

DEPARTMENT OF THE NAVY

SERIALIZED ITEM MANAGEMENT STRATEGY

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Deputy Under Secretary of Defense
for
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1.0 INTRODUCTION

The Department of the Navy (DON) oversees the Marine Corps' and the Navy's ability to project force onto the littoral regions of the world, engage in forward areas during peacetime, and rapidly respond to regional crises. It comprises the largest Navy in the world, with a tonnage greater than that of the next 17 largest navies combined and had a baseline budget of \$139.8 B in Fiscal Year 2008. To maintain combat-ready Naval forces, the Department continuously assesses best practices and evaluates new concepts similar to large, leading-edge commercial entities. The commercial sector has advanced modern supply chain management disciplines and methodologies, building upon advanced information technology to achieve distributed adaptive logistics support.

DON is currently focused on revamping logistical operations to improve efficiency, effectiveness and readiness, as well as its ability to meet future requirements—all at an affordable cost. To accomplish this, the DON plans to leverage the logistics technologies and business processes developed by commercial industry. The intent is to replace slow, cumbersome logistics processes with responsive anticipatory systems. These systems must enable the delivery of the right equipment and supplies in the right place, time, and quantities across the full spectrum of military operations. This will be made possible by implementing transformational innovations to processes, systems, and organizations in a collaborative, team-oriented environment. Accordingly, DON is adopting proven industry practices for standardized parts marking and material management.

This document defines the DON's approach for implementing two key emerging logistics concepts in accordance with Department of Defense (DoD) policy¹:

- **Item Unique Identification (IUID)**: A system of marking qualifying DoD tangible personal property including new acquisition items prior to delivery to the Government with unique item identifiers (UII) that have machine-readable data elements to distinguish an item from all other like and unlike items. This is accomplished by marking populations of select items (parts, components, and end items) with a data matrix symbol containing a UII and additional pedigree data as appropriate, enabling collection and analysis of maintenance, logistics, and accountability data about individual assets. It is a key enabler to data integrity and quality control by providing the ability to link attribute information about a specific item via a standardized, unique data element across disparate information systems.
- **Serialized Item Management (SIM)**: The ability to make attribute data about specific items and their respective total populations readily available to program managers, system engineers, designers, maintainers, logisticians, and other functional area managers, and the use of that data for current and enhanced management functions. It provides accurate and timely item-related data that is easy to create and use. This data improves performance of current programs and processes, allows new functional areas such as finance to have visibility and management of these populations of items, and empowers business process re-

¹ Department of Defense Instruction (DoDI) 4151.19, *Serialized Item Management (SIM) for Materiel Maintenance*, 26 December 2006

DoDI 8320.04, *Item Unique Identification Standards for Tangible Personal Property*, 16 June 2008

engineering in all functional areas to achieve greater efficiency, reliability, readiness, and safety.

A distinction must be made between “serialized items” and “serially managed” items. While DON may use an item that has been serialized by the manufacturer, it may not manage the item by means of its serial number, or may choose not to manage the item on an individual basis at all depending on the cost and purpose of the item. When DON elects to serially manage an item, it is designated to be tracked, controlled, or managed in maintenance, repair and/or supply by means of a unique, DoD-assigned or approved number. All DoD serially managed items require a UII for this serial management. Serial numbers from manufacturers may be unique within a product or company, but UIIs are globally unique. This permits an item to be uniquely distinguishable throughout its life cycle and within different databases. Items must satisfy both these requirements of UII-marked and managed by organizations and their information systems as unique items to qualify as “serially managed.”

A key tenet of SIM is the concept of managing assets by specific attributes. An attribute can be any quantifiable measure of performance, time, space, composition, environment, pedigree, cost or other definable data, such as historical, contractual, or ownership information associations. This concept will be further defined throughout this document.

2.0 PURPOSE

To define the DON SIM vision and strategy, and to identify the specific approach and elements required across the DON to achieve successful integration, implementation, evaluation, monitoring, and continuous improvement of SIM to improve logistics efficiencies and reduce cost of operations.

3.0 SCOPE

This Strategy presents the DON approach which is structured with two levels: the overarching DON-wide program elements; and Appendices for each Hardware Systems Command (SYSCOM) presenting the program elements allocated for SYSCOM management. For the DON-wide program, this document establishes the DON components of SIM goals and objectives, program approach, governance, and DON-assigned roles and responsibilities. Since the SYSCOMs are responsible for total life cycle systems management within the Navy and Marine Corps, they must define the processes and procedures unique to their environment and to ensure full compliance as stipulated within the DON guidance. In order to achieve maximum benefit throughout the DON enterprise, each SYSCOM has been charged to develop a logistically supported SIM-based plan and approach specific to their operating environment. This approach provides the opportunity for flexibility, innovation and priority sequencing of SIM implementation while still maintaining a centralized DON strategy and direction. These plans, attached as Appendices, are an integral part of the DON Strategy.

Within this document, the term “SYSCOM” is used to identify the following organizations:

- Bureau of Navy Medicine (BUMED)

- Marine Corps Systems Command (MARCORSYSCOM)
- Naval Air Systems Command (NAVAIR)
- Naval Facilities Systems Command (NAVFAC)
- Naval Sea Systems Command (NAVSEA)
- Naval Supply Systems Command (NAVSUP)
- Space and Naval Warfare Systems Command (SPAWAR)

DON has five smaller units in addition to the Hardware SYSCOMS above. The Military Sealift Command, the Office of Naval Research, and the Navy Special Warfare Command are beginning their engagement with IUID and SIM, and their SIM plans will be incorporated as appendices during annual reviews of this SIM Strategy. The Strategic Systems Program and Office of Special Projects SIM efforts will be handled in a separate planning and implementation strategy due to the sensitive nature of the items they manage.

DON intends to simultaneously implement SIM within its acquisition and materiel maintenance processes, procedures, and information systems, since the best benefits will be derived from all facets being considered concurrently, encompassing the full spectrum of materiel management as required. Practical considerations of resources and the precursor of IUID Automated Information System (AIS) modification and resources for SIM, such as increased attribute data collection, will lead to some sequential implementation, but the DON guidance is to engage immediately to the full extent possible.

The five major areas requiring SIM implementation efforts are listed in Table 1.

Table 1: SIM Implementation Areas

Area	SIM Scope of Effort
Capability Insertion	<ul style="list-style-type: none"> • Test and demonstrate SIM enablers and integration necessary to achieve life cycle management • Conduct integration engineering • Support analysis development
Continual Process Improvement	<ul style="list-style-type: none"> • Establish performance reviews relative to implementation efforts • Benchmark SIM capability and institute optimization and performance measures
Information Architecture	<ul style="list-style-type: none"> • Integrate SIM systems architectures (including assisting materiel developers) into the Logistics Architecture • Test and maintain interoperability • Refine systems architecture in support of AIS • Develop and maintain Operational and Technical Architecture including data standardization • Obtain Investment Review Board (IRB) milestone approval (if required)
	<ul style="list-style-type: none"> • Define specific application and DON interfacing of SIM roles within the Joint and Future areas

Joint/Future Synchronization	<ul style="list-style-type: none"> Identify gaps, redundancies in sustainment planning, and potential solutions
Logistics Domain	<ul style="list-style-type: none"> Develop inputs for policy, doctrine, requirements documents to achieve a fully synchronized SIM capability Develop and field materiel solutions that support the SIM requirements/capabilities Establish analytical entities and resources needed to convert SIM data to useful information

Full implementation of SIM throughout the DON will be achieved via a multi-year transition plan since it requires a significant quantity of assets to be IUID compliant, modernization of automated information systems, and focusing business process reengineering to capitalize on new technology.

As such, this overarching strategy and each Appendix will be updated annually, beginning October 2010, to document the evolutionary migration towards achieving full SIM implementation.

4.0 GOALS AND OBJECTIVES

The overarching goals of the DON SIM strategy are to increase weapons system readiness, reliability, and safety; create life cycle asset visibility; and provide a reduction in ownership costs through enhanced, efficient and effective weapons system sustainment operations. These goals will be achieved by creating a global, unified supply chain—one that is capable of projecting, sustaining, maintaining, and reconstituting combat power under the full range of operational scenarios—that performs with complete visibility and control of all relevant assets, equipment, and materiel.

DON objectives for accomplishing these SIM goals are:

- Establish an effective DON organizational structure that can address SIM governance, planning, implementation oversight, execution/application, and sustainment aspects, issues, and reviews.
- Fully support and advance the rapid implementation of IUID as a key enabler of SIM.
- Define SIM requirements for all Acquisition Category (ACAT) weapon systems acquisition programs.
- Develop broad-based SIM programs for all Critical Safety Items (CSI) managed or used by DON.
- Identify populations of unique items to be serially managed within legacy systems and equipment sustainment programs.
- Identify the relevant processes affected by SIM within the full spectrum of material management functions with initial emphasis on maintenance management and materiel requirements for weapon system sustainment.

- Identify, develop, and integrate effective SIM data capture processes and a supporting technology infrastructure for all relevant automated information systems needed to effectively manage SIM items.
- Reengineer materiel management, maintenance management, and other logistic processes to take advantage of greater automated information capabilities facilitated by the use of IUID and associated SIM data.
- Integrate all of the above into the future framework of DON support, logistics, business, and information systems and processes.

Failure to synchronize DON and Joint logistics functions with SIM implementation increases the risk of developing disparate, inefficient, and incomplete visibility information systems with burdensome and costly requirements and business rules.

5.0 BENEFITS OF SIM

A SIM culture and supporting processes will provide timely, actionable, relevant information to make well-informed decisions. DON weapon system sustainment managers will have dramatically improved insight into the cause-and-effect relationship between resources and readiness. Capitalizing on this insight, weapon system support decisions will be more timely and actionable. To fully achieve the benefits of SIM, DON must first decide what items will fall within the scope of SIM and then establish and track the required characteristics (attributes).

For SIM purposes, uniqueness goes beyond the ability to merely identify individual items. SIM adds the ability to characterize and manage these uniquely identified items by their specific and individual attributes. Attributes can be any quantifiable measure of performance, time, space, composition, environment, pedigree, cost, or other definable data, such as historical, contractual, or ownership information associations.

A carefully implemented SIM plan will yield the following benefits (not all inclusive):

- Assets requiring financial or physical accountability will be defined, identified, and accounted for at all times.
- Configuration status and management will be enhanced.
- Warranty management will be improved.
- Expiration of life-limited components will be anticipated and managed.
- Equipment recalls will be focused only on affected assets.
- Condemned parts will not be reintroduced into the working population.
- Maintenance will be tailorable to achieve programmatic or strategic goals.
 - Minimize maintenance cost
 - Maximize asset performance
 - Maximize asset reliability
 - Maximize maintenance throughput
- Maintenance will be performed only when necessary, will be more predictive in nature and will have enhanced management oversight.

- Maintenance will be customized to specific assets accounting for their pedigree, history, and intended mission.
- Systematic program problems will be identified and scoped both for impact and resolution so that program resources may be prioritized.
 - Cost overruns
 - Reliability, maintainability, availability problems
 - Delivery schedule slip
- Data entry and analyses will cost less, be more timely, and have better confidence intervals.
- Materiel and materiel-related services provided under contract will be more visible to allow greater accountability.
- Accurate, meaningful, and useful feedback will be available for incentive-based contracts.
- Life cycle costs will be reduced.
- Actionable information will be provided to those who need it when they need it.
- Timely identification of assets requiring Engineering Change Proposals.

6.0 KEY INITIATIVE ENABLERS

DoD has promoted several initiatives specifically designed to improve efficiency and effectiveness for sustaining combat capabilities, while ensuring the required level of readiness is attained at an affordable cost. Achieving these improvements is the primary objective of IUID, Continuous Process Improvement (CPI), Reliability-Centered Maintenance (RCM), Condition-Based Maintenance Plus (CBM⁺), Total Life Cycle System Management (TLCSM), Information Sharing and other materiel readiness programs and initiatives. Some of these initiatives enable a SIM approach to asset management and SIM, in turn, then enables additional initiatives. In a post-SIM environment, the feature common to all will be their interdependence on mutually defined data related to and associated with a specific materiel asset through use of IUID. All decision-makers, from maintenance technicians to logistics planners, will have rapid access to comprehensive and accurate information.

6.1 INITIATIVES ENABLING SIM

The DoD initiatives providing the foundation for SIM at the DON and SYSCOM level are:

ITEM UNIQUE IDENTIFICATION (IUID)

IUID is a system of marking items with UIIs, encoded in machine-readable symbologies which distinguish an item from all other like and unlike items. The IUID program is a foundation for enabling DoD to achieve improved readiness, total asset visibility, improved life cycle item management, and improved accountability.

A UII is a set of data marked on a tangible item in machine readable code, the Data Matrix ECC 200 symbol, that is globally unique and unambiguous. It ensures data information quality is maintained throughout the item's life and supports multi-faceted business applications and users.

DoD policy² defines the criteria for providing IUID marking on all qualifying property items delivered to the Government under contract, in inventory, in-use or legacy items.

On-going efforts throughout the DON to mark selected designated populations with a UII will not be sufficient in and of themselves for SIM implementation. IUID is only an enabler, as the primary means for associating pedigree, usage, maintenance, warranty, status, and configuration data to serially managed equipment.

DON does not advocate displacing the use of National Stock Numbers (NSN) within supply chain processes. However, for items that hold specific management significance, marking them with UIIs allows an almost infinite number of possibilities regarding how to better order, issue, track, store, handle, manage, maintain, use, and dispose of items. Used within the SIM paradigm, IUID enables the management of assets by relevant attributes to achieve huge efficiencies and operational gains.

SERIAL NUMBER TRACKING (SNT)

DON has been using SNT programs for many years in various commodity areas, such as small arms, aviation, and ordnance. They use a variety of systems and methods to track critical parts based on specialized needs for local maintenance or inventory tracking. Some SNT programs are automated, but the majority are based primarily on manual, paper-based procedures for a very limited population of items. These procedures feed a manual conversion process into electronic databases, which only capture information relative to the direct use or issuance of a serialized item with reference to that program or database. Previous limitations of technology have prevented a greater capability and application to larger item populations.

Because there are no guarantees against the existence of duplicate serial numbers in the larger enterprises of SYSCOMs, the DON, or DoD with multiple vendors, the limitations of SNT are immediately evident. Serial-numbered items are currently tracked with questionable accuracy, and true global uniqueness can never be established. Other systems and programs, such as acquisition, procurement, and finance, cannot use the SNT data for their business purposes. Thus, SNT cannot by itself provide the foundation for managing assets in the context of a comprehensive life cycle management paradigm. Furthermore, SNT is a laborious and costly effort when performed without the benefit of automation. However, despite the issues noted above, SNT programs provide the logical starting point in which to implement SIM with many valuable business processes based already on individual item identification, and defining the most important populations of items to begin IUID marking and eventual SIM management.

CONTINUOUS PROCESS IMPROVEMENT (CPI)

CPI is an Office of the Secretary of Defense (OSD) initiative focused on maximizing weapon system readiness while minimizing materiel flows and in-process inventories. The goal is to optimize reliability and cycle time while striking a reasonable balance with costs across the total life cycle value chain. The DON recognizes the inherent value of CPI as an important tool for

² Department of Defense Instruction 8320.04, *Item Unique Identification Standards for Tangible Personal Property*, 16 June 2008.

improving operating effectiveness in support of the warfighter. As such, a team of subject matter experts from across the department has been tasked to map our “as is” logistics processes supporting IUID and SIM. The three primary reasons for accurately describing the “as is” processes are to:

- ensure the processes currently used actually meet existing requirements and performance goals
- understand the efficiency of those requirements and goals relative to some measure or assessment of their effectiveness
- identify gaps that interrupt a seamless flow of information

All three reasons are critical to making certain that good processes are not fulfilling poor requirements, and conversely that bad processes are not perpetuated or limit the development of more advanced or better requirements. By continuously improving the current process and requirements environment, DON will strive to ensure the new requirements for transitioning to and achieving a full SIM capability are not restricted by obsolete or inadequate requirements.

6.2 SIM ENABLING OTHER INITIATIVES

Four other DoD initiatives will be enhanced by implementation of SIM, providing the specific pathways to increase our readiness, reliability, and safety at a reduced cost, as listed as SIM benefits. It should also be noted that CPI is identified again, this time as a beneficiary of SIM.

RELIABILITY CENTERED MAINTENANCE (RCM)

RCM is an industrial improvement approach focused on identifying and establishing the operational, maintenance, and capital improvement policies that will manage the risks of equipment failure most effectively. Maintenance plans for equipment will be derived from a RCM analysis that determines the prescribed maintenance action required to mitigate effects of known failure modes of equipment. This analysis will define the failure modes and conditions of failure that will drive sensor placement, preventative maintenance tasks, or inspection cycles required to achieve inherent reliability through prevention of known critical failure modes. SIM is a foundation for RCM by providing both historic data for analyses and operational data to signal the need for maintenance.

