ITEM-UNIQUE IDENTIFICATION

Implementation Template

for

DoD Maintenance Depots

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Item-Unique Identification

PURPOSE

This document is designed to aid DoD maintenance depots in implementing item unique identification (IUID). Specifically, the guidance will help depots plan for IUID, achieve their first IUID parts marking milestones, and establish full parts marking capability (to include registering associated data in the DoD UID registry).

INTRODUCTION

This document represents the culmination of experience gained from actual DoD implementation efforts. The basis of these efforts was formed by using the *Approach to Unique Identification Initial Operating Capability at DoD Maintenance Depots* that was prepared by the Office of the Secretary of Defense, Materiel Readiness and Maintenance Policy, in May 2005.

Vanguard efforts, such as IUID implementations at the Air Force Okalahoma City Air Logistics Center and at the Corpus Christi Army Depot, have produced effective planning documents that are guiding units to an initial capability and beyond. From these documents, seminal aspects of their successful approach to implementation planning and execution were extracted and are restated herein.

The common fundamental elements of each aspect were arranged into succinct and concise steps that together form a simple template for the planning and execution of IUID at DoD maintenance depots. The template includes a checklist that allows the implementation managers to chart their organization's progress as they advance their depot's IUID capability.

BACKGROUND

The Department of Defense (DoD) has determined that it will uniquely identify its tangible items to provide for better asset accountability, valuation, and life cycle management. Supporting this course, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD[AT&L]) created the Unique Identification (UID)[1] Program. The UID Program has established and is refining relevant DoD

[1] DoD Instruction 5000.64 *Defense Property Accountability*, UID policy applies to all items acquired through purchase, lease, or other means, including transfer or fabrication if the unit acquisition cost is $5,000 or more; the item is either a serially managed, mission essential, controlled inventory piece of equipment; the item is a reparable item, or it is a consumable item or material where permanent identification is required; or the item is a component of a delivered item that the program manager has determined must be uniquely identified for management purposes.

policy, acquisition requirements, and marking criteria for the implementation of UID within the DoD logistics and business environments.

As part of the UID program, separate initiatives have evolved to focus attention into the specific functions, processes, and activities essential to UID implementation. One of the initiatives relevant to the DoD maintenance environment is IUID, which uses a Unique Item Identifier (UII).

IUID is the process of implementing UID standards, instructions, and policies for tangible assets and items. The resultant identifying symbol or "mark" on a component or item is referred to as the UII. The UII contains the identification data string that is globally unique and unambiguous, yet it is standardized for full interoperability among automated information systems (AISs). This uniqueness of the data ensures integrity and quality throughout the life of the item, and supports multi-faceted business applications and users.

IUID and UII will help make possible the differentiation of marked items in the supply chain, bringing the DoD one step closer to realizing a full serialized item management (SIM) program for all tangible items and for all life cycle phases. As such, the DoD maintenance depots, where most legacy parts currently in inventory will be marked, are in a position to contribute significantly to this transformation of DoD information management capability.

OUTCOMES

The rationale for a depot to implement IUID should extend beyond meeting any Government requirements; rather, the motivation should come from an intimate awareness of the near- and long-term outcomes derived by the depot from UID. In the near term, as a depot progresses along the steps in this guide, the following will be established:

1. Depot IUID processes and associated doctrine,

2. The capability to uniquely identify and mark UID items using DoD sanctioned serialization schemas and parts marking techniques (plates, labels, direct parts marking), and

3. The capability to automatically capture, modify and query UID data in a local database and to transmit that data to a DoD centralized registry.

After these above capabilities are established, and as the depots begin to advance their UID programs, greater benefits can be realized. In the initial phases of UID, depot, item, and program managers will have better visibility of item location and value. But as UID is fully institutionalized across the Services, the capabilities evolve to provide managers with a means to share other vital information (reliability, maintenance events, etc.), and as such enable more effective life-cycle management. Improvements in the availability and quality of data give the depots

the much needed information to realize great efficiencies in depot operations, thus approaching the intent of serialized item management (SIM).

