 June 2010. Through a series of working groups, the task force evaluated 3 value chains and 10 logistics nodes to determine and validate IUID requirements and apply a set of assumptions and ground rules to estimate the costs and benefits of implementing IUID. The task force identified costs by node and benefits by value chain.

<sup>2</sup> The task force recommended the targeting of specific populations of items for IUID marking.

Other ancillary changes included the following:

- ◆ The military services revised their legacy item estimates.
- ◆ The Navy estimated its costs to incorporate IUID into automated information systems (AISs).
- ◆ DLA increased its AIS estimate slightly, but decreased the manpower portion of its recurring operating costs significantly.
- ◆ The task force removed any costs that could not be solely attributed to IUID implementation, such as acquisition IUID program management and non-recurring engineering costs beyond a reasonable time (e.g., 5 years)<sup>3</sup> following implementation.

The overall effect of these changes is a reduction in estimated IUID implementation costs to \$3.2 billion. Payback is now expected in 4–6 years.

*Table 1. Initial and Revised Costs*

Category	What has changed?	Estimate (in millions)	
		Initial	Revised
IUID management program updates	Refined acquisition program estimates <sup>a</sup>	\$341	\$198
Cost to mark items (labor and equipment)	Refined depot maintenance marking cost estimates <sup>b</sup>	\$896	\$544
Non-recurring engineering (technical and process)	Refined acquisition program estimates, <sup>a</sup> revised legacy item NIIN estimate <sup>c</sup>	\$5,142	\$1,696
Automatic information technology (AIT) equipment and training	DLA <sup>d</sup> revised its estimate	\$221	\$167
AIS enterprise resource planning (ERP) plus feeder and boundary systems	Navy <sup>e</sup> provided an estimate and DLA <sup>d</sup> revised their initial estimate	\$40	\$295
Sum of annually recurring operating costs between FY12 and FY20	DLA <sup>d</sup> revised its estimate	\$495	\$262
<b>Total</b>		<b>\$7,100</b>	<b>\$3,200</b>

<sup>a</sup> Considered NRE requirement for items with data plates, revised man-hour estimates, and accepted tech data update costs through 2015.

<sup>b</sup> Considered the ease of marking items with data plates versus direct part marking.

<sup>c</sup> Services revised legacy item NIIN count from 252,095 to 461,000.

<sup>d</sup> DLA provided POM submission information; increased the ERP estimate from \$35 million to \$40 million and decreased FTE from 72 to 47.

<sup>e</sup> Navy provided an estimate of \$250 million.

<sup>3</sup> After this period, it is believed these costs will be normalized within the respective processes. As such, the costs should be viewed as part of a standard practice and not as specific IUID implementation costs.

**ACQUISITION LOGISTICS PLANNING NODE**  
**IUID COST ANALYSIS—REVISED**



**March 10, 2011**

**Prepared by the  
Acquisition Logistics Planning Node Working Group**



## SUMMARY

In the June 2010 report, the Acquisition Logistics Planning (ALP) node estimates contributed \$1,405 million of the non-recurring costs and \$322 million of the recurring annual costs for a total of \$4,625 million over the estimated 10-year implementation period.

At the direction of the task force, the ALP node working group refined its approach, obtained more data, and conducted additional analysis. The task force specifically asked the working group to reexamine the estimate for non-recurring engineering (NRE) costs, as NRE was the most significant cost element reported by any node to the task force.

In refining its approach, the ALP Node Working Group first examined its initial assumptions and obtained more data to improve the set of assumptions used in its estimates. After further analysis, the group determined it had overstated the estimated time needed to determine if an item meets IUID criteria and the average time to update technical drawings and repair specifications. The group also determined that many items that meet IUID criteria have data plates that will accommodate the two-dimensional (2D) IUID data matrix, which greatly reduces the NRE required for these items.

The updates to the initial set of ALP node assumptions are provided in ALP Table 1. A complete list of assumptions is provided in Appendix A.