CONDITION BASED MAINTENANCE (CBM) / CBM PLUS (CBM⁺)

CBM is the application and integration of appropriate processes, technologies, and knowledge-based capabilities to improve the reliability and maintenance effectiveness of DoD systems and components. A goal of CBM is to perform proactive maintenance at specified trigger events, rather than unscheduled reactive maintenance. The trigger events are determined in a variety of ways, including physical inspection, analyses (such as diagnostics and prognostics), and known periodic cycles. CBM⁺ at the basic level is enabled by sensors embedded on equipment platforms and other systems to improve reliability, maintenance, and the operational availability of those assets. The ability to utilize CBM⁺ requires having reliable, timely data covering the life cycle of the item—linked to that item and visible to analytic and reporting systems—that IUID-enabled SIM provides.

TOTAL LIFE CYCLE SYSTEM MANAGEMENT (TLCSM)

TLCSM is the implementation, management, and oversight, by the designated Program Manager, of all activities associated with the acquisition, development, production, fielding, sustainment, and disposal of a DoD weapon system across its life cycle. A goal of this initiative is to realize benefits by proactively anticipating problems to be encountered in later phases of a system's life cycle, and initiate corrective action as early as possible by the most cost effective and efficient means. SIM data will span the entire life cycle. For TLCSM, SIM enables not just ordering and receiving the "right" part, but also accurately identifying, requesting, and receiving the "best" part, based on the additional, finer-grained attribute information possible with IUID and SIM. The best part is one that holds the correct attributes needed to optimize the readiness at the best cost, as determined by individual weapon system, fleet, or enterprise management criteria.

INFORMATION SHARING

The DoD Information Sharing Implementation Plan (ISIP) v1.0 issued 22 July 2008 provides amplifying guidance on achieving Information as a Strategic Asset, Goal 2 of the DoD Information Management (IM)/Information Technology (IT) Strategic Plan. The plan identifies the scope of and impediments to achieving information sharing envisioned by the DoD. SIM will be implemented within the DON to support sharing information within individual programs, between separate DON programs, with other services, other governmental and non-governmental agencies, and with local authorities as delineated within the ISIP. Five implementation considerations to improve the DoD's ability to share information addressed within the ISIP are:

- Culture
- Policy
- Governance
- Economics and resources
- Technology and infrastructure

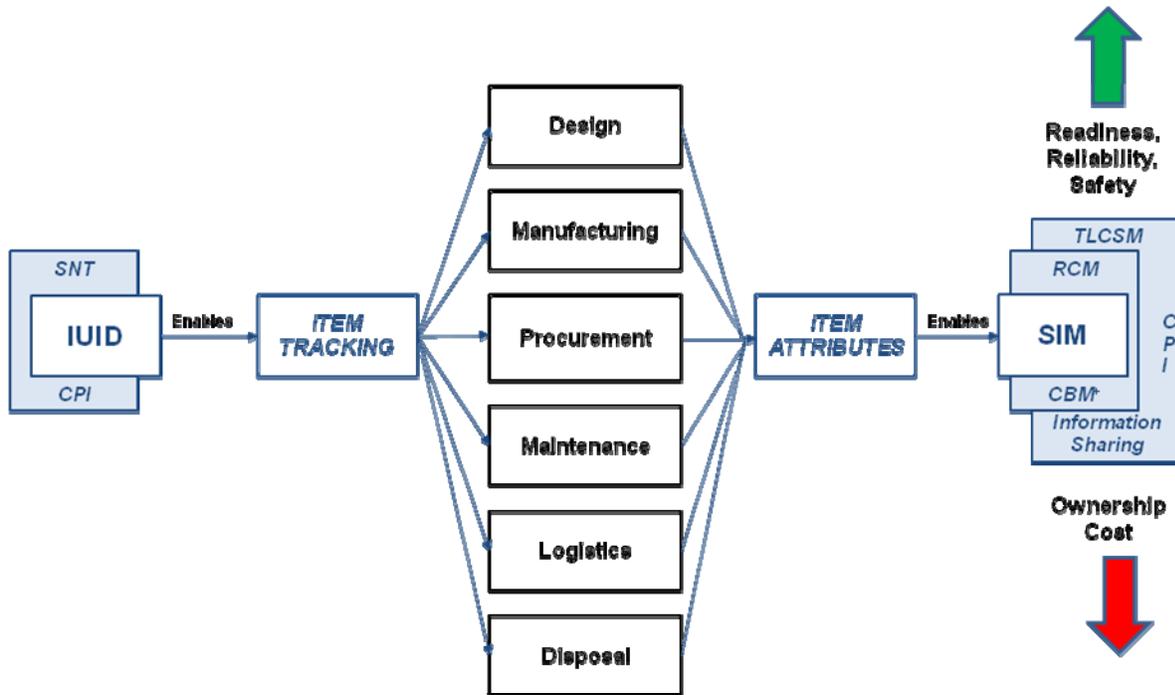
DON SIM implementation will support the ISIP principally in the area of establishing technology and infrastructure through data standardization. SIM will provide motivation and guidance to the legacy AISs to use the UUI as the global primary key across all item-related systems with common data attribute definitions, thereby enabling data sharing and Net-based data harvesting. It will create a rich analytical and management environment for acquisition, procurement, sustainment, logistics, finance, and potential expansion into other functional areas.

CONTINUOUS PROCESS IMPROVEMENT (CPI) ENABLED BY SIM

While CPI supports SIM by establishing appropriate and effective processes, SIM then serves as a major tool in CPI after implementation. SIM will allow all processes dealing with items to increase the precision of existing metrics through the accuracy of automated item tracking, including the effectiveness of CPI activities. It will also enable introduction of new metrics with greater granularity using attribute information down to the individual item level. Additionally, SIM will stimulate creation of new views and analysis of processes with the enhanced attribute

analysis made possible by SIM- based aggregation of data from previously isolated functional areas.

Figure 1: SIM Integration with Key Initiatives



7.0 IMPLEMENTATION STRATEGY

SIM by its nature impacts many facets within an organization, from the highest planning activities to the physical touch of millions of items. DON implementation allocates responsibility to the appropriate organization for the diverse tasks of AIS modification, hardware acquisition, and business process re-engineering. The Office of the Deputy Assistant Secretary of the Navy, Acquisition and Logistics Management (DASN (A&LM) provides enterprise leadership on AIS modification and acquisition process change; while the SYSCOMs handle the technical implementation and business process re-engineering. Supply chain and disposition implementation is under the guidance of DoD, given the cross-service process management structure in place at this time.

7.1 DON-LEVEL IMPLEMENTATION

The Department level will be responsible for two DON-wide tasks: coordinating the enterprise approach to AIS integration of SIM requirements, and propagating SIM integration into the acquisition process. These two areas may be performed most effectively through DON policy and directives, management of relationships with DoD/OSD and other services, and DON-wide training and culture change.

7.1.1 AUTOMATED INFORMATION SYSTEMS

To fully leverage the value of SIM, Automated Information Systems (AIS) will need to be able to offer four distinct capabilities:

- 1) Associating an UII with an asset
- 2) Capable of sharing the data across AISs using the UII as a common key.
- 3) Accurately capture life cycle data about individual items, which is pertinent to their effective management, without overburdening the individuals involved or debilitating the information system.
- 4) Support data mining (the data that enables RCM, CBM⁺, and TLCSM decision making) for analyses, which provide the majority of benefits.

It is the DON position that legacy information systems will be modernized to incorporate IUID or SIM capabilities on a case-by-case basis, depending on (a) overall impact to the unit, SYSCOM or DON; (b) expected remaining service life; (c) resources; and (d) value to partner systems in cross-component and cross-agency interfaces. Creating or modifying new architectures should strive for scalability specifically with respect to end item, component, and part parent-child relationships of items. Architectures that support nested parent-child relationships to an arbitrary depth can accommodate any relational representation of an item's configuration.

Maintenance and logistics analyses are currently conducted based on combinations of pedigree data and/or other system-unique asset identifiers. It may be necessary to create a separate data file cataloging UII information as it correlates to identifying information in the various databases within the program as the most cost effective, expedient way to provide a level of SIM benefits for a program.

With SIM, it is necessary to determine a structured transit approach and process based on the use of IUID in order to guide and ease the large-scale legacy system transformation, either as a modernization to the legacy system or migration to a new enterprise-wide system. Naval enterprise-wide AIS solutions are under development—Navy Enterprise Resource Planning (Navy-ERP) and Global Combat Support System-Marine Corps (GCSS-MC). Both of these transformational efforts are multi-year evolutions that require Department-wide business process reengineering of financial, maintenance, and logistics systems, and will be IUID-enabled for SIM implementation.

DON leadership will ensure that AIS transformation for IUID and SIM processes are leveraged through collaborative, integrated strategies across and beyond the SYSCOMs. As with overall IUID implementation, this will not result in a broad full-scale SIM capability on a given timeline, but a graduated implementation within and across SYSCOMs, as well as differing functionality based on requirements.

DON IUID AIS COMPLIANCE STRATEGY

The DON has initiated a strategy to evaluate legacy AISs, to create a comprehensive, prioritized plan for converting appropriate AISs to IUID. For legacy systems that will be modernized to handle UIIs, this will begin the process of SIM implementation, since few systems need to track

items for minimal inventory control and most will migrate to managing items by relevant business process attributes.

The DON AIS strategy analyzes each AIS with respect to its relevancy to item management, as expressed in the Weapons Systems Lifecycle Management/Materiel Supply & Services Management (WSLM/MSSM) Investment Review Board IUID compliance checklist. The plan then considers the four factors described above (impact, remaining life, resources, and cross-agency value) to prioritize these systems for investment. Navy-ERP will serve as the forcing function in IUID compliance in that feeder systems will have to read and store IUID data in order to pass it to the ERP-embedded acquisition, supply, or maintenance support processes. The Strategy, due to be completed in August 2009, will guide the DON transformation to an IUID-enabled information sharing environment, providing the foundation for SIM-based process improvements and business re-engineering. The SYSCOMs will take the lead in the SIM exploitation of the item data, as discussed in the Appendices.

NAVY-ERP

The Navy-ERP program will transform business activities into an integrated network of decision-making processes and activities. It will be a critical link between operating forces and the Navy's support echelons, of acquisition, supply chain, logistics and maintenance. The program will:

- Reduce overall Navy costs by applying proven industry best practices and processes and replacing legacy IT systems.
- Facilitate an end-to-end solution for receiving requests for resources and processing them to fulfillment.
- Replace stove-piped systems used for financial management, and personnel management with an integrated system.
- Enable rapid response to operating force logistic needs through integrated visibility and status data.
- Provide allocation, visibility, tracking, and reporting functionality.
- Perform funds execution from distribution through disbursement.

The data gathered by SIM implementation in the SYSCOM AISs will transparently link and integrate Navy data across many diverse and dissimilar systems into a distributed, unbounded information environment. That data will then be made available to and from Navy-ERP by interfacing with modified legacy AISs. The maintenance and sustainment item data, which are not designed to be housed in Navy-ERP, will then provide opportunities for business process improvement of the Navy-ERP modules such as finance, beyond the scope of the legacy AISs that manage the individual SIM items. Navy-ERP will also evaluate its business processes to determine where IUID functionality is required, and to identify any existing gaps from the functional, interface, and business rule perspectives.

GCSS-MARINE CORPS

The scope of GCSS-MC includes all transactional Combat Service Support (CSS) systems related to supply chain management and enterprise asset management functionality with an element of service management functions. When combined, these capabilities are referred to as

logistics chain management. It will provide timely and accurate asset posture, correct equipment readiness information, and total asset visibility, all in a deployed environment. Financial management benefits include accounting for all materiel items equal to or greater than \$100,000 on the Marine Corps balance sheet, and financial statement traceability of these items down to the physical asset level. As with Navy-ERP, the enhanced accuracy and expanded analytical opportunities provided by SIM-level data will increase the value of the GCSS-MC functions.

INDUSTRY DATA STANDARDS

New business practices relying on the use of digital methodologies and products have generated significant cost savings, reduced process cycle times, and expanded capability for interoperability. On October 23, 2004, the Assistant Secretary of the Navy, Research, Development and Acquisition (ASN (RDA) signed a memorandum entitled “Department of Navy Policy on Digital Product/Technical Data,” which directed Department-wide use of PLCS (Product Life Cycle Support), ISO 10303-239, and its associated data exchanges (DEXs). PLCS is an internationally accepted Standard for the Exchange of Product Model Data (STEP) standard. By providing neutral data exchange sets, STEP enables system agnostic communications for new and legacy data systems using a common language regardless of the functional domain of the data or the naming conventions of individual data systems. This approach exemplifies a commercial best practice that results in numerous improvements including increased accuracy of records, additional data to support equipment upkeep and replacement actions, improved manpower scheduling, increased equipment life cycle, and reduced maintenance backlogs.

The DON will also need to expand its current work on data sharing standards to include efforts spanning the DoD. Some of these efforts are the DoD U-Core, the National Information Exchange Model (NIEM) and the Common Terrorism Information Sharing Standards (CTISS) Committee. Incorporating these standards will allow the DON SIM programs to cross component and agency boundaries to provide expanded SIM-based value both internally, and to the other partner organizations.

INTEROPERABILITY

Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6212.01³ covers interoperability requirements within the DON. Interoperability is more than just information exchange. Interoperability is defined by all elements that have the capability to exchange information and to use the information that has been exchanged. It includes systems, processes, procedures, organizations, and missions over the life cycle and must be balanced with information assurance. Interoperability includes both the technical exchange of information and the end-to-end operational effectiveness of that exchanged information as required for mission accomplishment.

SIM interoperability within the DON is the ability of systems, units or forces to provide data, information, materiel, and services to and accept the same from other systems, units, or forces; and to use the data, information, materiel, and services so exchanged to enable them to operate effectively together. The enterprise and legacy AIS implementation will be coordinated with

³ CJCSI 6212.01D, *Interoperability and Supportability of Information Technology and National Security Systems*, 8 March 2006

DON and DoD interoperability initiatives and standards, to ensure maximum SIM value. Interoperability is at the heart of future value of SIM, as wider nets of systems can access and analyze item-level information, spanning wider functional areas. This wider access will enable new management approaches, increased accuracy of reports, and a rich environment for business process re-engineering.

INFRASTRUCTURE

All the ancillary components of an information system that provide an intra- or inter-communication capability must be addressed as elements of system infrastructure. This includes all necessary communication hardware components, protocols, standards, and interfaces that derive a system's capacity and thereby define its capability. Many elements of a system's communication infrastructure have processes that support it and further define the degree of automation needed. These accompanying processes must also be considered in terms of infrastructure engineering.

The elements of infrastructure begin with the points and sources of data collection all the way through the points of data termination or its conversion to actionable information. The Navy/Marine Corps Intranet (NMCI) has the responsibility to define DON-wide infrastructure requirements.

7.1.2 SIM IN THE ACQUISITION LIFE CYCLE

SIM requirements should be submitted to the Joint Capabilities Integration and Development System⁴ (JCIDS) for inclusion into the acquisition process for new acquisitions. It is practical to consider establishing the definition of data types, formats, and standards as early as the System Requirements Review (SRR). In which case, the data definitions would be useful in subsequent reviews⁵ (e.g. test data) as well as a sustainment phase of the item's life cycle.

Having paid for the creation of the data, it will be important to receive the data and, at a minimum, archive it until the SIM system is mature enough to incorporate it.

The beginnings of a program-wide SIM plan are plausible prior to the Critical Design Review (CDR). At this point in the acquisition process, the program should have established business rules for assigning part numbers, model numbers, lot numbers, batch numbers, serial numbers, and UIIs. The business rules should address length, allowable characters, allowable format, the use of any check digits or other error correction scheme. The intent of developing business rules early within the acquisition process is to prevent problems which have plagued programs in the past. A partial list of practices to avoid includes:

- The use of leading zeros in some cases and not others
- Appending dash one (-1) to some numbers and (-0001) to others for version control

⁴ CJCSI 3170.01F, Joint Capabilities Integration and Development System, 1 May 2007

⁵ System Functional Review, Software Specification Review, Preliminary Design Review, Critical Design Review, Test Readiness Review, Functional Configuration Audit, System Verification Review, and Physical Configuration Audit.