BENEFITS

Although IUID is viewed as a strategic imperative and a key enabler for benefits across the spectrum of DoD materiel readiness processes, there are specific benefits that will reach the depots.

IUID facilitates direct benefits in a depot's productivity (such as in reducing repair cycle times); in process efficiency (e.g., accurate automation of tedious and labor intensive tasks); inventory efficiency (reductions in depot inventory and support equipment); and in record/administration management (reduced time spent in slow and inaccurate paper-based systems).

Even small gains in productivity and efficiency in an operation as large as a depot are significant. These gains lower depot support costs and ensure higher states of readiness and availability for the supported warfighters. This gives a depot the competitive advantage in performance-based weapon support options and other industry partnerships.

APPROACH

This document provides succinct guidance that assists the DoD maintenance depots in planning for and establishing full parts marking capability. The guidance is presented in the form of a phased approach and includes three phases for ease of use. The phases are:

1. Conducting preliminary research and planning efforts,

2. Determining the new business environment and develop a marking plan for initial items targeted for IUID, and

3. Executing the marking plan and developing a full implementation plan for the remaining IUID items.

Within each phase, we present a list representing actionable tasks. Due to the distinctions between individual depot environments and requirements, the lists may not capture all the steps necessary for achieving all the objectives of each phase at every facility. However, the list provides a good foundation for comprehensive IUID planning.

It is envisioned that many of the tasks will be addressed concurrently. The three phases and associated steps are detailed in the next section.

IUID IMPLEMENTATION PHASE AND TASKS

Phase I. Conduct Preliminary Research and Planning Efforts

This phase includes developing the basic steps to define the scope of effort, establish a collaborative path, and designate the organizational elements needed for proper oversight and execution. The minimum Phase I steps are described below.

1. Establish IUID team: An Integrated Process Team (IPT) should be established to develop the depot IUID implementation plan. It is envisioned that the steps outlined throughout this document will be addressed by depot personnel (e.g., technicians, engineers, shop managers, process owners) and augmented by outside personnel with IUID experience. The IPT, in addition to depot representation, should also include item and program managers, and Service representatives having a vested interest in the decisions made (see Special Considerations section). Likewise, industry partners and significant suppliers should be aware of IPT decisions to ensure consistency with new item marking solutions whenever possible. As part of this step, the depot should designate a depot IUID POC to serve as the liaison to outside organizations.

2. Initiate preliminary research and planning efforts: The IPT should initiate preliminary research and planning efforts.

   a. Develop an IPT Plan of Action and Milestones.

   b. Research candidate items for IUID marking.

   c. Research parts marking sourcing options (organic or contract).

   d. Determine local serialization schema alternatives (i.e., the data construct of the marking [serial number, cage code, manufacturer id]).[2]

   e. Initiate engineering analysis to determine best alternatives and requirements associated with parts marking (e.g., what type to use [label, plate, or direct part mark], where to apply, and how to apply), to include determining technical data requirements (changes to engineering drawings, material specifications, and standards).

[2] Data constructs shall be consistent with current DoD policy, MIL STD 130M.

f. Investigate parts marking resource requirements (materials, equipment, automatic information technology [AIT], facilities, and training). This includes exploring:

   i) local database requirements,[3]

   ii) communication interface options associated with the DoD UID registry,

   iii) facility provisions, and

   iv) personnel training requirements.

g. Explore material process flow options as well as associated data and information requirements.

h. Determine quality control requirements.

i. Initiate associated costs analysis and define funding responsibilities.

3. Map current processes: The depot should map its existing maintenance, repair, and overhaul and manufacturing processes at a high level to determine how and where to insert parts marking capabilities.[4]

Phase II. Determine the New Business Environment and Develop a Marking Plan for Initial IUID Items

Under Phase II, the IUID team will use the information garnered under the previous phase to determine the new business environment. In addition, the team will select the first candidate parts for marking and establish a marking plan for these particular items. Phase II steps are defined below.