**ALP Table 1. Updated Assumptions**

Assumption	Initial factor	Refined factor
Average time to determine the applicability of IUID to an item	0.5 hours per NIIN	0.2 hours per NIIN
Average time to update technical drawings and repair specifications	8 hours per NIIN	4 hours per NIIN
Percentage of legacy repair-part NIINs that have a data plate	Not considered	80–85%
Percentage of existing data plates that can accommodate the IUID 2D data matrix	Not considered	90%

The updates to initial assumptions and the additional analyses by the members of the ALP Node Working Group resulted in refined cost estimates for IUID implementation within acquisition logistics. The group now estimates non-recurring costs of approximately \$347 million and recurring costs (starting in year 2) of \$154 million annually, for a total IUID implementation cost over a transitional 5-year period of about \$963 million. All of these costs are acquisition program labor costs related to IUID planning activities.

Beyond the transitional 5-year period of IUID implementation, these planning activities and their associated labor costs will likely be normalized within the acquisition process and, therefore, will no longer be a cost that can be solely attributed to IUID implementation.

---

## ESTIMATED COSTS

The ALP Node Working Group identified non-recurring costs in five planning activities and recurring costs in six planning activities.<sup>1</sup> The planning activities are required to accomplish the 43 validated task force requirements to implement IUID in acquisition logistics. These requirements are detailed in Appendix N of the initial task force report.<sup>2</sup>

### Non-Recurring IUID Implementation Planning Costs

The non-recurring costs are for five planning activities needed to implement IUID in existing acquisition programs:

- ◆ Program IUID Implementation Plan preparation and distribution
- ◆ AIS integration planning
- ◆ Requirements determination (identifying which NIINs need to be UII marked)
- ◆ Engineering analyses (selecting where to mark items, analyzing the engineering impact on the item, and determining what technology to use)
- ◆ Drawing or repair specification updates.

Using the set of assumptions and calculations (shown in Appendix A), the ALP node working group estimated costs in each non-recurring planning activity, as shown in ALP Table 2.

**ALP Table 2. Non-Recurring Costs**

Planning activity	Major program	Less-than-major program	Total
Plan preparation and distribution	Done	\$292,880	\$292,880
AIS integration planning	\$966,000	\$1,987,400	\$2,953,400
Requirements determination	\$2,250,000	\$7,837,500	\$10,087,500
Engineering analysis	\$16,800,000	\$58,520,000	\$75,320,000
Technical drawing or repair specification updates	\$57,600,000	\$200,640,000	\$258,240,000
Total	\$77,616,000	\$269,277,780	\$346,893,780

---

<sup>1</sup> Cost estimating approach leverages LMI report, *Item Unique Identification (IUID) Non-Recurring Investment Costs within the DoD Maintenance Enterprise*, Steve Heilman, 2005

<sup>2</sup> Logistics Item Unique Identification Task Force, *Implementation of Unique Identification in DoD Logistics Processes*, Appendix N, “Validated IUID Logistics Requirements Final Working Paper” (dated October 23, 2009), 8 June 2010.

---

## Recurring IUID Implementation Planning Costs

The recurring costs are for six planning activities that are needed each year to incorporate new programs as they emerge and to update IUID plans in existing acquisition programs:

- ◆ Program IUID Implementation Plan preparation and distribution
- ◆ AIS integration planning
- ◆ Requirements determination (identifying which NIINs need to be UII marked)
- ◆ Engineering analyses (selecting where to mark items, analyzing the engineering impact on the item, and what technology to use)
- ◆ Drawing or repair specification updates
- ◆ Program IUID Implementation Plan updates.

Using the set of assumptions and calculations shown in Appendix A, the ALP node estimated costs in each of the 6 non-recurring planning activities as shown in ALP Table 3.

**ALP Table 3. Recurring Costs**

Planning activity	Major program	Less-than-major program	Total
Plan preparation and distribution	\$160,000	\$630,000	\$790,000
Plan updates	\$128,800	\$350,000	\$478,800
AIS integration planning	\$80,000	\$315,000	\$395,000
Requirements determination	\$600,000	\$1,650,000	\$2,250,000
Engineering analysis	\$16,000,000	\$44,000,000	\$60,000,000
Technical drawing or repair specification updates	\$24,000,000	\$66,000,000	\$90,000,000
Total	\$40,968,800	\$112,945,000	\$153,913,800

---

## Total IUID Implementation Costs

All IUID implementation planning costs for acquisition logistics planning would be incurred over a notional 5-year period. Recurring implementation planning costs will start in year 2 and continuing each year over the notional period. The total nonrecurring and recurring costs over this period are presented in ALP Table 4.