- Confusing “1”, “I”, “l” (the first is the number ‘one’, the middle is a capital ‘I’, and the last is a lower case ‘L’)
- Confusing “O” for “0” (capital O for zero)
- Using performance characteristics within a part number rendering the part number “classified”
- Creating serial numbers in the field for unserialized items without direction
- Duplicate serial numbers
- Manual number entry without check digits can lead to
 - Transposition errors,
 - Twin errors,
 - Jump transposition errors, and
 - Phonetic transposition errors.
- Using part numbers and serial numbers in IUID marks which violate IUID business rules.⁶

When acquiring additional assets under contract it is critical that the identification of SIM requirements begin at the earliest development of the acquisition process. The Request for Quote (RFQ), Request for Proposal (RFP) and/or Statement of Work (SOW) must identify the materiel that will be included in the SIM program and subsequently qualify for IUID marking.

SYSCOMs shall ensure the supporting Defense Federal Acquisition Regulation Supplement (DFARS) clause⁷ is inserted in all solicitations and contracts for new equipment, major modifications, and reprocrements of equipment and spares.

7.2 SYSCOM-LEVEL IMPLEMENTATION

A cornerstone of the DON SIM implementation strategy is giving each SYSCOM the authority and responsibility to develop a manageable, affordable, and executable SIM plan within their respective organization, while also complying with the overall DON vision.

7.2.1 DON PRINCIPLES FOR SYSCOM IMPLEMENTATION

Based on this approach, the DON SIM implementation strategy incorporates five key tenets:

1. *Provide flexibility.* The DON organizational structure is complex and conducts multiple diverse missions that are unique and often independent of one another. By permitting each SYSCOM to develop a tailored SIM approach, it allows for maintaining a standard doctrine, which will ensure a common understanding, standardization, and operational cohesion.
2. *Establish a clear line of accountability and responsibility for successfully implementing SIM plans.* Each SYSCOM will identify a SIM Champion (National Security Personnel System 03/ General Schedule-14/equivalent) who performs day-to-day program administration and service delivery in support of SIM efforts. Responsibilities include management of administrative, budgeting, operational and programmatic activities. Additionally, it will be the SIM

⁶ A UII may only have capital letters or the characters 0 – 9 or dashes (-) or forward slashes (/). Use of part numbers in the IUID mark is permitted as long as the length is less than or equal to 32 characters, serial numbers must be less than or equal to 30 characters.

⁷ DFARS 252.211-7003, *Item Identification and Valuation*, August 2008

Champion's responsibility to facilitate, coordinate, and direct the Appendix development and implementation of SIM within their operating environment. Lastly, the SIM Champion will actively engage with the ODASN (A&LM) and others, as necessary, to ensure successful SIM implementation.

3. *Establish SIM capability within Information Technology.* The DON is currently developing Navy-ERP and GCSS-MC, which will create a comprehensive information technology infrastructure. SIM capability will be incorporated into both of these programs. While awaiting the roll-out of SIM capabilities in these enterprise systems, DON is also engaging in intermediary efforts to realize the benefits of SIM as early as possible in its legacy applications, presented in the DON AIS Strategy section above.
4. *Establish contexts for the level of detail to implement SIM.* Today's operating maintenance environment is one that precludes a "one size fits all" approach to SIM program implementation. Failure to match the level of detail within the SIM implementation strategy to the specific maintenance philosophy could result in failure to meet desired objectives. As such, the creation and execution of the SYSCOM implementation plans will be accomplished collaboratively. This translates into a need to include, early on in the planning and development process, the coordination of maintenance, logistics, and operational activities. While a main focus area of SIM is within maintenance, it is not strictly depot-centric. The impact to organic and intermediate maintenance must also be taken into account. Additionally, the logistics involvement would include acquisition and contracting organizations, warehousing, distribution, and disposal activities. Program offices and item managers are also a vital part of the SIM implementation process. Various organizational elements will have differing degrees of involvement and influence in these tenets of the DON SIM implementation plan, yet all affect the success of our plan and should be taken into account. Inclusion of these various parties will facilitate improved maintenance management processes that will be incorporated throughout the SYSCOM organization.
5. *Provide additional direction/guidance, when necessary.* The SYSCOMs may delegate unique requirements to the individual programs within their cognizance to coordinate and achieve the overall strategic goals and objectives as outlined in this document.

The DON position on the technical aspects of SIM implementation is to provide areas of consideration, and allow the SYSCOMs the flexibility to implement in the manner best suited for their individual operating environment. The requirements, capabilities, resources, and needs of each SYSCOM are unique and best known by their own management. SIM should be implemented so as to provide maximum benefit while balancing requirements and constraints. It is fully anticipated that there will be a varying level of SIM implementation across the DON, as not every program will have the resources or requirements to gain the same SIM functionality or benefits.

7.2.2 SYSCOM IMPLEMENTATION PLAN REQUIREMENTS

As stated above, a cornerstone of the DON strategy is providing the SYSCOMs with the authority to customize their individual SIM implementation plans. Accountability and responsibility

for developing these plans and overall implementation efforts resides with the SYSCOM SIM Champion.

All administrative personnel supporting SIM must meet the security clearance, training and certification requirements as determined by the SYSCOM Regulations and local guidance.

SYSCOM plans will be reviewed annually by the ODASN (A&LM) or designee. The annual review will include, at a minimum, a status update to the stated goals, update of implementation progress, identification of challenges and lessons learned, and documentation of implementation costs and cost savings/avoidance. In addition, the annual review will provide an opportunity to identify common efforts or problems, and work on a joint solution, helping to reduce overall costs and manpower requirements. The annual reviews will monitor the resources expended to implement SIM, progress made towards using the data, and realization of SIM outputs and benefits.

Each SYSCOM plan is expected to address the following areas, at a minimum, in their SIM implementation plan.

It should be noted, however, that since full implementation across the Department will be evolutionary. Appendix development will undergo a “crawl, walk, run” philosophy to the quickest extent possible.

IDENTIFY SIM POPULATION

Each SYSCOM will determine which parts, components, and end items will be serially managed within their respective operating environment, to include the decision logic. SIM populations will be selected based on the magnitude of potential benefits to maintenance operations, while considering other factors such as high-cost, reliability, safety, condition based maintenance programs, mission essentiality, or other issues of critical interest relative to their effective lifecycle management. All of the items identified for SIM will be IUID compliant and marked in accordance with the latest version of MIL-STD-130.

The DON has provided guidance that items falling within some or all of the following categories will be serially managed:

- Controlled items, with a possible exception for selected “pilferable” items
- Safety related items (e.g. Critical Safety Items (CSI), Critical Application Items (CAI))
- Government-owned material in the possession of a contractor
- Foreign Military Sales (FMS) items
- Warranted items
- Service-life limited parts (e.g. batteries, rocket motors)
- Personal property
- Repairable items
- Restricted use items
- Sensitive items
- Items requiring periodic maintenance

SYSCOMS should consider the following questions when determining the SIM population:

- How likely will the population need to be accounted for? How frequently?
- How likely is it this part will be recalled or cause a recall of a larger system?
- How likely is it this part will drive reliability of a major weapons system?
- What tactical advantage could a combatant commander achieve by knowing the reliability/capability/availability/location of that specific item?

IDENTIFY ATTRIBUTES

In coordination with determining which items will be managed via this process, each Appendix will identify the specific attributes of the select population to be tracked. Attributes can be any quantifiable measure of performance, time, space, composition, environment, pedigree, cost, or other definable data, such as historical, contractual, or ownership information associations. Some attributes change constantly (such as accumulated hours of use) while others remain constant (such as pedigree data). Attributes are collected throughout an item's life cycle based on specific management requirements. Attributes are defined and explicitly articulated as data elements that can be captured, recorded, and are relevant to the management of that item.

DEFINE DATA CHARACTERISTICS AND USE

Data is the key enabler that drives the realization of SIM benefits. As such, the importance of determining what data to capture can not be overstated. When making this determination, there are several factors DON encourages the SYSCOMS to consider:

- **Cost.** It costs money and human resources to capture, store, and analyze data. Determining the return on investment for this sunk cost in terms of follow-on cost avoidance is difficult to identify and in some cases impossible to foresee. Also, return on investment is not always monetary. Item, component, subsystem, or system failures, improved system performance, and the cultural effects on the workforce all have real value but are difficult to express in terms of monetary gain or loss. Contingency planning is necessary to capture and record additional data elements should the need arise in the future.
- **Technical feasibility.** Given the maintenance philosophy of an item, it may be reasonable to capture all maintenance actions within SIM, e.g. a highly controlled, non-mobile system. In other cases where maintenance is performed in the chaos of battle, capturing and supplying maintenance transaction information for SIM will be challenging, if not impossible. The lack of data reporting at any point within the logistic/maintenance/acquisition cycles can pose difficulties. Establishing remediation efforts for information gaps may be necessary.
- **Data value.** The value of data increases as it is aggregated. This aggregation is what leads to the generation of actionable information and knowledge. Considering the types of available data with which other data may be combined will affect its value to the program.
- **Data classification.** Data that must be classified is more expensive and in general less useful than unclassified data. It is expensive not only because of the security procedures necessary to safeguard it, but it limits where the data can be used, and who can see it. In general data is only valuable when it is used to help make a decision. By restricting data

access, the data is inherently less valuable. Another challenge of using classified data is the difficulty in converting normally benign data into classified data when they are combined/aggregated. Additionally, merging two or more unclassified data sets may result in a classified datum, which requires extra security measures for collection, storage, analysis, and transmission.

- **Metadata.** The value of data increases with metadata. Metadata is data about the data itself, such as how current is the data, how complete is the data, what is the error rate in the data, and who entered the data. It is useful in analyses to establish the appropriate level of confidence in the results. Metadata is crucial in an environment of data sharing.
- **Data audience.** Generally speaking there are two types of data users: 1) those who make decisions resulting in real-time action such as maintenance personnel; and 2) those who make long-term or strategic decisions. While both may use historical and current data the data elements used may not be entirely coherent between the two types. Accordingly, data structures should be developed with both types of users in mind.
- **Data purpose.** A single data type is very narrow in scope. Often a database full of data is mistakenly thought capable of answering any question, when in fact it cannot. This is important for complex analyses, such as reliability studies. There are many purposes to which data collected will be used, such as:
 - Establishing pedigree data, analysis capability, and supporting data requirements
 - Creating operational and maintenance histories for the life of the item
 - Providing information for weapon systems and equipment configuration management
 - Ensuring item applicability, e.g., to higher assemblies and end items
 - Conducting maintainability, supportability, and reliability assessments
 - Performing maintenance planning, engineering, and safety investigations
 - Exercising contract warranty provisions associated with newly manufactured materiel and with commercially and organically repaired materiel
 - Controlling counterfeit parts
 - Demilitarizing condemned items
 - In-Transit Visibility (ITV) and transportation history

PROVIDE AUTOMATIC IDENTIFICATION TECHNOLOGY (AIT)

AIT is a generic term for devices that capture, aggregate, and transfer data to automated information systems (AISs). It is essential for SIM execution as the only means to track items in a rapid, accurate manner by electronically scanning Machine Readable Information (MRI) such as IUID data matrix. AIT is a powerful technology that has been used to reduce administrative and logistics costs in a wide variety of applications by eliminating errors and speeding data collection and transmission. AIT is a key element in achieving Total Asset Visibility (TAV), as well as other logistics, medical, and personnel functions.

The cost of maintaining high quality data is not trivial. In 2002, “The Data Warehousing Institute estimated that poor quality data costs U.S. businesses a staggering \$611 billion a year”.⁸

⁸ Data Warehousing Special Report: Data quality and the bottom line, Wayne W. Eckerson, 1 May 2002

One effective strategy is to prevent bad data from entering into a SIM-enabled system. AIT is well suited to help solve this problem.

OPNAV N41⁹ is the functional sponsor for Navy AIT and directed NAVSUP to manage and operate the Navy AIT Program Office located at Mechanicsburg, Pennsylvania. This office works with the designated AIT representatives within the 35 Echelon II commands and other key claimants who have related implementation responsibilities.

The mission of the Navy AIT Office is to foster a community of understanding through the participation, definition, resolution, and dissemination of AIT related standards, technologies, and implementation issues. AIT programs managed out of this office include:

- Navy Serial Number Tracking (SNT)
- Navy Common Access Card (CAC)
- Navy Radio Frequency Identification Device (RFID) Implementation

The DON goal is to identify and procure scanners capable of reading IUID compliant marks which can be used to both identify the item and enter that data into a SIM-enabled information system. With the appropriate distribution of scanners and the appropriate integration as a SIM interface for the DON workforce, all maintenance, logistic, and usage data, including metadata, about each specific item can be captured automatically.

Additionally, AIT can be used beyond the scope of just reading IUID-compliant marks and can be utilized in the broader based UID efforts such as identifying who performed the action. A CAC-enabled AIT device, coupled with UIIs on tangible items can associate who did what to which item and when. This capability has applicability in both logistics and maintenance functions, and can ease the burden by providing complete and accurate data for effective SIM.

Each Appendix or future updates will identify the types, quantities, location, and cost of AIT devices and media that are required to achieve Initial Operating Capacity (IOC) and Full Operational Capacity (FOC) capability requirements.

MODIFY LEGACY AISS

Capacity and capability are the two key elements of any AIS. Information capacity can be defined as an information system's ability (i.e., those physical traits and characteristics) to function and respond to specified requirements within a given environment. Capacity in this instance does not include human resources. AIS capability, on the other hand, describes how effective and efficient that system's response is in meeting its information requirements. Capability, in effect, is the measure of a system's performance relative to its capacity and its operational environment. The combination of capacity and capability defines an information system in terms of its ability to accept inputs and generate and deliver a required output.

Ultimately capacity and capability should be held in balance to deliver an optimal level of automation, successfully and efficiently meeting the operational requirements of an AIS. Automa-

⁹ Chief of Naval Operations, Director, Supply, Ordnance and Logistics Operations Division

tion delivers both speed and accuracy in AIS data processes, which increases system efficiency and reduces the burden on the user.

Each SYSCOM will support the creation and implementation of the DON IUID AIS Strategy described earlier, by identifying the legacy, interim or new AISs that will be used and/or modified to achieve SIM goals; ensuring the required data can be captured, stored, shared, and retrieved; and designing infrastructure and/or interfaces planned as part of SIM implementation. Interim AISs will be used until such time as Navy-ERP and GCSS-MC capability or continued as an interface supplemental AIS, as described in the DON IUID AIS Strategy section of this document.

Legacy AISs include such systems as (not all inclusive):

- Joint Engineering Data Management Information and Control System (JEDMICS)
- Naval Aviation Logistics Command Information System (NALCOMIS)
- Configuration Data Managers Database-Open Architecture (CDMD-OA)
- Material and Equipment Real-time Logistics Information Network (MERLIN)
- Maintenance Figure of Merit (MFOM)

New AIS capability could include (not all inclusive):

- Quick Compliance Tool Suite (QCTS)
- IUID Registry Gateway Services
- Depot Web Application
- Joint Asset Maintenance Integrated Support System (JAMISS)

FULFILL RESOURCE REQUIREMENTS

When IUID-enabled SIM is fully realized, the DON will enjoy the dual benefits of increased materiel readiness and reduced costs. However, to achieve this end-state a significant initial investment is required. At the strategic level, the DON Life Cycle Item Identification Working-level Integrated Process Team (LCII WIPT) can help optimize the use of existing resources by comprehensively capturing and sharing lessons learned, closely reviewing SYSCOM SIM implementations to identify and eliminate unnecessary duplication of effort, or points where waste may occur, and helping implementers reduce the resourcing burden to the minimum required for success.

Program Managers (PM) must plan and allocate sufficient manpower and other resources necessary to effectively implement SIM requirements within their programs that are consistent with DoD and DON policy and goals.

PMs and industrial activity commanders will include requirements to resource SIM implementation when developing financial requirements for their program. Requirements must be requested as part of the Planning, Programming, Budgeting and Execution (PPBE) process. It is essential that Program Executive Offices (PEO), PMs, the SYSCOMs, field activities and other organizations responsible for acquisition and sustainment of DON property ensure current requirements for SIM are identified in Program Objective Memoranda (POM) and Program Reviews (PR).

SIM requirements for legacy items already installed or already in inventory will be funded by the appropriate funding stream such as the Working Capital Fund (WCF) as items pass through depots and other maintenance and operational processes. PMs will coordinate IUID marking requirements within their respective enterprise constructs to ensure they adequately plan for all resources required for SIM.

Each SYSCOM will independently assess the costs of implementation and the derivative savings that can be anticipated. The SYSCOMS will also conduct a targeted SIM Business Case Analysis (BCA), as required, to determine investment priorities, support budget planning, and to quantify the return on investment. The BCA will identify functional alternative approaches and decision logic for achieving SIM objectives over the life cycle. For consistency, BCAs will be submitted to ODASN (A&LM) for review.