1. Develop an implementation schedule for initial items targeted for IUID, to include:

   a. selecting best candidate items for initial IUID parts marking, and

   b. setting production goals and timelines.

2. Establish local serialization schema.

[3] Initial UID data transactions should be able to report changes in inventory locations and item value. This communication must be automatic and should not involve manual data entry.

[4] The "as-is" process models serve as the baseline for IUID integration and employment within the depot environment. This defines the scope of implementation in the context of training, resources required, and business process reengineering required to achieve the "to-be" process models. Planning for the "to-be" should consider the impact on shop flow, training requirements, management and administrative requirements, and quality control measures.

3. Address parts marking technical requirements, to include:

    a. obtaining technical data,

    b. determining where and how to mark each item, and

    c. developing and obtaining approval of necessary changes to depot processes, material specifications, standards, and engineering drawings (Note: Current design authority for engineering drawings may reside outside of depot purview).

4. Establish sourcing option (organic or contract): If a decision has been made to procure any part of the IUID implementation requirement, initiate contracting process.

5. Determine and map the layout of the new business environment, to include:

    a. material process flow, including equipment locations, and

    b. data and information requirements.

6. Ready parts marking capability:

    a. Establish a local database to act as the touch point for IUID data or integrate IUID processes into an existing system.

    b. Develop or obtain communication interface with DoD UID registry for both depot manufactured and legacy parts.

    c. Obtain other necessary materials, supplies, and equipment.

    d. Address facility requirements.

    e. Train operators.

7. Establish the management structure: Define the roles and responsibilities necessary to manage and execute IUID implementation relative to a definitive capability (i.e., degree of performance/outcome expected).

8. Draft depot doctrine (e.g., instructions, management plan, SOP, and performance metrics, etc).

9. Set up quality control processes: To include establishing a method to document parts marking progress and monitor performance metrics.

10. Prepare budget.

11. Create a marking plan for initial parts targeted: to include developing a process for documenting progress.[5]

Phase III. Execute Marking Plan and Develop a Full Implementation Plan for Remaining IUID Items

At this phase, the depot executes the transition plan for the initial items targeted to be marked and, from the lessons learned from this experience, develops an implementation plan for all other items requiring IUID marking. The knowledge gained from the first IUID parts marking experiences should enable the depot to finalize its processes and doctrine in an informed manner. Having done so, the groundwork will be in place for executing parts marking on all other items, leading the way for ongoing IUID management. As with all processes, IUID processes should be continually reassessed and improved upon through continuous process improvement (CPI) initiatives. Phase III steps are described below.

1. Implement the marking plan for initial items targeted, to include:

    a. executing parts marking on targeted items and registering associated data in the UID registry,

    b. documenting experiences, and

    c. measuring any performance outcomes identified in steps 2-7 & 2-8.

2. Develop a full implementation plan for all other IUID items: Incorporating lessons learned from first parts marking experiences.

3. Finalize depot doctrine.

4. Review and adjust funding requirements as necessary.

5. Execute the implementation plan: Which will be the ongoing depot IUID program.

6. Initiate a CPI program: Capitalizing on experiences from other IUID implementation programs.

SPECIAL CONSIDERATIONS

Although the intent of this document was to draw from preceding guidance to document high-level actions and events that the depots should consider in planning

[5] The transition plan should exercise as many parts marking capabilities (labels, plates, direct parts marking) as feasible since it will serve as the foundation from which the depot UID program will be developed.

for IUID implementation, certain areas deserve special consideration. These areas are addressed below.