**ALP Table 4. Annual Costs**

Cost category	Year 1	Year 2	Year 3	Year 4	Year 5	5-year total
Non-recurring	\$69,378,756	\$69,378,756	\$69,378,756	\$69,378,756	\$69,378,756	\$346,893,780
Recurring (annual)	–	\$153,913,800	\$153,913,800	\$153,913,800	\$153,913,800	\$615,655,200
Total	\$69,378,756	\$223,292,556	\$223,292,556	\$223,292,556	\$223,292,556	\$962,548,980

For the notional 5-year period, the delta IUID implementation planning costs are estimated to total \$963 million. After the notional 5 years, recurring planning costs can no longer be attributed solely to IUID implementation.

## APPENDIX A. Assumptions and Calculations

This appendix provides a consolidated list of assumptions (ALP Table A-1) used by the ALP Node Working Group to arrive at its cost estimates and cost calculations (ALP Tables A-2 and A-3).

**ALP Table A-1. Assumptions**

Assumption	Initial factor	New factor
Existing major acquisition programs to assess for IUID applicability	100,000 NIINs 621 programs	No change
Existing less-than-major acquisition programs to assess for IUID applicability	275,000 NIINs 550 programs	No change
New major acquisition programs each year	10 programs	No change
New less-than-major acquisition programs each year	45 programs	No change
New major acquisition program NIINs each year	20,000	No change
New less-than- major acquisition program NIINs each year	55,000	No change
Percentage of existing major programs that have IUID plans	100%	No change
Percentage of existing less-than-major programs that have IUID plans	96%	No change
Percentage of existing major programs that have completed other IUID implementation planning activities	75%	No change
Percentage of existing less-than-major programs that have completed other IUID implementation planning activities	5%	No change
Average time to develop IUID implementation plan for a major program	160 hours	No change
Average time to develop IUID implementation plan for a major program less-than-major program	140 hours	No change
Average time required for AIS implementation planning for a major program	80 hours	No change
Average time required for AIS implementation planning for a less-than-major program	40 hours	No change
Average time required for IUID requirement determination	0.5 hours per NIIN	0.2 hours per NIIN
Average time required for engineering analysis	4 hours per NIIN	No change
Average time required for technical drawing and repair specification updates (items without data plates or items with data plates that cannot accommodate the IUID 2D data matrix)	8 hours per NIIN	No change
Average time required for technical drawing and repair specification updates (items with data plates that can accommodate the IUID 2D data matrix)	Not considered	4 hours
Percentage of existing program plans to update each year	10%	No change
Percentage of time required to update existing plans	50%	No change
Labor rate for IUID implementation plan preparation and distribution and annual plan updates (if necessary)	\$100 per hour	No change
Labor rate for AIS integration planning	\$100 per hour	No change
Labor rate for requirements determination	\$150 per hour	No change
Labor rate for engineering analysis	\$200 per hour	No change
Labor rate for technical drawing and repair specification updates	\$150 per hour	No change
Percentage of legacy repair-part NIINs that have a data plate	Not considered	80-85%
Percentage of existing data plates that can accommodate the IUID 2D data matrix	Not considered	90%

### ALP Table A-2. Non-Recurring Cost Calculations

<i>Major acquisition programs:</i>	
AIS integration planning (161 plans × 80 hours × \$100 × 75%)	\$ 966,000
Requirements determination (100,000 NIINs × 0.2hours × \$150 × 75%)	2,250,000
Engineering analysis (28,000 NIINs <sup>a</sup> × 4 hours × \$200 × 75%)	16,800,000
Technical drawing/repair specification updates (28,000 NIINs <sup>a</sup> × 8 hours × \$150 × 75%)	25,200,000
Technical drawing/repair specification updates (72,000 NIINs <sup>b</sup> × 4 hours × \$150 × 75%)	32,400,000
Total non-recurring cost for major acquisition programs	\$ 77,616,000
<i>Less-than-major acquisition programs:</i>	
IUID plan preparation and distribution (475 plans <sup>c</sup> × 140 hours × \$100 × 4%)	\$ 292,880
AIS integration planning (500 plans × 40 hours × \$100 × 95%)	1,987,400
Requirements determination (275,000 NIINs × 0.2hours × \$150 × 95%)	7,837,500
Engineering analysis (77,000 NIINs <sup>d</sup> × 4 hours × \$200 × 95%)	58,520,000
Technical drawing/repair specification updates (77,000 NIINs <sup>d</sup> × 8 hours × \$150 × 95%)	87,780,000
Technical drawing/repair specification updates (198,000 NIINs <sup>e</sup> × 4 hours × \$150 × 95%)	112,860,000
Total non-recurring cost for less-than-major acquisition programs	\$269,277,780
Total non-recurring costs	\$346,893,780