All cost factors, both recurring and non-recurring, will be considered. These include the investment dollars necessary to establish a given capability such as conversion of AISs, software development and licenses, procurement/deployment of AIT handheld devices and marking equipment, establishment of supporting institutional training, and initial implementation stand-up costs. Dependent upon the business process reengineering opportunities explored, costs for analyses are to be considered as well. The SYSCOMs are examining multiple alternatives for the rate of implementation and the scope of SIM application depending upon a particular weapons system's or AIS' maturity in the life cycle or funds available for execution. Those various cost scenarios will be assessed by the SYSCOMs to determine best value to their organization and where it synergistically compliments processes across the DON and other DoD elements.

Resource constraints, operational continuity requirements, re-capitalization, and other factors must be balanced against the expected benefit SIM will bring to a program when deciding when and at what pace a program will implement SIM.

ADDRESS OTHER CONSIDERATIONS

In addition to the above mentioned elements of the SYSCOM plans, the following items will be documented in the SYSCOM Appendices:

- Level of maintenance accomplished (Operational/Intermediate/Depot)
- Current and planned IUID marking and UII data capture and management capability
- Current and planned ability to interface with IUID Registry for UII submission and / or pedigree data update
- Types of government-owned tangible personal property maintained, including quantity processed per unit time and stratification by program or commodity
- Identification of IUID and SIM local risk factors and mitigation strategies
- Familiarization and training of managers and line employees on SIM
- Instituting change management processes to enhance acceptance of SIM

8.0 IMPLEMENTATION PLANNING

Within the Department, it is recognized as both impractical and unwise to advance SIM across all SYSCOM organizations, and among programs, uniformly. A quick and expeditious way to

determine the level of effort needed to integrate SIM is to categorize like items based on how they are managed today:

1. *None*—Not an IUID candidate, and no assignment of specific attributes for SIM.
2. *IUID only*—IUID is present or required for the purpose of asset tracking or valuation, but there are no assignments of specific attributes.
3. *Serial Number Tracking (SNT)*—Existing SNT requirements and procedures are applicable but without IUID or an expandable, enterprise-wide attribute data management capability.
4. *SIM*—SIM exists or is required and the items are explicitly managed according to specific attributes relative to an IUID within pertinent processes.

By utilizing this method, it becomes evident an item that is currently categorized as “IUID only” – but may be placed into a “SIM” state for its “to-be” environment – generally will require greater effort and consideration than an item progressing from a “SNT” state and moving to “SIM”.

DON will pursue a distributed database approach to SIM linked to Navy-ERP and GCSS-MC, but during the transition to this desired architecture, databases do not have to be fully integrated in order to begin benefitting from SIM implementation. They do, however, need to link to a common data denominator. That common denominator is the IUID. By using the IUID, SIM has the potential to link key data used in multiple functional areas, including acquisition, supply, maintenance, transportation, and financial management.

9.0 IMPLEMENTATION TIMELINE

As stated earlier, full implementation of SIM throughout the DON will be via a multi-year transition plan since it requires a significant quantity of assets to be IUID-compliant, modernization of automated information systems, and focusing business process reengineering to capitalize on new technology.

A phased approach, while complex in planning, will also better manage risk and provide a greater ability to achieve success. The complexity lies in determining the scope of functionality and affected users in each phase and the sequence and scope of transition of data, business logic, and operational support.

The timeline for implementing SIM processes will be a migratory continuum over the next several years based on current process states, resources, and AISs. The earliest adopters will be those who already leverage and utilize SNT programs. Others, in a semi-closed loop or in specialized environments, will be candidates for applying SIM principles in the near-term. Those utilizing a traditional culture of materiel management or lacking the necessary AISs will take longer. The overarching DON implementation schedule will evolve as the SYSCOMs analyze, assemble, and continue to refine their approach. It is understood that the longer the timeline for SIM implementation, the greater the opportunity cost for the organization as a whole. To minimize this, the ODASN (A&LM) will coordinate across SYSCOMs to reduce the associated costs of redundancies and facilitate complimentary schedules for the shortest total implementation time with the best managed risk.

Programs currently utilizing SNT systems lend themselves as the best point of initial SIM implementation. SNT systems present more of a “conversion” opportunity rather than a full-scale IUID-SIM process remodeling/reengineering requirement. This approach permits us to learn optimal implementation points such as determining the correct percentage of parts that must be marked with UII and registered within a given population before we can enable SIM within that system.

Each SYSCOM plan will be constructed to execute implementation in two phases. The first phase will provide an Initial Operating Capability (IOC) in which a small number of items will be included in the SIM program locally. This phase will act to highlight and identify issues, constraints, and other problem areas and allow time for resolution strategies to be developed and implemented. It is expected IOC will be achieved no later than December 2010. As the process is refined and proved efficient and effective, the size and scope will be enlarged as designated in the implementation plan until the SYSCOM achieves Full Operational Capability (FOC), but no later than December 2015. Pre-designated measures and metrics will be monitored throughout the process to determine and report on progress of implementation.

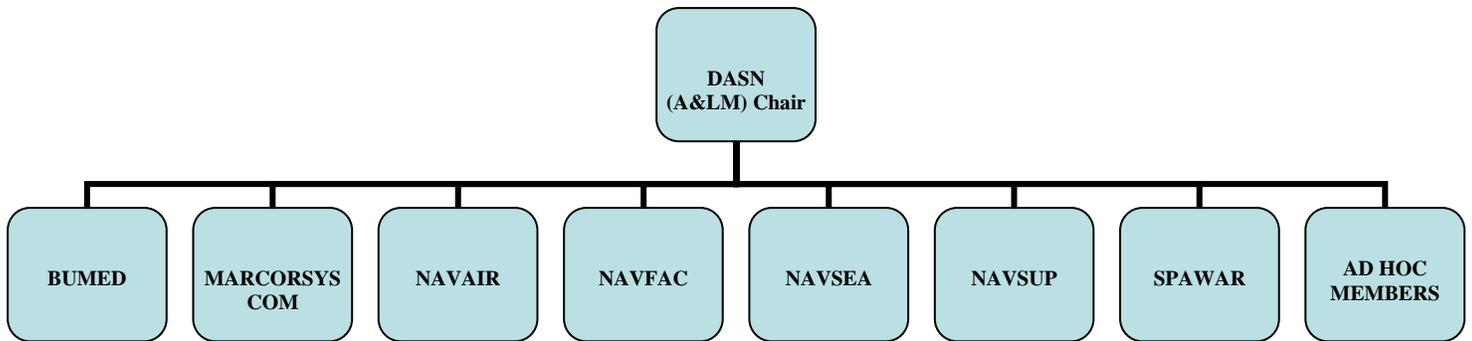
10.0 GOVERNANCE

The DON assigned leadership responsibility for IUID and SIM policy and implementation guidance to the ODASN (A&LM) in 2007. The ODASN (A&LM) lead quickly established a team in September 2007, as the main venue to communicate with the SYSCOMs, provide insight, conduct reviews, and share expertise and ideas on implementation. With the maturation of the IUID and SIM efforts throughout DON since then, ODASN (A&LM) is now establishing a governance structure with the creation of a Senior Steering Group (SSG), which has formal decision-making responsibilities at the DON enterprise level.

10.1 LIFE CYCLE ITEM IDENTIFICATION WORKING-LEVEL INTEGRATED PROCESS TEAM

The ODASN (A&LM) is committed to fostering a SIM transition enabled through IUID implementation. Figure 2 depicts the ODASN (A&LM)-chaired DON LCII Working-Level Integrated Process Team (LCII WIPT) functional organizational structure. This group was formed to enable time-phased implementation of IUID and SIM across the DON. Its vision is to establish life cycle item identification solutions that support the diverse needs for SIM of materiel within the DON, to leverage AIT to enable IUID data capture within enterprise maintenance and supply chain processes, to integrate enterprise AISs to enhance logistics and maintenance reporting for TLCM, and to create IUID business rules and processes that satisfy DoD Net-Centric UID requirements. This group will serve as the primary communications body for intra and inter-service SIM planning and knowledge sharing. Membership consists of the SYSCOM-appointed IUID lead and supporting staff from each SYSCOM, as determined by the SYSCOMs.

Figure 2: Functional Organizational Structure for the DON Life Cycle Item Identification Working Group



10.2 LIFE CYCLE ITEM IDENTIFICATION SENIOR STEERING GROUP

This governing body will be the driving force for the strategic management, and continuous improvement of initiatives implementing enhanced, modernized tangible personal property item identification and tracking, such as IUID, SIM, RFID and emerging next generation identification and tracking technologies to support diverse Navy and Marine Corps missions in air, space, land, surface, and subsurface environments. The LCII SSG will provide vision, guidance, momentum, and accountability for the programs implementing the DoD, DON, Headquarters Marine Corps Installations and Logistics (HQMC I&L) and SYSCOM policies directing implementation and integration of item identification initiatives. As part of that guidance, the SSG will be responsible for defining enterprise-wide standardized approaches, where a single set of processes and tools should be established to eliminate redundant, costly capabilities.

As the hub of management and leadership for tangible personal property item identification and tracking, the SSG will provide continuity of purpose, methods, and metrics for the entire Department. The LCII SSG will be comprised of senior-level professionals (GS-15/O-6).

11.0 ROLES AND RESPONSIBILITIES

A large-scale SIM implementation will cross many organizational boundaries that require close collaboration in development of policy, planning, requirements, funding, execution, and sustainment. The stakeholders identified below are key contributors to the successful DON SIM implementation strategy.

DEPUTY ASSISTANT SECRETARY OF THE NAVY, ACQUISITION AND LOGISTICS MANAGEMENT (DASN (A&LM))

The mission of DASN (A&LM) is to shape acquisition and logistics policies that ensure our Sailors and Marines are mission capable and have a technological edge over our adversaries. To meet OSD requirements for implementing SIM across the department in a timely and cost efficient manner DASN (A&LM) will:

- Establish DON SIM policy and guidance

- Chair DON LCII WIPT and SSG
- Report overall DON SIM implementation progress and other identified metrics to OSD
- Review the status of SYSCOM-specific SIM implementation plans annually
- Identify conflicting policies regarding IUID and SIM
- Remove or update outdated IUID and SIM related policies under its purview

CHIEF OF NAVAL OPERATIONS (CNO) AND DEPUTY COMMANDANT OF THE MARINE CORPS, PROGRAMS AND RESOURCES (DC P&R)

As resource sponsors for the procurement and sustainment of all operational hardware and software, the offices of the CNO and DC P&R are responsible for incorporating funding requirements into the POM sponsor program proposal, as part of their PPBE program submission.

SYSCOMS

The SYSCOMS, as defined in this document, will:

- Identify a SIM Champion responsible for planning, implementation, and other duties as assigned
- Actively participate in the DON LCII WG and SSG
- Engage with IDASN (A&LM) and other SYSCOMS to share lessons learned and eliminate duplication of effort where applicable
- Develop a SIM implementation plan compliant with DON strategy, policy, guidance, and timelines
- Ensure process owners identify functional requirements for IUID SIM-enablement to AIS providers.
- Monitor progress and report to ODASN (A&LM) implementation metrics
- Participate in annual DON SIM strategy review process and update Appendices, as required
- Work closely with PEO and PM staff to determine SIM POM/PR resource requirements in order to implement SIM across the enterprise

PROGRAM EXECUTIVE OFFICES (PEO) AND PROGRAM MANAGERS (PM)

The PEOs and PMs are responsible for the development and acquisition of Naval systems and will:

- Ensure both acquisition and sustainment program offices under their management successfully implement SIM requirements in the timeline directed within their SYSCOMS to the best of their ability dependent upon funding and staffing constraints.
- Notify DASN (A&LM) and appropriate SIM Champion immediately if IUID-enabled SIM implementation is at risk of not complying with the SYSCOM SIM strategy and timelines.
- Work closely with SYSCOM staff to determine SIM POM/PR resource requirements in order to implement SIM within program offices. Ensure funding requirements are incorporated into the POM process as part of their PPBE program submission.

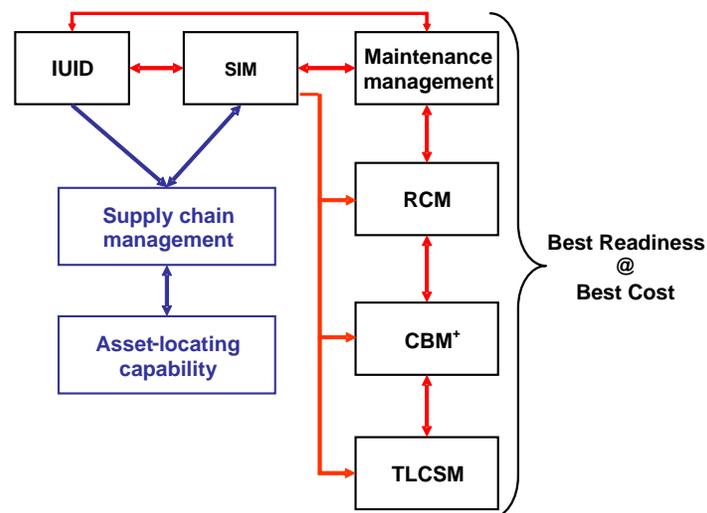
12.0 SUMMARY

The DON approach to implementing SIM is “crawl, walk, run,” allowing the major changes required in many areas of the organization to be integrated in the most efficient, cost-effective manner, and led by the units closest to the business processes affected. The DON SIM Strategy is a “living document” that will evolve as the SYSCOMs define their specific SIM implementations, and as annual reviews update progress and identify new challenges, lessons learned, and opportunities for leveraging. Modification to the DON SIM strategy will also result from the cross-socialization of ideas, efforts, and lessons learned during implementations from the participating entities.

The specific initiatives described in this document focus on the DON’s ability to transform utilizing information as the backbone for accurate, knowledge-driven decision making to enhance overall current readiness and provide the prognostics for constantly improving affordable readiness in the future.

Effective SIM implementation will enhance our ability to provide the best readiness at the best cost over the weapon systems life-cycle and deliver optimal benefits to the warfighter, logistician, and business elements, as illustrated in Figure 3.

Figure 3. Best Readiness at Best Cost



13.0 REFERENCES

Chairman of the Joint Chiefs of Staff Instruction 3170.01F, Joint Capabilities Integration and Development System (JCIDS), 1 May 2007

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14.0 ACRONYMS AND ABBREVIATIONS

ACAT	Acquisition Category
AIS	Automated Information System
AIT	Automatic Identification Technology
ASN (RDA)	Assistant Secretary of the Navy (Research, Development and Acquisition)
BCA	Business Case Analysis
BUMED	Bureau of Naval Medicine
CAC	Common Access Card
CAI	Critical Application Items
CBM	Condition Based Maintenance
CBM ⁺	Condition Based Maintenance Plus
CDMD-OA	Configuration Data Managers Database-Open Architecture
CDR	Critical Design Review
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
CNO	Chief of Naval Operations
CPI	Continuous Process Improvement
CSI	Critical Safety Item
CSS	Combat Service Support
CTISS	Common Terrorism Information Sharing Standards
DASN (A&LM)	Deputy Assistant Secretary of the Navy (Acquisition and Logistics Management)
DC P&R	Deputy Commandant of the Marine Corps, Programs and Resources
DEX	Data Exchange
DFARS	Defense Federal Acquisition Regulation Supplement
DoD	Department of Defense
DoDI	Department of Defense Instruction
DON	Department of the Navy
FMS	Foreign Military Sales
FOC	Full Operational Capability
GCSS – MC	Global Combat Support System – Marine Corps
GS	General Schedule
HQMC I&L	Headquarters Marine Corps Installations and Logistics

IM	Information Management
IOC	Initial Operating Capability
IPT	Integrated Process Team
ITV	In-Transit Visibility
IRB	Investment Review Board
ISIP	Information Sharing Implementation Plan
ISO	International Organization for Standardization
IT	Information Technology
IUID	Item Unique Identification
JAMISS	Joint Asset Maintenance Integrated Support System
JCIDS	Joint Capabilities Integration and Development System
JEDMICS	Joint Engineering Data Management Information and Control System
LCII SSG	Life Cycle Item Identification Senior Steering Group
LCII WIPT	Life Cycle Item Identification Working-level Integrated Process Team
MARCORSYSCOM	Marine Corps Systems Command
MERLIN	Material and Equipment Real-time Logistics Information Network
MFOM	Maintenance Figure of Merit
MIL-STD-130	Military Standard 130
MRI	Machine Readable Information
NALCOMIS	Naval Aviation Logistics Command Information System
NAVAIR	Naval Air Systems Command
NAVFAC	Naval Facilities Systems Command
NAVSEA	Naval Sea Systems Command
NAVSUP	Naval Supply Systems Command
Navy-ERP	Navy Enterprise Resources Planning
NIEM	National Information Exchange Model
NMCI	Navy/Marine Corps Intranet
NSN	National Stock Number
ODASN (A&LM)	Office of the Deputy Assistant Secretary of the Navy (Acquisition and Logistics Management)
OSD	Office of the Secretary of Defense
PEO	Program Executive Office
PLCS	Product Life Cycle Support
PM	Program Manager
POM	Program Objective Memorandum

PPBE	Planning, Programming, Budgeting and Execution
PR	Program Review
QCTS	Quick Compliance Tool Suite
RCM	Reliability Centered Maintenance
RFID	Radio Frequency Identification
RFP	Request for Proposal
RFQ	Request for Quote
SIM	Serialized Item Management
SNT	Serial Number Tracking
SOW	Statement of Work
SPAWAR	Space and Naval Warfare Systems Command
SRR	System Requirements Review
SSG	Senior Steering Group
STEP	Standard for the Exchange of Product Model Data
SYSCOM	Systems Command
TAV	Total Asset Visibility
TLCSM	Total Life Cycle System Management
UII	Unique Item Identifier
WCF	Working Capital Fund
WIPT	Working-Level Integrated Process Team
WSLM/MSSM	Weapons Systems Lifecycle Management/Materiel Supply & Services Management

NAVAL AIR SYSTEMS COMMAND
APPENDIX TO DON SIM STRATEGY



Prepared by:

NAVAL AIR SYSTEM COMMAND

June 2009

INTRODUCTION/BACKGROUND

The Naval Aviation Enterprise (NAE) is a warfighting partnership in which interdependent issues affecting multiple commands are resolved on an enterprise-wide basis. The NAE enables communication across all elements of the enterprise, fosters organizational alignment, encourages inter-agency and inter-service integration, stimulates a culture of productivity, and facilitates change when change is needed to advance and improve. As the single process owner for Naval Aviation warfighting readiness, the NAE is accountable for coordinating and fielding readiness-related initiatives. Among those, serialized item management (SIM) is recognized as a transformational initiative affecting all elements of the NAE and peer enterprises. The NAE is committed to promoting a successful SIM environment for asset management and material maintenance.