1. Alignment within the Service: Implementation of IUID must be well coordinated; implementation managers must think about the materiel and information requirements as they apply to an end-to-end life-cycle management approach. Depots are but one part of the DoD logistics and materiel readiness system and process; consequently, they must integrate their IUID efforts with others. Effective coordination requires active participation in other IPTs and implementation workgroups. Likewise, organizational responsibility must be established to properly research and articulate issues and find paths to resolution. Depot managers should publicize their points of contacts for IUID implementation and continually seek to reinforce implementation with strong organization and management.

2. Single Solution: An IUID implementation solution conceived for a local or unique process may not "fit" within the design of other organizations' processes. A collective or "holistic" solution may not be possible, or it may be cost prohibitive to those charged with implementation. However, intelligent decisions must be made as to when it is acceptable to isolate implementation into a single solution. Implementation decisions must be made with as full an understanding as is possible about future ramifications. The intent is not just to mark as many parts as quickly as possible, but to begin the transformation to a fully integrated information enterprise with full visibility of unique items (i.e., SIM).

3. Information Flow: The use of IUID facilitates accurate identification of unique items within an automated system. Parts identity data eventually coalesces with other data (technical and business) to become actionable information. This is the goal of both of the above steps: to form foundational approaches and plans in a collective manner in order to establish relevant, accurate, unique item-level data for shared enterprise-wide use. Depot implementation teams must consider the interoperability of their systems architecture when designing IUID capabilities.

4. IUID IPT: There are two aspects that must be addressed and coordinated when implementing IUID within a depot: 1) those internal aspects such as training depot artisans, and 2) those aspects that are external to the depot but affect or are affected by the application of IUID (such as standards, engineering specifications, compatibility with industry partners and suppliers, and AIS reengineering). In order to create a service/program approach to IUID, item and program managers and service representatives should be included on the depot IPT Team. In addition, outside sources such as industry experts and relevant academia, should be drawn upon to assist in evaluating implementation plans and processes.

5. AIS Interface: The item, system, and logistics process owners seldom have complete control or ownership of the AIS used in support of materiel management. As such, effective interface with the AIS is essential for success. Similarly, as IUID progresses and becomes the key enabler of increased efficiency and other benefits across the Service and DoD enterprise, AIS interface requirements may become fairly common. Depot teams should look to assess the availability of interface hardware and software as it might exist or be developed for like organizations and processes.