<sup>a</sup> 28,000 NIINs in major programs do not have data plates or have data plates that do not accommodate the IUID 2D data matrix: (100,000 NIINs × [1 - 80%]) + (100,000 × 80% × 10%)

<sup>b</sup> 72,000 NIINs in major programs have data plates that will accommodate IUID 2D data matrix: (100,000 NIINs × 80%) - (100,000 × 80% × 10%)

<sup>c</sup> 523 plans in less-than-major programs still need IUID plans prepared and distributed: 550 plans × 95%

<sup>d</sup> 77,000 NIINs in less-than-major programs do not have data plates or have data plates that do not accommodate the IUID 2D data matrix: (275,000 NIINs × [1 - 80%]) + (275,000 × 80% × 10%)

<sup>e</sup> 198,000 NIINs in less-than-major programs have data plates that will accommodate IUID 2D data matrix: (275,000 NIINs × 80%) - (275,000 × 80% × 10%)

### ALP Table A-3. Recurring Cost Calculations

<i>Major acquisition programs:</i>	
New IUID plan preparation and distribution (10 plans × 160 hours × \$100)	\$ 160,000
IUID plan updates (161 plans × 80 hours × \$100 × 10%)	128,800
AIS integration planning (10 plans × 80 hours × \$100)	80,000
Requirements determination (20,000 NIINs × 0.2 hours × \$150)	600,000
Engineering analysis (20,000 NIINs × 4 hours × \$200)	16,000,000
Technical drawing/repair specification updates (20,000 NIINs × 8 hours × \$150)	24,000,000
Total recurring cost for major acquisition programs	\$40,968,800

---

**ALP Table A-3. Recurring Cost Calculations**

<i>Less-than-major acquisition programs:</i>	
New IUID plan preparation and distribution (45 plans × 140 hours × \$100)	\$ 630,000
IUID plan updates (500 plans × 70 hours × \$100 × 10%)	350,000
AIS integration planning (45 plans × 70 hours × \$100)	315,000
Requirements determination (55,000 NIINs × 0.2hours × \$150)	1,650,000
Engineering analysis (55,000 NIINs × 4 hours × \$200)	44,000,000
Technical drawing/repair specification updates (55,000 NIINs × 8 hours × \$150)	66,000,000
Total non-recurring cost for less-than-major acquisition programs	\$112,945,000
Total non-recurring costs	\$153,913,800



## **APPENDIX B. Applicable Governing Policies**

The following governing policies are applicable to the ALP node for IUID:

- ◆ DoDI 5000.02, *Operation of the Defense Acquisition System*
  - Planning for entering full cost of item in IUID registry upon delivery—Encl 2, Para 7.c(4)
  - IUID implementation plan summarized in SEP at MS A, annex to SEP at MS B, and MS C, Encl 4, Table 3
- ◆ DoDI 8320.04 IUID Standards for Tangible Personal Property
  - Incorporates DFAR 211.274 requirements (see below)
  - Planning that includes provision for GFP
  - Planning for marking standardization in accordance with Mil-Std-129 and Mil-Std-130
- ◆ DoDI 5000.64 Accountability and Management of DoD-Owned Equipment and Other Accountable Property
  - Planning for mandatory use of AIT—Para 6.1.2
  - Planning for GFP—Para 6.3 and 6.4
- ◆ DFARS 211.274 Item Identification and Valuation Requirements
  - Planning for UII of all delivered items of \$5,000, or more
  - Planning for UII of items that are serially managed, mission essential, controlled inventory, or if the requiring activity determines a UII is required
- ◆ DoD Directive 8320.03 Unique Identification (UID) Standards for a Net-Centric DoD
  - Planning that accounts for data exchange standards
- ◆ DoD 4140.1-R DoD Supply Chain Materiel Management Regulation
  - Planning for system design to accommodate a Unique Item Identifier (UII) for individual assets—C5.7.3.2.8
  - Planning for Unique Item Tracking (UIT) program, as appropriate—C5.7.3.2.7