The efficiency and effectiveness of the NAE is measured by the single Fleet-driven metric of "Naval Aviation forces, efficiently provided and ready for tasking now and in the future." This metric is the standard for measuring the NAE's ability to deliver value: warfighting capability first, cost-wise readiness, greater speed/reduced cycle time, reliability, reducing total cost, and implementing process efficiencies.

NAE Triad

The partnership creates a model for systematically meeting the demand signals generated by our fleet forces. In viewing **Error! Reference source not found.**, the logical flow between the participating entities demonstrates the orderly control this approach offers to meet the operational needs of the warfighter.

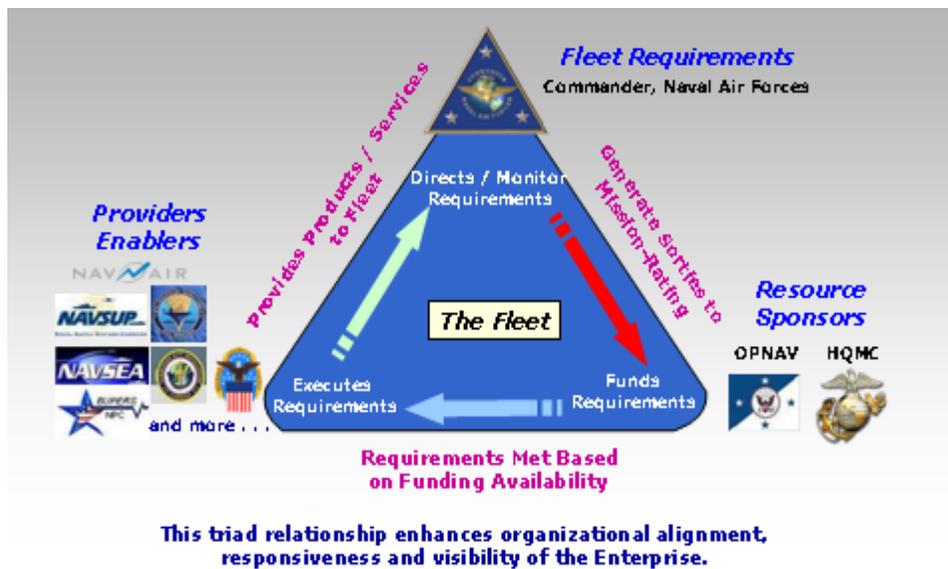


Figure 1 – Naval Aviation Enterprise Triad

At the peak are fleet requirements. This is the true origin that needs to be answered. Commander, Naval Air Forces (CNAF) directs and monitors requirements needed in order to answer the tasking placed upon the fighting forces.

Chief, Naval Operations (OPNAV), as the primary resource sponsor, puts in place the necessary supporting resources to generate the solutions to satisfy the requirements call for by the fleet. As one of nine provider organizations in the Navy Enterprise, NAVAIR is the principal provider/enabler for the NAE.

SIM and NAE Corporate Goals

NAVAIR’s Strategic Priorities illustrated by **Error! Reference source not found.**—Current Readiness, Future Capability, and People—are aligned with the strategic direction of the Navy’s leadership. They are also all enhanced with the benefits achievable through SIM. SIM is viewed within the NAE as one of the contributing factors to obtaining success in the areas of strategic interest to all levels of NAE leadership.

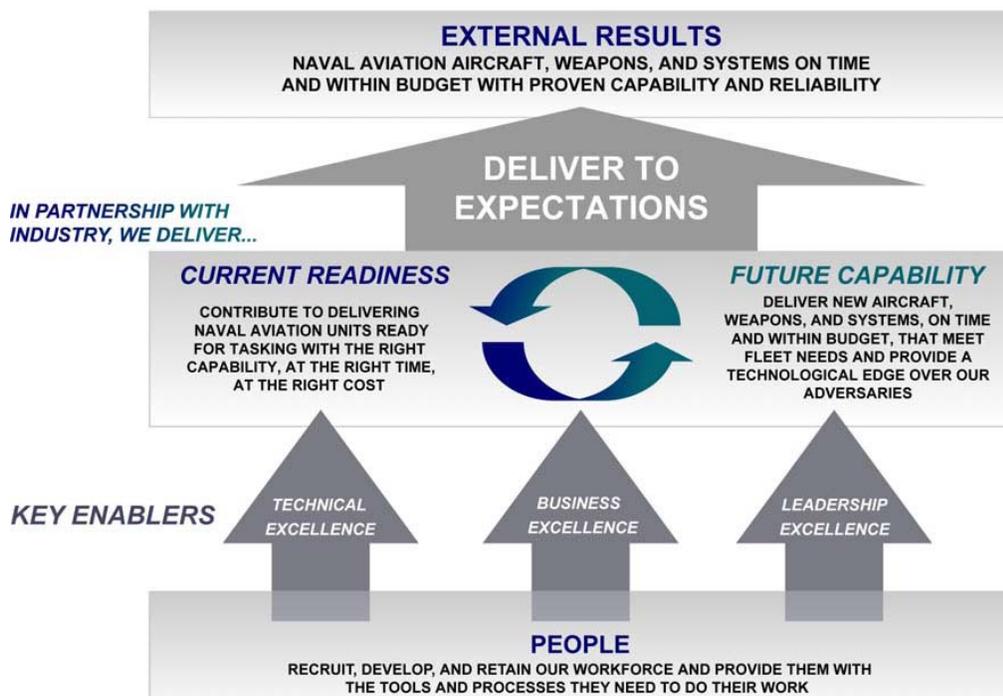


Figure 2 – NAVAIR Strategic Framework

The objectives for each are measurable and define the desired end state. At a high level, each objective has associated corresponding SIM benefits as described below.

- **Current Readiness:** Current Readiness refers to the operations our Navy and Marine Corps are conducting today. Our role in support of these operations is sometimes referred to as “sustainment” in that we help support the systems and aircraft presently in use by the Fleet. SIM will reduce the cost of operations through optimizing the use of existing assets, reducing investments in spares, increasing operational availability without additional costs, and leaning investments in material management functions. As awareness and understanding of managing items by attributes drives the necessary behavior changes resulting from enabling SIM based actions, the improvements and efficiencies of the long-term future are made available to feed into the business processes used today. Bringing these advantages onboard today elevates the present readiness posture demonstrated by our fleet forces
- **Future Capability:** Future Capability refers to our responsibility to develop, test, and field new aircraft and systems that give our Sailors and Marines technological and operational superiority over their adversaries. The arrows between Current Readiness and Future Capability in the center of **Error! Reference source not found.** represent the interdependent relationship between these two Strategic Priorities. From a SIM perspective, the adoption of “smart aircraft” concepts, technology insertion for data collection, and modernized information systems will support decision making using prognostics in a condition-based maintenance (CBM) and reliability centered maintenance (RCM) atmosphere.: Automating the retrieval of status and condition information on items under consideration for employment helps assure the most appropriate asset is applied to the situation with the least cost in the most appropriate timeframe possible. This will further be fostered with the use of Portable Electronic Maintenance Aids (PEMAs) and Automated Logistics Environment (ALE) practices.
- **People:** At the foundation are the people of the NAE and NAVAIR, whose technical, business, and leadership excellence sustain the levels of Current Readiness our Sailors and Marines need today, and who will deliver the Future Capability they will need tomorrow. SIM, whether as a toolset for maintainers in a hanger bay or logisticians conducting analyses, will enhance productivity and professional skills by enabling the individual to spend less time on burdensome, administrative data gathering or exception resolution tasks. With the added ability of SIM to link disparate data sets from numerous sources together, the people making deckplate decisions on mission assignments and platform availability are bolstered with the knowledge that the specific choice presented to the decision maker is the best available, releasing that maintainer/logistician to address other issues at hand without being concerned for whether or not the information used was the best available

Relationship to Other DON Organizations

The processes that drive Naval Aviation readiness and costs span a number of commands, among them:

- Commander, Naval Air Forces (CNAF)
- Deputy Commandant, US Marine Corps Aviation (USMC AVN)

- Commander, US Fleet Forces Command (CUSFFC)
- Commander, Naval Air Forces Reserve (CNAFR)
- Naval Education & Training Command (NETC)
- Naval Sea Systems Command (NAVSEA)
- Space and Naval Warfare Systems Command (SPAWAR)
- Naval Supply Systems Command (NAVSUP)
- Naval Inventory Control Point (NAVICP)
- Commander, Naval Installations Command (CNIC)
- United States Transportation Command (USTRANSCOM)
- Defense Logistics Agency (DLA)

Most of these activities are part of other enterprise partnership models serving the mission objectives and goals in meeting the challenges of protecting U.S. vital interests surrounding wartime and peacetime operations. Together, these organizations form the end-to-end supply chain processes that support the NAE mission. Coordination of SIM implementation with all organizations is a planned and essential task to establish a broad SIM culture from system acquisition through sustainment and disposal. Although each activity is embarking on SIM initiatives specific to their mission, requirements and processes, the common cross-entity foundation will be item unique identification and a robust data sharing architecture.

CURRENT NAE STATE

Historically, successful variants of SIM have been used within the NAE for decades and will provide the core establishment for formalized SIM enablement. Naval aviation has already used selected attributes to manage commodities and embraced innovative maintenance concepts. An overview of current practices and capabilities is provided below.

SNT Culture

Serial Number Tracking (SNT) System (SNTS) – Naval Supply Systems Command (NAVSUP) is the lead agency and controlling authority for SNTS. Naval Air Systems Command (NAVAIR) is responsible for aviation requirements and marking aviation components using automatic identification technology (AIT) such as barcodes or contact memory buttons (CMBs). Similar to the SIM Item Unique Identification (IUID) precept with data matrix barcodes, CMBs are permanently affixed AIT used to store basic nameplate data as well as other critical component maintenance history and logbook information. An AIT read/write device (scanner or imager), is used to collect the stored data, enhances the accuracy of data input into the Naval Aviation Logistics Command Management Information System (NALCOMIS) Optimized Organizational Maintenance Activity (OOMA). The SNTS using AIT provides the means to track selected aviation components through their life cycle.

With increasingly more powerful computational resources, including information technology, internet capabilities and AIT, the NAVSUP/NAVAIR team deployed a seamless SNT solution. The program employs commercial practices and standards in using AIT capability, including contact memory buttons, 2-dimensional bar codes and portable read/write devices, to transfer

serial number and other maintenance significant component information into legacy supply, transportation and maintenance applications. Once stored in existing systems, the web-based SNTS allows users, through the worldwide web, to retrieve that information and use it in the logistics decision-making process. The end result is a web-enabled SNT application, linked to legacy Navy systems and available for use throughout the Navy, DoD and private industry, employing state-of-the-art technology and commercial standards to the maximum extent possible.

These baseline activities using SNT offer a clear pathway for embracing the attributes and data sets envisioned through adoption of SIM. By way of layering over the existing processes, surgically integrating new capabilities at the appropriate touch-points in the data flow, and a greater emphasis on attribute-oriented decision-making, SIM capabilities are achievable.

Major Corporate AISs

SIM relevance to the overarching NAE strategy escalates when considering the corporate information technology resources being engaged now and in the future. As naval aviation logistics has advanced, the dependency on data-intensive tools to support critical decisions affecting readiness and asset utilization relies increasingly on the computing power and data architecture of the AISs. Today's focus on seamless data flow among the various AISs calls for a robust mechanism for relating the various data sets being extracted, exchanged and analyzed. With SIM and the approach for using attributes linked to a specific item, the tools planned for future use need to accommodate the additional requirements associated with bringing SIM into practice. In the chain of information flow, any link in the chain unable to accept, process or pass SIM-related elements and attributes severely limits the effectiveness of SIM, the AIS and the NAE as a whole.

Table 2 lists the significant contributors forming the NAE architecture of information handling. One system, Navy ERP (N-ERP), continues to develop and deploy functionality once provided by existing systems. For those systems not subsumed by N-ERP, attention will be given to configuring their code base to accommodate their functioning in a SIM aware environment.

Table 2 - Relevant NAE AISs to SIM Implementation

Short Name	Full Title	Description	SIM Association
AIRRS	Aircraft Inventory Readiness and Reporting System	Provides on-line access to aircraft inventory, readiness, and flight utilization data stored in the Naval Aviation Logistics Data Analysis (NALDA) Integrated Data Environment (IDE)	Data retrieval/analysis using SIM approach syncs information flow with NAE and DoD systems
CMIS	Configuration Management Information System	Joint DoD Application supporting configuration, engineering, and technical data management functions; provides data to operators, maintainers, and logistics personnel for DoD weapon systems or tracked assets	SIM assists with collating data from multiple sources to enable comprehensive configuration postures
DECKPLATE	Decision Knowledge Programming for Logistics Analysis and Technical Evaluation	A data warehouse containing management data associated with aviation maintenance and monthly flight records and usage data.	SIM links related data sets to item maintenance actions and fleet usage
DECKETR	DECKPLATE Engine/Propulsion System Module Management	As a module within DECKPLATE, provides real-time and historical status of Engine/ Propulsion System Modules (EPSM) and is authoritative source for EPSM management decision process	As with DECKPLATE, SIM links related data sets to item maintenance actions and fleet usage
JEDMICS	Joint Engineering Data Management Information and Control System	DOD standard engineering data management/repository system; manages engineering drawings and supports logistics business functions, such as maintenance, repair, procurement and re-engineering provides a means to convert, store, and receive information from original hard copy media	SIM assists with collating data from multiple sources to enable comprehensive analysis with greater information detail
JDRS	Joint Discrepancy Reporting System	Common solution for deficiency reporting and resolution management across the DoD Aeronautical Enterprise. A cross-service web enabled tracking system initiating, processing and tracking deficiency reports from the Warfighter through the investigation process.	Identification of material performance trends across services beyond classes of commodities to individual instances develops as a result of applying SIM

Short Name	Full Title	Description	SIM Association
JTDI	Joint Technical Data Integration	Integrated data environment enabling warfighters worldwide to access technical, supply, and maintenance data from authoritative sources in digital form	SIM adds capability for connecting item documents based on specific item configuration
MEASURE	Metrology Automated System for Uniform Recall and Reporting	Supports the Navy's Metrology and Calibration (METCAL) Program by provides users with access to calibration production, recall and inventory tracking data for support equipment requiring calibration	SIM maintains linkage of related data sets to item maintenance actions and fleet usage
NALDA	Naval Aviation Logistics Data Analysis	As an Integrated Logistics Support (ILS) data analysis system, provides logistics data analysis capability to support the Naval Air System Command, Fleet Type Commander and field activities involved in the analysis and management of logistics and engineering	SIM assists with collating data from multiple sources to enable comprehensive analysis with greater information detail
N-ERP	Navy Enterprise Resource Program	An integrated business management system that modernizes and standardizes Navy business operations provides management visibility across the enterprise, and increases effectiveness and efficiency	As a core business system, SIM capability is essential to instituting enterprise wide usage of SIM
NDMS	NAVAIR Depot Management System	Supports the maintenance, repair and modification of aircraft, engines, components, avionics and manufacturing operations within the Fleet Readiness Center (FRC)	SIM maintains linkage of related data sets to item post rework actions
NALCOMIS	Naval Aviation Logistics Command Management Information System	Provides organizational, intermediate and supply support center activities with management information system. Three NALCOMIS objectives are increased aircraft readiness reduced administrative burden to the fleet and improved quality of up-line data reporting	SIM-enabling Auto Log Set function reduces item association errors.