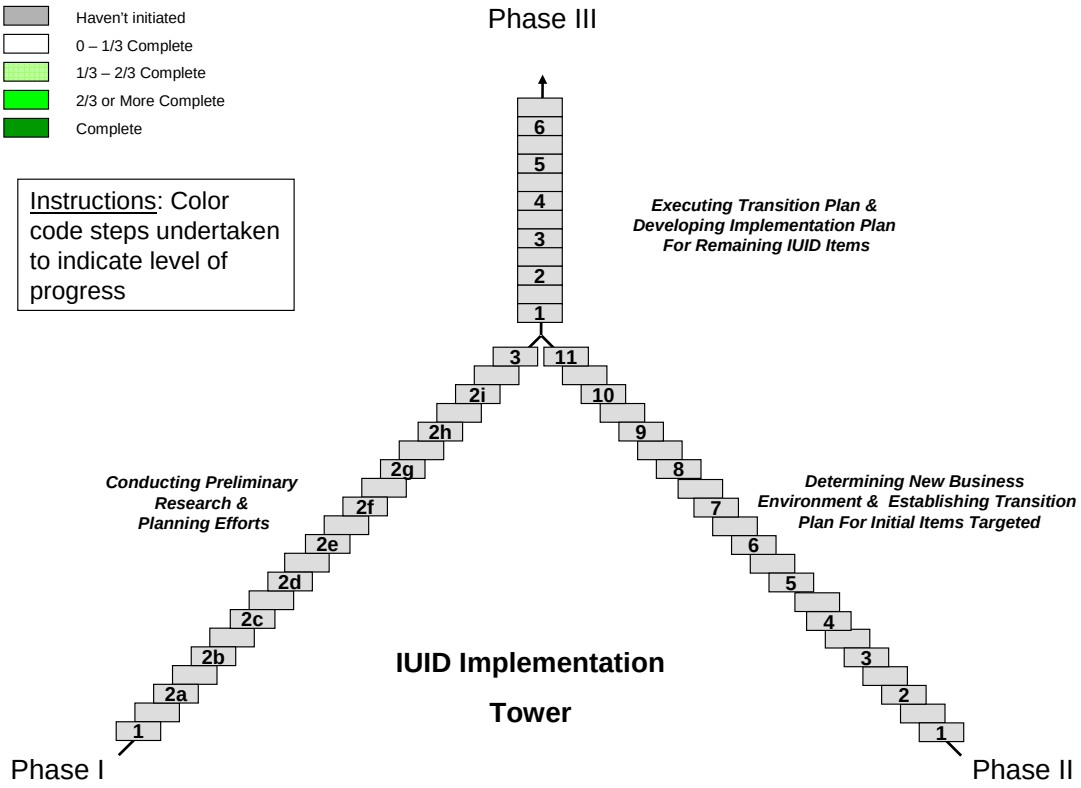
MEASURING PROGRESS

The diagram below, used in conjunction with this guide, has been developed to provide depots with a common tool with which they can map and communicate their IUID progress, both internally and externally.

Each leg in the diagram represents one of the three phases addressed in this guide. The blocks represent the associate steps. As IUID is implemented, the depot IPT should indicate its progress by color coding the blocks corresponding to the steps in the guide. For example, using the legend at the top left of the diagram, the lightest green color would represent that a third of the effort associated with a particular step has been accomplished; the next darker shade would indicate that between a third and two thirds of the work had been accomplished, and so forth.

As depicted by the diagram, both Phase I and II provide the foundation for realizing full parts marking capability.

Figure 1. IUID Implementation Tower



The appendix provides a working version of Figure 1 for depot use.

SUMMARY

The tasks laid out in this document provide a template to implement IUID at DoD maintenance depots. These steps are not all inclusive and additional actions may be necessary as deemed appropriate by internal implementation teams. However, these steps are considered minimum essential tasks. By following these basic steps, depot managers will significantly simplify their implementation efforts and be able to collectively articulate and discuss common issues and solutions.

The steps in this template are the culmination of the lessons learned from successful implementation efforts and experience. In order to provide utility to an audience with diverse backgrounds, the tasks are represented in a generalized fashion.

An implementation effort as comprehensive and as large as the application of IUID has many aspects that have no precedence; consequently there are many unknowns. The best path to success is to share experiences and issues within the community at large. By following the intent and concept of this template and maintaining good communications across the Services, the depot implementation

teams will be able to take full advantage of the business and information transformation that IUID enables.

In addition to the references cited in this document, please visit http://www.acq.osd.mil/dpap/UID/ for more detailed information and guidance in implementing IUID.

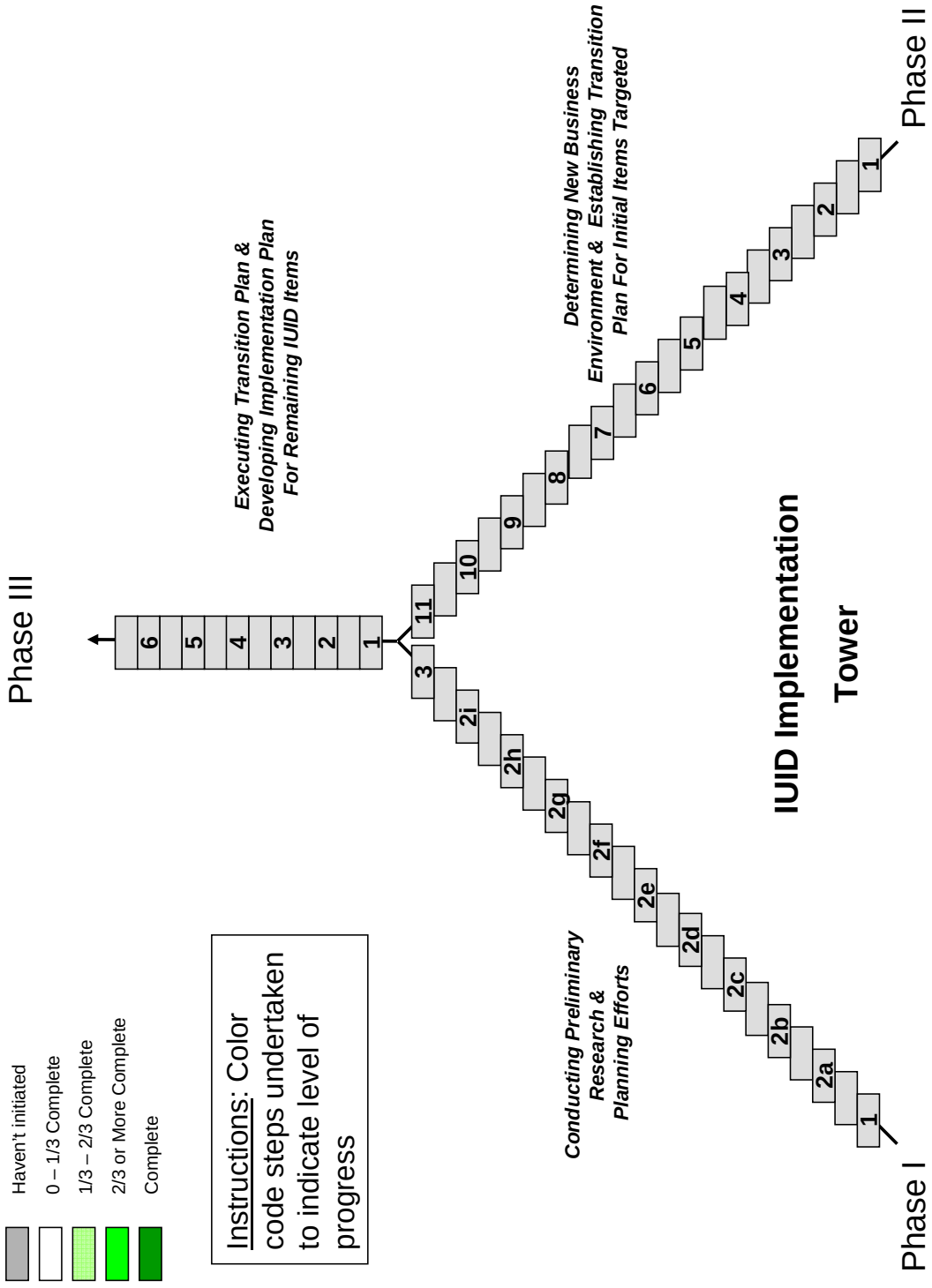
REFERENCES

[1] Office of the Assistant Deputy Under Secretary of Defense–Materiel Readiness and Maintenance Policy (ADUSD-MR&MP), *The Concept for IUID-Enabled Maintenance in Support of DoD Materiel Readiness*

[2] Office of the Assistant Deputy Under Secretary of Defense–Materiel Readiness and Maintenance Policy (ADUSD-MR&MP), *Approach to Unique Identification Initial Operating Capability at DoD Maintenance Depots*, May 2005

[3] Under Secretary of Defense for Acquisition, Technology, and Logistics (USD[AT&L]) UID website, http://www.acq.osd.mil/dpap/uid

[4] IUID Toolkit (see PM, supplier, depot, and warfighter tracks), http://www.iuidtoolkit.com

[5] Defense Acquisition University UID Special Interest Area (see Acquisition Community Connection, Unique Identification), https://acc.dau.mil/CommunityBrowser.aspx?id=18007

APPENDIX. IUID IMPLEMENTATION ACHIEVEMENTS