Short Name	Full Title	Description	SIM Association
RBFM	Readiness Based Forecast Model	Program Management Board (PMB) aircraft propulsion management support model. Uses NALDA/DECKPLATE data for model population. Forecasts materiel requirements F404 engine parts to determine current and future materiel demand criteria for accurate materiel procurement.	With SIM, increased accuracy is expected with higher fidelity data usage per item vice category
SERMIS	Support Equipment Resources Management Information Systems	As the primary automated management information system supporting the Aircraft Maintenance Material Readiness List (AMMRL) program, provides all levels of SE logistics management with timely, accurate SE allowance, inventory, and rework data	Adds SIM benefits to Support Equipment readiness and life cycle management

SIM Business Areas

Instituting SIM within the NAE will encompass five distinct logistics business areas. Those are acquisition, fleet maintenance, fleet operations, wholesale supply and transportation; and depot maintenance. The common element for SIM-enablement across these complimentary business areas is accomplished by marking populations of select items (parts, components, and end items) with a Unique Item Identifier (UII), enabling collection and analysis of data over the life-cycle and throughout the supply chain. Those business areas and the relationship to SIM are described below.

- Acquisition – new programs and re-procurements will incorporate SIM concepts within the support and maintenance plans, IUID strategies will be fully evolved, pedigree data collected and relevant SIM attributes defined.
- Fleet Operations – operational requirements planning will define SIM end-item resourcing/allowances and deployment of SIM assets.
- Fleet Maintenance – “O” and “I” level activities will manage asset induction, maintenance processes and disposition (RFI, non-RFI, BCM) using the UII for all SIM items.
- Wholesale Supply/Transportation – distribution to/from ATAC and DLA depots will include IUID for material visibility, requisition, tracking, filling and status recording.
- Depot Maintenance – rework of SIM assets will be managed by the UII and depot workload management analysis will support IUID data collection.

SUPPORT RESOURCES

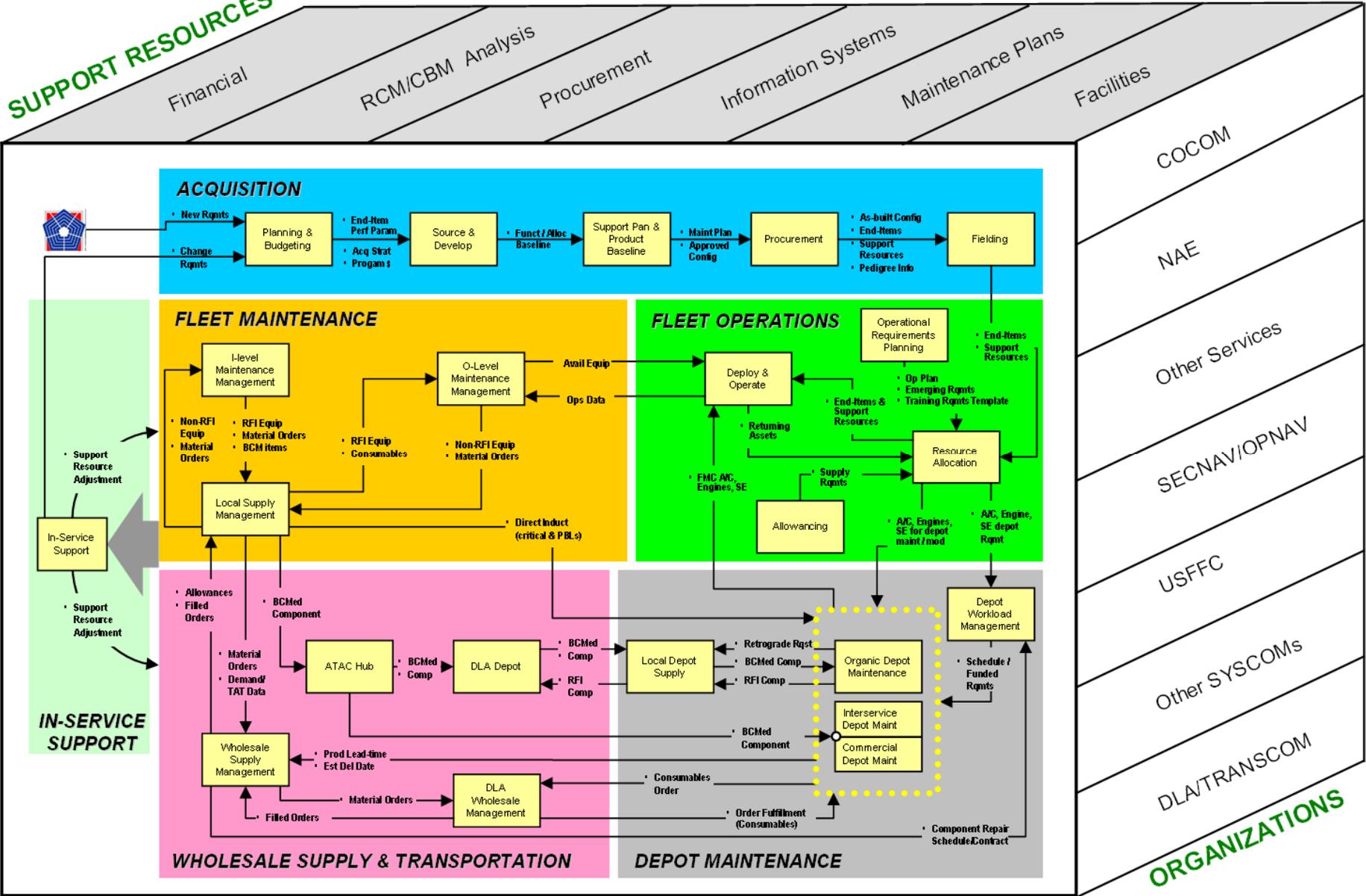


Figure 2 - Naval Aviation Business Model
A-11

All business areas, diagramed in Figure 2, will define data generation, entry and collection thresholds within their respective processes, i.e. receipt, issue, transfer, custody, maintenance, removal/replacement.

In addition to the processes above for SIM management of aviation repairables, similar but discrete processes exist for the accounting and accountability of personal property, sponsor-owned materials, special tools/special test equipment, and foreign military sales. Those relevant information systems will be IUID-enabled for material management purposes but full SIM-enablement will only be instituted where business case analysis and return on investment warrant. In many cases, these commodities are small populations of specific items, equipment leaving U.S. operational inventory or do not require logistics analysis for supportability.

As a minimum, it is appropriate to consider selecting item populations from within the following categories:

- Repairable items down to and including sub-component repairable unit level,
- Life-limited, time-controlled, or other items with records (e.g., logbooks, aeronautical equipment service records, etc.), and
- Items that require technical directive tracking at the part number level.

IUID Process Integration

The NAE approach to SIM achievement is entirely predicated on a coordinated, successful deployment of IUID. For a coordinated and executable SIM strategy, the NAE has a three-fold approach: monitoring of IUID progress during acquisition, deployment of marking capability at the FRCs, and providing centralized corporate resources.

- Acquisition - Across the NAE there are 92 ACAT programs at various stages within their IUID implementation. Within acquisition, provisions for marking of new items are achieved through the enforcement of the DFARS IUID clause and MIL-STD-130 series standard; coupled with close dialogue between industry counterparts and NAVAIR. For re-procurements of existing items, programs are budgeting for and performing non-recurring engineering activities necessary for manufacturer or commercial depot marking prior to delivery. Education and advocacy for IUID are continually reinforced in scheduled and reference modes.
 - Independent Logistics Assessments (ILAs) are conducted prior to each milestone review and include a dedicated section on Automatic Identification Technology (AIT). The ILA assesses the soundness of the IUID strategy, compliance with policy, implementation schedule and funding profile.
 - The NAE has available to all personnel involved in acquisition a web-based, Wiki-like guide for all activities prior to Milestone B. For IUID this provides consistent application of sample language for the CDD, performance specifications, SOW and reference materials including an on-line discussion forum with product specific subject matter experts.

- Depot Marking Capability - For legacy SIM items, almost exclusively, ACAT IUID plans cite the “trigger” point for legacy marking to be concurrent with scheduled depot maintenance. Consequently, the NAE is leveraging on the Fleet Readiness Centers (FRCs) by establishing IUID marking and registration capability. During FY09, Q2 & Q3, major FRCs (FRC East, Cherry Point, NC; FRC Southeast Jacksonville, FL; FRC Southwest, North Island, CA and FRC Support Equipment, Solomons, MD) will be outfitted with advanced multi-purpose marking carts for producing nameplates, labels and direct parts marking using lasers and conventional printers for imprinting metal and various label media. Satellite FRC sites (previously “AIMDs”) will be scheduled based on products managed and volume during the out-years based on available funding.
- Centralized NAE IUID Resource – To assist the PEOs, PMAs, PMs (both weapons systems and AIs) and FRCs with IUID implementation, the Total Asset Visibility Division (AIR 6.8.3) has technical authority to assist in the strategy development, quality monitoring, deployment of systems and providing technical support services for implementation. This encompasses establishment of NAE UID policies; review of UID processes and related specifications; first article testing of sample marks; AIT equipment evaluation; software assistance with data collection tools; metrics assessment and planning for coordinated UID implementation across the enterprise.

SIM-ENABLED NAE VISION

The NAE SIM effort will be an aligned end-to-end business process that is implemented jointly with all other supply chain management business processes of corresponding stakeholders. This implies that Navy ERP and other ERP efforts will have evolved as both independent and inter-faceted AIS modernizations. The outcome will facilitate horizontal and vertical integration of processes that support SIM functionality over the life-cycle: acquisition, operations and sustainment. Upon achieving a fully-enabled SIM state, users can anticipate more rapid development of business decisions and early, convenient access to fully integrated, commonly shared information.

Fully Integrated SIM Culture

Recognizing that the NAE already manages aviation reparable items based on select attributes, however this is a derivative or long-standing aviation practice and does not fully capitalize on SIM. Our maintainers and logistics providers today have a mind-set closely aligned with the current tools and processes. Included with this toolset are a familiar set of data points applied to ensure the mission of the warfighter is met. With the introduction of SIM, the number of data points grows significantly and there will be a corresponding change in business rules and criteria for decision-making. This new wealth of untapped insight will change the maintainers’ and logistics providers’ tactical approach to reaching enterprise goals and objectives. An overview of the NAE SIM end-state will entail:

- General user understanding and acceptance that, within a population of a specific item, some otherwise similarly identical, ready-for-issue items are better suited for an application than another.
- Embedded maintenance and logistics data collection practices that use machine readable information for SIM items whenever possible.
- AISs that collect, store, and analyze attributes in order to provide users with hierarchical recommendations for material solutions by automatically assessing all pertinent attributes.
- Data exchange between AISs and across functional processes that are SIM item specific using IUID.
- Revised maintenance doctrine and philosophies to ensure SIM convention and common practices to optimize decision-making across programs, enterprises and services.

Achieving this end-state will, no doubt, evolve within cultural, technological, and budgetary limitations over a five to ten year period by leveraging on-going efforts.

Integration of AIS Data

Part of the motivation for NAE formation grew out of the recognition that the consumption mind-set of readiness “at all cost” was not sustainable. The fully-enabled SIM end-state displaces “business as usual” by introducing new business models as the “norm”. Among the various improvement techniques leading to the reduction in time, cost and manpower is applying Total Life Cycle System Management (TLCSM) processes. SIM supports the tenets of TLCSM and Performance Based Logistics (PBL) to focus early on sustainment within the system life cycle early. Using SIM and the ability to uniquely identify critical items provides the common thread from initial development, into testing and acceptance, through fielding and sustainment and finally, into disposal; giving all participants access to knowledge for making smart, appropriate decisions on how the asset is managed.

SIM maturity is inclusive of fully adopted RCM and CBM as SIM is the critical enabler of those maintenance practices succeeding. NAVAIR, a leader in the development and application of RCM analysis, authored NAVAIR 00-25-403, “Guidelines for the Naval Aviation Reliability-Centered Maintenance Process,” which continues to be updated with the latest in RCM process knowledge and lessons learned. With RCM analysis relying on data repositories, the aforementioned SIM culture, AISs, data and maintenance philosophies are essential.

For CBM, each program manager is responsible for “optimizing” operational readiness through affordable, integrated, embedded diagnostics and prognostics, automatic identification technology; and iterative technology refreshment as called for by DoD Instruction 5000.2. Combined with DoD policy on Condition Based Maintenance Plus (CBM+) strategies to “improve maintenance agility and responsiveness, increase operational availability, and reduce life-cycle total ownership costs,” SIM creates the data link for the requisite maintenance data analysis, modeling and simulation inherent in correlating those variables with the requirement to accomplish a maintenance action.

TLCSM, RCM, and CBM+ are maintenance disciplines that will draw data from numerous AISs. SIM capability depends on providing for the creation, association, storage and retrieval of the IUID and associated attribute data, a keystone to the SIM enabled process. The NAE is currently migrating AISs to N-ERP to serve as the long-term solution and mainstay for all future data-intensive activity. Requirements are currently being defined in N-ERP for IUID in a future release in the FY11 timeframe. However, maintenance requirements are not included and will lag behind for N-ERP. Consequently, the NAE will be using “bolt-on” legacy systems to supplement N-ERP capabilities and user interfaces while permitting seamless data flow. For SIM to reach its end state, AIS stakeholders and the user community will need to conduct evaluations to determine the benefits and options for investing in legacy systems to support SIM in the near term (beyond the existing SIM capabilities).

Just as important is the ability of AISs under the direct control of other NAE partners to accept process and/or pass SIM associated attributes. Several of these systems are under the stewardship of NAVSUP or SPAWAR. Using the NAE partnership to successfully channel NAVAIR’s SIM requirements to other SYSCOMs will advance the SIM to an effective end state.

SIM is intended to support enterprise-wide logistics functions by leveraging UID and pedigree data. For non-UID enabled systems, pedigree data will be the discriminator among items using machine readable information. With a shift to modernized AISs and N-ERP, a migration from managing by pedigree data to UID will ensue. During the implementation of UID from the present through 2015, legacy assets will be marked and registered to the IUID Registry by both FRCs and Program Offices using direct interfaces or established DoD submission methods. Functionality for UID-enabled AISs will include data upload for life-cycle transaction recording to the IUID Registry at periodic intervals. Real-time data will be maintained within the internal organizations information systems.

TRANSITION EVENTS

The NAE intends to control the application of SIM to preclude unnecessarily expanding the SIM population to items that do not foster improved readiness objectives. The NAE approach to SIM deployment will be based on three over-arching, prioritized criteria defined by corporate process-based business rules, the regulatory environment, and where quantifiable benefits exist.

From an NAE mission-orientation, the first order of SIM implementation will focus on core commodities that currently require SIM as inclusive to the logistics and maintenance processes already in place. Those items that are currently determined to warrant managing on a serialized basis will continue to be done under SIM.

Regulatory statutes may require SIM consideration for some items for that would not otherwise be selected based on extant business processes. Whenever such regulations require that SIM be adopted for items outside of specific NAE requirements, IUID marking and tracking will apply. However, consideration for inclusion in RCM or CBM analyses or revised maintenance philosophies will be performed on a case-by-case basis.

The third basis for SIM adoption will be where a quantifiable return on investment can be documented. In such instances, non-SIM items either within or outside of the commodity list below may be designated for SIM. Aircrew survival equipment may exhibit such qualities which may push them close to meeting these types of situations. To illustrate the point, the life preserver LPP-41/P is a low cost (under \$250) item carried aboard cargo and transport aircraft. At some point in the future, based on the critical aspect of its normal use during emergencies, managers may develop the need to know what the history of the device is during an aircraft incident investigation where the personnel manifested aboard a transport flight endured an emergency requiring the use of the life preservers. Under today's processes, data relating to its acquisition may be retrievable, but little would be known about its travels through the distribution paths, how long it was stocked prior to issue, which aircraft carried the unit(s), etc. And with the low dollar amount, it falls outside the current minimums for IUID. But in a SIM aware world, the dream of collecting just the kind of quality data highlighted here becomes a program manager's choice.

Across the three criteria above, the planning for implementation of SIM by program or commodity will take into account the alternatives available (SIM, non-SIM, SNT, IUID only, etc.) and the life-cycle maturity of the program or item to determine that a benefit exists. For example, programs phasing out assets prior to SIM FOC or transitioning to FMS will likely be excluded from consideration. In other cases, as N-ERP evolves and legacy AISs are to be subsumed, then implementation investments for those AIS-dependent programs will be limited to IUID marking and registration. The SIM Program Oversight Team described below will review the SIM population selection by programs for their determination of SIM and implementation phasing.

Implementation Pathway

It is important to note that the lack of a marked UII, in particular for legacy items at a shop repairable assembly (SRA) or lowest replaceable unit (LRU) level, will not indicate the non-SIM status of an item. Some SIM items may not have nameplates, are not practical for marking because of size constraints or use, or require specialized direct part marking that may not be in place prior to SIM full operational capability. Where this occurs, SIM will continue based on human readable or other accessible information.

Conversely, all items with a UII may not imply SIM status and are in use for accounting or accountability purposes. Up to this point, the discussion has cast a wide definition over what is covered by the SIM initiative, and with the preceding statements, showing that not all IUID items are included in SIM and SIM does not address all IUID items.

SIM Population Base

Among the more difficult challenges is the validation of the SIM population and defining the attributes which will be tracked. For SIM implementation the following types of items will form the core NAE SIM populations.

For naval aviation weapons platforms, the repairable assets for which attributes will typically be collected include the airframe, engines, turbines, rotors, propellers, gearboxes, wing panels, flaps, critical hoses, catapult/arresting gear components, struts, movable flight controls (eleva-

tor/rudder/flaps components), compressed gas systems, avionics, communications systems, radar and navigation, doors and canopies, and cartridge actuated devices. In addition, emergency equipment (survival gear, life raft, parachutes, etc.), personnel equipment (oxygen masks), and technical directive kits are included. These items are currently under individual management and typically involve scheduled removal components or life-limited items.

Not all SIM candidates will be either in government inventory or operational use. SIM monitoring will also apply to government furnished property. This can be equipment provided to support production such as special tooling/special test equipment or other assets for integration. Such quantities are not currently aggregated by program or commodity but that data will become available as N-ERP or AIS modernizations to support IUID and SIM evolve.

Emphasizing Attributes

The attributes intended to be tracked for the above commodities include numbers of field and catapult take-offs; arrested and field landings, hard landings, touch and go landings, bolters, flight hours, engine hours, available service life, calendar time in use, date of failures, date and type of maintenance, and association to other affixed serviceable components.

Such data is already collected from naval aviation flight records and used to conduct analyses. A review of current processes to desired SIM end-state processes will be conducted to determine gaps or opportunities for SIM enhancements.

Other aviation-related items will have sub-sets of the above attributes used for tracking. Those include support equipment, calibration equipment, and certain shelf-life materials. Although the focus for SIM in the NAE are aviation assets, some other categories of equipment will have SIM applied or be considered for SIM. This could include shore-based security, surveillance or communications equipment, controlled substances or small arms.

Each weapons system and platform will have a specific listing of subsystems and attributes relevant to that platform. This is defined and distributed by the PMA assigned overall responsibility for the weapons system. Most will have a shared subset across many platforms. Initially, the SIM implementation will consist of attributes currently collected with the emphasis being on the use of the data. As the SIM process matures, core NAE SIM stakeholders will assess monitoring additional attributes beyond those. Table 3 contains those items and attributes NAVAIR focuses on when developing SIM capabilities.

TABLE 3 - SIM ATTRIBUTES	
Core SIM Item	Typical Attributes
Fracture-critical parts	<ul style="list-style-type: none"> * Install date * Last inspect date * Next Inspect date * Vendor/supplier info * Repair source

TABLE 3 - SIM ATTRIBUTES

Core SIM Item	Typical Attributes	
Limited-life items/ Structural life-limited items	* Limit Reference * Total Flight Hours * Catapult Cycles * Arrest Cycles * Fatigue life ex- pended	* Landings * Compliance (hrs/date) * Next Higher Assy * Directive Compli- ance
Safety-critical Items	* Scheduled Remove date * Inspection cycle	* Issue date * Last Inspection date
Items requiring periodic maintenance	* Hours * Starts * Last PM Date * Next PM Date	* Performing Activ- ity * Periodicity * Planned duration
Repair-limited items	* Disposition action	* Inspection method
Restricted-use items	* Inspection date * Expiration date	* Limiting threshold * Remaining life
Calibration items	* Standards used * Settings within tol- erances * Lab type	* Last repair action * Next calibration due date * Cycle interval
Hazard analysis items	* Test date * Usage restrictions	* Past Discrepancy reports
Small arms	* Country of origin * Warranty Period * Rounds Fired	* Date of fire * Weapon's Total Rounds
Critical fasteners	* Install date * Last inspection date	* Vendor/supplier information * Inspection method
Service life extensions/Aircraft Service Period Adjustment (ASPA) or as defined in Program-specific maintenance plans	* Initial Service date * Evaluation date * Period End Date (PED)	* Extension Number * Operating Service Life * Actual Service Life
Fluid handling components (hydraulic, oil, water, fuel)	* Prior Test results * Parent system * Last rework date	* Unique Transpor- tation Criteria

TABLE 3 - SIM ATTRIBUTES

Core SIM Item	Typical Attributes	
Program Office interest items	<ul style="list-style-type: none"> * Special test data * Abnormal characteristics * Significant damage/repair * Oil Analysis Program entries * Extension authorization of operating intervals 	<ul style="list-style-type: none"> * Equipment operating hours verification on acceptance/ transfer * Exposure to large qty of salt water, fire extinguishing agents, or other corrosive elements

Training

An investment in training is a necessary requisite in the early stages of SIM. The maintenance and logistics communities are well versed in executing current practices and are proficient users of a particular software application or manual data collection process. Training will be from three perspectives.

- Education and advocacy are needed across the key stakeholders to promote the understanding of the concept for the necessary buy-in for making the investments in equipment, AISs and process re-engineering. This will take the form of briefings, seminars, conferences and web-based knowledge management tools.
- Formal and informal training for users at the data collection points (supply and maintenance) to obtain the familiarity with the skills sets in new processes involving automated maintenance environments using scanners and portable electronic maintenance aids (PEMAs). This training will require coordination with schoolhouses and initial on-site training during fielding.
- Structured competency training for individuals involved in logistics or maintenance data analysis for TLSCM, RCM and CBM+ practices using attribute data mining techniques.

Navy-ERP

In its enterprise system role, N-ERP is pivotal to SIM similar to the way IUID enables SIM. From the generation of procurement requests to the reporting of disposal, few processes operate without N-ERP interaction. NAVAIR has engaged N-ERP points of contacts to provide guiding needs and functional requirements of SIM from the NAE perspective.

Navy ERP focuses on applying COTS software to support the Navy’s current and future business process, system, and organizational requirements defined in the N-ERP ORD. The software pre-

sents functionality addressing financial, work force management, supply, acquisition, maintenance, and logistics across the Navy’s maritime, aviation, nuclear, sustainment, and supply business areas. In some cases, existing legacy systems will provide “bolt on” capabilities to N-ERP to allow SIM processes.

Government Stakeholders

Multiple stakeholders are involved, both internal and external to the NAE, for successful SIM implementation. Engagement with the respective leadership and SIM peers is an early priority as SIM strategies and plans evolve. A summary of those expected stakeholders and their relationship to the NAE is depicted in **Error! Reference source not found.** below.

Table 3 – NAE SIM Stakeholders

Core Stakeholder	Primary SIM Role
DASN, A&LM	DoN SIM policy guidance, cross stakeholder coordination.
CNAF	Application of SIM practices in logistics and maintenance sustainment operations.
NAVSUP	Software support activity for select AISs used within the NAE providing functionality and interfaces. Revised P-485 supply practices to support SIM.
SPAWAR	Software support activity for select AISs used within the NAE providing functionality and interfaces.
NAVSEA	Collaborative management of processes and data for aviation/ship assets.
NAVICP	Institute SIM-derived logic for acquisition, allocation, issue and life-cycle decisions.
NETC	Training provider to incorporate SIM curriculum in “A” and “C” schools.
Fleet Readiness Centers	IUID parts marking/registration. Application of SIM-derived logic for production and rework planning/execution.
NAVAIR Program Offices	Identify IUID and SIM candidates, define attributes, budget for implementation
NAVAIR 6.8	Modified AISs to support SIM data analysis. Serves as SIM Champion. NAE SIM education/advocacy. Assess SIM metrics on readiness. IUID implementation assistance.
DLA	Provide receiving/shipping capability for IUID/SIM data collection and interface.

Core Stakeholder	Primary SIM Role
USTRANSCOM	Provide asset visibility and interfaces using IUID data during distribution.

Data Sharing and Use Among Industry Partners

The NAE industry partners will also have a participating role in achieving the desired SIM end-state, in particular where commercial organizations are under contract for performance-based logistics (PBL), contractor logistics support (CLS) or other third-party logistics (3PL) functions. An assessment of the logistics and maintenance data to be collected and shared and the interfaces between systems will need to be fully evaluated. The SIM expectations are for data exchange between the NAE and industry using existing data systems and international standard protocols. Presently, maintenance data sharing evaluations are being applied using the ISO10303 AP 239 model for the exchange of industrial maintenance and repair product data. This will provide an XML-based framework that offers a network where IUID-related maintenance information is shared freely across organizations for analysis and joint SIM decision making. Improvements to readiness will ensue from re-engineered business functions; increased availability to accurate, timely data and greater use of automated data collection and analysis tools. Both at a corporate and program level, an evaluation of the alternatives and impacts of data sharing will continue to be assessed to determine opportunities to capitalize with data sharing, for defining AIS modernizations/interfaces and contractual implications.

In concert with the data sharing evaluations, the proper contract mechanisms for engaging our industry partners are needed. Inclusion of the appropriate contract modifications, clauses and language with the existing and developing acquisition frameworks allows all parts to achieve the programs goals and remain cognitive of the intellectual property issues and/or proprietary knowledge connected to the open exchange of this data.

PROGRAMATIC & RESOURCING

For SIM to achieve its full potential, it is necessary to ensure the correct application of leadership oversight to the SIM implementation. This will include planning, progress monitoring, risk management and quantitative analyses of the outcomes. At the onset of SIM, the core SIM stakeholders will establish estimates for readiness improvement goals, defined SIM end-state processes to be institutionalized, desired schedules and stakeholder roles.

The critical metric for defining success will be measurable improvements to NAE readiness objectives. Supporting metrics for SIM implementation will be determined after socializing SIM concepts and convening the key stakeholders. Candidate metrics for consideration will likely include the percentage of identified SIM populations being assessed by attributes, the percentage of AISs that have been reviewed for SIM inclusion and are SIM-capable, improvements in asset availability, the reduction of defects found by operational users, the increase in warranty usage, the decrease in spares inventories, the reduction of flight hour costs, and the improvement of throughput for repairs.

Considering the breath and depth of the NAE, both in geography and in assets, lessons learned will be assessed and shared especially early during SIM implementation. Using both metrics along with process owner feedback from the various stakeholders, SIM lessons learned shall be developed for knowledge sharing and to preclude redundancies. Lessons learned will cover the areas of IUID, AIS modernization and SIM migration activities. The essence of lessons learned will be to document what did and did not go well, what may be lacking, a description of events that caused deviations from plans, an assessment of technical methods and tools, recommendations (system, process or data), and useful measurements. SIM lessons learned will be openly discussed among key stakeholders, and used for revising SIM implementation strategies as necessary.

Applying SIM is considered an inherent discipline for logisticians and maintainers to adopt, as an extension of their professional obligations within DoD 5000 and various DoD and DoN policies or instructions. No new or separate funding for SIM implementation is identified. Program managers, either of hardware systems or information systems, shall plan and budget for SIM in accordance with the requirements of their user community.

The SIM end-state predominantly capitalizes on data mining, manipulation and analysis so the preponderance of the SIM planned effort is AIS-related. Budgeting for IUID efforts is considered separate and stand-alone from SIM activities. AIS owners are responsible to incorporate phased SIM functionality with future planned software releases. Program managers are expected to plan budgets necessary to review their processes for new or expanded SIM capabilities and to accordingly budget for out-year execution within POM cycles; and they are expected to provide training in SIM, RCM, and CBM to their acquisition, logistics and maintenance personnel. Funding requirements will be identified by Program Managers to their respective resource sponsors. As part of the functions of the NAE SIM Oversight Team, and coordinated by the SIM Champion, funding shortfalls for SIM will be assessed for prioritization and impact on overall NAE SIM functionality.

SIM implementation will vary across systems and users as AIS capabilities evolve. SIM already exists in the NAE, albeit handicapped by principally manual data collection. IUID full operational capability (FOC) is not expected prior to FY15. During that period an expanding population of UII marked assets will become available. It is anticipated that earliest adopters for new or expanded SIM functionality in AISs will begin in FY10 for legacy systems with the eventual migration to N-ERP (and its affiliated bolt-ons) being introduced through FY17. **Error! Reference source not found.**, below, provides the notional timeline for SIM FOC.

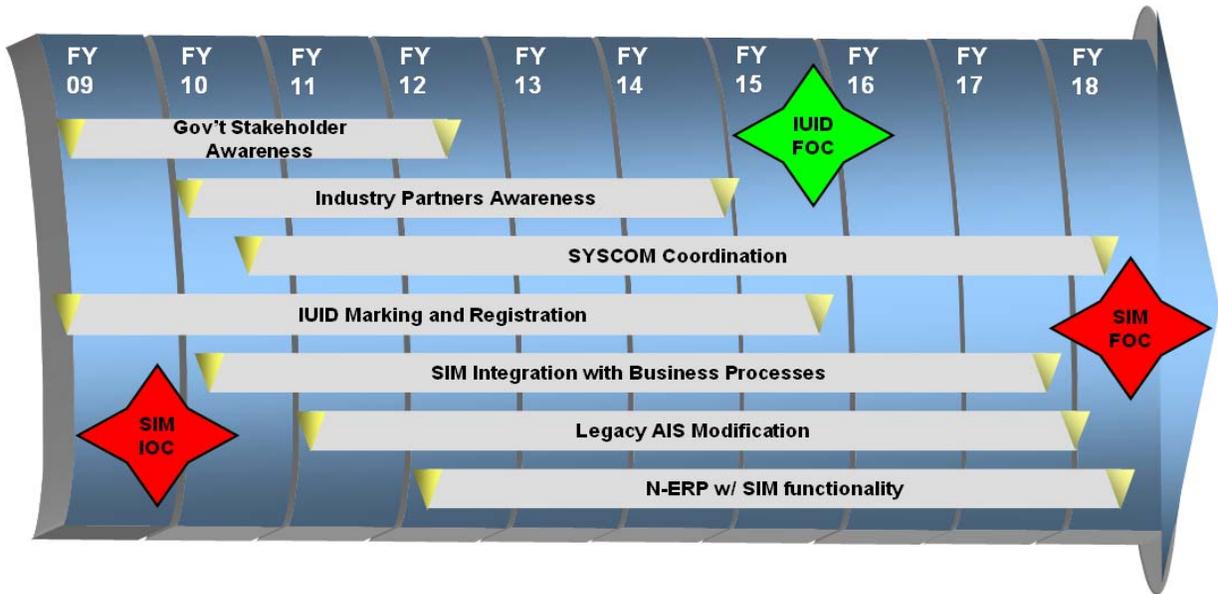


Figure 4 – NAE SIM Schedule

Risks

With large-scale change there can often be considerable risk. However, in the particular case of SIM implementation within the NAE, risk is mitigated by the fact that SIM principles have been consistently applied and used for many years. As such, minimal risk is anticipated as SIM will be an evaluation for enhancements or practices exported to manage other items.

However, SIM is not exempt from risk entirely. Two risks, in particular, will be regularly assessed by the core SIM stakeholders; IUID implementation and AIS modernization or migration to N-ERP.

IUID, properly implemented, does not introduce much risk to the SIM process itself, but rather the availability of underlying IUID implementation to provide timely, machine readable information for data collection. Lacking an adequate population of marked items could negatively impact data accuracy as manual modes of data collection continue. As described in early sections regarding IUID for new acquisition and marking of legacy parts, IUID has a well established strategy for ensuring reliable data matrix barcodes are available by FY15. Consequently IUID risks are not liabilities to SIM progress in the near term.

The most relevant risk is associated with SIM-enabled AISs. Current AISs are designed to support the known requirements for presently specified attributes, processes and analyses. As SIM business processes are reviewed, new attributes or AIS capabilities may be defined. Modifying older systems or new functional design specifications for N-ERP may have budget and schedule impacts that cannot be assessed at this early juncture. To mitigate this risk, an aggressive SIM awareness campaign will educate AIS and process owners as the responsible agents for defining

requirements. This will be done early in the SIM phase, FY09, to allow adequate time to perform requirements evaluation and analyses of alternatives. The core stakeholders will review status of AISs quarterly for SIM progress.

To a lesser degree, organizational and communication risk are anticipated. Given the numerous stakeholders and multiple processes occurring within the NAE communications and coordination are essential. The Total Asset Visibility Division, AIR-6.8.3, will provide the facilitation and serve as the information conduit for NAE SIM issues. AIR-6.8.3 will assist in policy guidance, implementation strategies and knowledge sharing activities.

Cultural risks exist as well. Having a rigorous heritage of managing aviation assets across the NAE, it's expected there will be resistance to change. Again, the SIM education and advocacy are key elements to dissipate the silo-thinking or reactive maintenance practices to more sophisticated methods dependent upon contemporary philosophies and AISs. History has shown that user "buy in" is essential for the successful deployment of new systems and business processes.

NAE SIM Program Oversight

The execution of SIM will reside with a decentralized, but coordinated body representing the key interests of the SIM enablers and users. The primary purpose of this team is to monitor the progress of SIM implementation from a programmatic, budgetary and schedule perspective. The composition of the NAE team may vary as the SIM efforts mature or conditions change. This oversight body will be supplemented, as necessary, with representation from supporting organizations for SIM progress and insights in their respective areas. Within the NAE SIM Program Oversight Team, the Total Asset Visibility Division (AIR-6.8.3) is designated as the NAE SIM Champion for the SYSCOM. This role will include overall strategy development, planning and implementation for SIM and assistance to the PEOs and PMs for the coordination and execution of SIM. The SIM Champion will be the centralized resource for enterprise metrics collection, assessment and reporting; periodic review and updating of the SIM annex to the DoN plan; ongoing participation with the Life Cycle Item Identification Working IPT (LCII WIPT); and liaison with counterparts within other SYSCOMs. The NAE SIM Program Oversight TEAM and primary functions are defined in Table 4 below.

Table 4 – NAE SIM Program Oversight Team

NAE Entity	Primary SIM Role
NAVAIR 6.8	Responsible for monitoring overall SIM implementation progress.
NAVAIR 6.7	Competency expertise for expanding SIM-based maintenance planning concepts in legacy and new acquisition programs.
NAVAIR 6.8.3	NAVAIR SIM Champion and subject matter expertise in SIM; NAE SIM team facilitation; SIM metrics assessment and reporting; SIM education and advocacy; participate in LCII WIPT and DoN SIM liaison

NAE Entity	Primary SIM Role
NAVAIR 6.8.4	Subject matter expertise for AIS requirements determination and planning
<i>Fleet Readiness Centers</i>	Subject matter expertise for incorporating SIM in depot processes.

NAVAL BUREAU OF MEDICINE AND SURGERY
APPENDIX TO DON SIM STRATEGY



Prepared by:

Naval Bureau of Medicine and Surgery

Washington, D.C.

July 2009

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1.0 BUREAU OF MEDICINE AND SURGERY (BUMED) ORGANIZATION

The Bureau of Medicine and Surgery (BUMED) is responsible to the Chief of Naval Operations for providing superior medical support services and products that are customer focused, agile, responsive, and aligned with Navy Medicine's priorities and strategic goals. BUMED leads the Navy Medicine Support Command (NMSC), which is responsible for expeditionary medical facilities, hospital ships, and ensuring the economical and effective delivery of Navy Medicine enterprise-wide support services as directed by Chief, Bureau of Medicine and Surgery. NMSC also exercises program executive office oversight of specified execution-level programs, and command and control over Navy Medicine Mission Specific Commands:

- Navy Medicine Manpower, Personnel, Training and Education Command (NAVMEDEPT&E)
- Naval Medical Logistics Command (NMLC)
- Navy Medicine Information Systems Support Activity (NAVMISSA)
- Navy and Marine Corps Public Health Center (NMCPHC)
- Naval Medical Research Center (NMRC)

2.0 PARTICIPATION IN THE DASN (A&LM) LCII WIPT

In 2008, BUMED joined the Deputy Assistant Secretary of the Navy (DASN) Acquisition and Logistics Management (A&LM) initiative to propagate improved systems for item management throughout the Department of Navy (DON). DASN (A&LM) established the Life Cycle Item Identification Working-Level Integrated Process Team (LCII WIPT), which brings together the SYSCOMS to review and implement major DoD and DON mandates, technologies, and process improvements for item-level tangible property management. BUMED is committed to participate in the coordination and issue resolution related to implementing initiatives associated with LCII, including Item Unique Identification (IUID), Serialized Item Management (SIM), and emerging next generation material identification / tracking technologies to support diverse Navy and Marine Corps missions in air, space, land, surface, and subsurface environments.

3.0 BUMED SIM CHAMPION

3.1 BUMED SIM CHAMPION

The BUMED SIM Champion will be the IUID Project Manager within the Navy Automatic Identification Technology (AIT) Office acting under the NAVSUP Chief Information Officer (CIO).

3.2 RESPONSIBILITIES

The role of BUMED SIM Champion will not be considered an additional duty. Core responsibilities are consistent with duties and responsibilities already defined for the IUID Project Manager (PM). The IUID PM will be responsible for the following:

- Participate as an active member of the LCII WG.
- Act as primary functional liaison between SYSCOMS, DASN, COCOMS, other Component Services and DoD Agencies with respect to IUID and SIM related information and activities.
- Act as lead to facilitate development of the BUMED SIM Plan compliant with OSD and DoN policy and guidelines.
- Act as lead to ensure designated IUID and SIM metrics are collected and reported on in accordance with agreements and directives.
- Ensure the BUMED SIM Plan appendix is reviewed at least annually and updated as required.
- Assess risks and report on risk management strategies.
- Help formulate input to create and update policy, doctrine and requirements documents to create a robust SIM developmental and operational environment.

4.0 BENEFITS OF SIM

For BUMED, SIM provides the logistical foundation for adopting techniques leading to better patient care through the improved time, cost and manpower management by applying Total Life Cycle System Management (TLCSM) processes at the item level for medical equipment. SIM supports the tenets of TLCSM and Performance Based Logistics (PBL) to focus early on accountability and sustainment within the system life cycle. Using SIM and the ability to uniquely identify critical items provides the common thread from initial development, into testing and acceptance, through fielding and sustainment, and finally into disposal-- providing all participants access to knowledge for making smart, appropriate decisions on how the asset is managed. SIM will also assist with rapid assessment of operational needs with improved asset visibility and accurate inventory management and tracking, leading to better medical outcomes.

An additional benefit for SIM adoption will be where a quantifiable return on investment can be documented. In Navy Medicine, this would also apply to any item where patient safety was involved, regardless of cost. This is particularly applicable to items with the low dollar amount that would usually fall outside the current minimums for IUID. But in a SIM aware world, the dream of collecting the kind of quality data highlighted below becomes a Clinician's and a Logistician's reality.

5.0 SIM STRATEGY

Navy Medicine's strategy for achieving SIM consists of two preparatory steps, IUID marking and Automated Information Technology (AIT) hardware provision; and seven activities for directly implementing SIM, involving data analysis, AIS modification, resourcing, business process re-engineering, and operational rollout.

5.1 PREPARATION – IUID MARKING

The DoDI 8320.04, "Item Unique Identification (IUID) Standards for Tangible Personal Property," dated June 16, 2008 mandates IUID requirements for qualifying items delivered to the

Government under contract, in inventory and in-use if one or more of the following criteria apply. These DoDI 8320.04 requirements are part of the SIM population at BUMED with additional items added by each program, when necessary:

- a) Items for which the Government's unit acquisition cost is \$5,000 or more
- b) Items for which the Government's unit acquisition cost is less than \$5,000 and when identified by the requiring activity as DoD serially managed, mission essential or controlled inventory item
- c) When the Government's unit acquisition cost is less than \$5,000 and the requiring activity determines that permanent identification is required
- d) Regardless of value, (i) any DoD serially managed subassembly, component, or part embedded within an item and, (ii) the parent item that contains the embedded subassembly, component or part

Navy Medicine's plan for compliance with the DoD IUID Directives embraces two efforts: future acquisition marking in close coordination with the private sector and DLA, after the Food and Drug Administration (FDA) final rule-making; and legacy marking at both the operational and intermediate levels. BUMED does not have depot capabilities per se, but primarily relies on the commercial medical industry for replacement parts, since medical equipment is usually either too complex for non-OEM repair, or would be disposed of for patient safety reasons. This approach also ensures that we will be emphasizing cooperation with related military partners such as NATO. Programmatic support and coordination will be handled by BUMED.

- Acquisition – The Naval Medical Logistics Command will be working with DLA in 3rd and 4th quarter 2009 to plan the rollout of the DFARS IUID clause and MIL-STD-130 standards as soon FDA issues their final rule on all US medical equipment marking, expected at the end of calendar 2009. Since the result functionally is either one or two marks per DoD-acquired medical equipment, planning can prepare for either path. After the FDA ruling is issued, Navy Medicine will work with DLA and private sector manufacturers to apply the new standards as quickly as possible. Navy Medicine will take advantage of the time up to the FDA decision by:
 - Training Navy Medical acquisition personnel on IUID and the DFARS clause, to enable immediate implementation upon FDA's decision and BUMED's action plan finalization
 - Continue education and advocacy of leadership, PMs, medical, IT and logistics staff of BUMED, to ensure use of the IUID mark and data upon implementation

Navy Medicine has been a constant presence in the acquisition challenge of pending federal regulations affecting the unique marking of medical equipment, and provided formal comments to FDA as well as requested a DoD-harmonized federal regulation, to simply and quicken the conversion of OEM to IUID-compliant marks.

- Intermediate/Preposition Marking Capability for Deployable Expeditionary Medical Facilities (EMF) - For legacy EMFs, the IUID/SIM items are being handled for maintenance and forward deployment by the Naval Expeditionary Medical Support Command. This facility

is conducting limited markings and will be marking complete EMFs during FY2010. This facility will handle legacy marking of medical equipment under a process flow to be developed with the Navy Medical Logistics Command and will be scheduled based upon, the return of forward deployed EMFs for their Service Life Extension during the out-years, as well as available funding.

- Operational Level – Hospital Ships – All legacy medical equipment on board the two hospital ships (T-AHs) has been marked, approximately 3,000 items per ship, and is in the process of being entered into the relevant AIS, DMLSS, discussed in AIS section below. The marking process flow, Lessons Learned, and modifications to supply, logistics, and transportation processes are the next phase of the project. Completion will enable this portion of Navy Medicine to implement SIM using current processes, and begin consideration of business process re-engineering to fully exploit the new SIM capabilities. The AIT hardware for initial legacy marking will remain on board, for continued opportunistic marking.
- Centralized BUMED IUID Resource –BUMED will coordinate Navy Medicine UID policies; review UID processes and related specifications; first article testing of sample marks; AIT equipment evaluation; software assistance with data collection tools; metrics assessment and planning for coordinated UID implementation across the enterprise.

5.2 PREPARATION – AIT PROVISION

The use of IUID information, and especially the benefits of reduced cost and accurate inventory, depend on field access to the bar code scanners that instantly read, record, analyze, and can transmit the item identification data. These AIT devices may also read and transmit other information that can be stored in the two-dimensional data matrices that comprise UID, depending on the revised business processes possible under SIM. Navy Medicine will work with the commands to plan, budget and procure AIT equipment to meet the health care workers, logisticians, and maintainers needs in order to experience the full benefits of SIM. It is noted that the commercial/civilian hospital sector is rapidly deploying these technologies, and Navy practitioners and protocols will be maintaining best medical practices by moving to these item management techniques and technologies.

At this time the noted equipment, the two Navy hospital ships have AIT sufficient to implement IUID and SIM in accordance with current strategies. As programs continue to implement IUID and enable SIM, new equipment will be evaluated and Business Case Analysis results will assist in determining whether to procure equipment as a targeted effort, or integrated with current program procurement.

Navy Medicine will also continue to participate on the DASN LCII WIPT and OSD Forums which will provide opportunities to leverage lessons learned from other services on which new equipment and efforts will best provide the tools that to satisfy SIM AIT requirements.

5.3 IDENTIFICATION OF SIM POPULATION

The population of items appropriate to Navy Medicine SIM populations will be determined by a variety of factors including safety, logistics management, cost, and medical protocols. The selections will be made by the program managers, clinicians, and logisticians. The factors will include the following categories:

- Controlled items
- Safety related items (for patient and health care provider)
- Patient safety items
- Government owned property in the possession of a contractor (PIPC)
- Foreign Military Sales (FMS) items
- Warranted items
- Service-life limited parts
- Personal property
- Repairable items
- Restricted use items
- Sensitive items
- Items requiring periodic maintenance

5.4 IDENTIFICATION OF ATTRIBUTES/DATA ELEMENTS

The DOD SIM strategy as laid out in DoDI 4151.19 of December 26, 2006, “Serialized Item Management (SIM) for Materiel Maintenance,” establishes a serialized item management program where activities identify populations of select items (parts, components, and end items), mark all items in each population with a unique item identifier (UII) and generate, collect, and analyze maintenance, logistics, and usage data about each item. Navy Medicine will consider the following attributes:

- Patient Use
- Operator Use
- Manufacturer or government recall status
- Measures of performance (availability, reliability, maintainability, etc.)
- Operational time
- Configuration
- Cost
- Historical information
- Contractual information
- Custodial information

These attributes are collected throughout an item’s life cycle and are articulated as data elements captured and recorded in the AISs used in BUMED facilities.

5.5 DATA CHARACTERISTICS DEFINITION AND USE

The following factors will be considered for use under the SIM program initiative:

- Patient Use. Links use of instruments and diagnostic tools to individual patients or characteristics of patients, such as location, medical condition.
- Operator Use. Captures user history, and exposure of health care workers to procedures.
- Manufacturer or government recall. Provides immediate access to locate items for recall, or to check recall or manufacturer's advisories regarding a product.
- Performance Measures. Allows for accurate tracking of availability and failure rates. Stakeholders with access to this data will have a solid foundation from which to make logical maintenance and operational decisions to improve overall readiness and availability of medical services.
- Operational Time. Overall operational time data is used by the program / manufacturer to make decisions with respect to improving design.
- Configuration. Navy Medicine managers will be able to access SIM data in order to make better decisions involving upgrades, modifications, and substitutions.
- Cost. Navy Medicine will serially manage items to reduce life cycle sustainment cost.
- Historical Information. Navy Medicine can recording pertinent data to create operational and maintenance history and will utilize this information for planning improvements and prognostic maintenance
- Contractual Information. New Navy Medicine contracts requiring item marking are incorporating the IUID DFARS clause, and that contractual information can follow the item through its life cycle.

5.6 MODIFY AUTOMATED INFORMATION SYSTEM (AIS)

Navy Medicine has successfully completed the modification of the medical equipment AIS to enable it to handle IUID and enable SIM. The Defense Medical Logistics Standard Support (DMLSS) system is the accepted AIS for all DOD medical treatment facilities. Under the BUMED IUID pilot, which was a follow-on to the precursor of SIM (the DoD Serial Number Tracking initiative), legacy marking of the two hospital ships triggered the modification of DMLSS to store the UII of all IUID-marked medical equipment on board the ships. IUID and SIM are now possible for all sites in future deployments of this upgraded version. The additional modifications necessary to store desired SIM attributes and begin active serial management will be coordinated by the SIM Champion with the Navy Medicine programs and facilities.

This system's owners have agreed to extend the IUID modification to the enterprise version of the system to enable additional legacy marking and accommodate the upcoming intake of new acquisitions with IUID marking after the FDA rule issuance. This successful adoption will benefit all DoD components.

It now looks as if the Defense Medical Logistics Standard Support system (DMLSS) will also be accepted as the AIS that will feed into the Navy-wide ERP for the fleet. So now that it appears we will have a common system throughout Navy and DOD, completing that initial step to have the IUID-based capabilities created and turned on in order to permit SIM compliance by all Navy Medicine facilities.

5.7 RESOURCE REQUIREMENTS

Navy Medicine anticipates that recognition of the value of IUID/SIM will increase resource availability from existing funding streams, greater effort will be placed to obtain funding via POM leading to eventual sufficient resourcing. At the current time, the initiative has no directed resources, resulting in SIM/IUID efforts being more sparsely implemented, and requiring a well-planned and coordinated approach to goal attainment relying heavily on communication and training.

The application of financial and personnel resources will be to any and all of the following:

- AIS enhancement by roll-out of the upgraded DMLSS to all sites
- AIT standardization (economy of scale purchases for DoN)
- Legacy marking
- Policy development (BUMED-specific and in tandem with DASN(A&LM))
- Education/training outreach to Navy Medicine leadership

5.8 INITIAL OPERATING CAPACITY (IOC)

Navy Medicine plans to achieve the IOC requirements by December 2010 using the two hospital ships as pilot sites. The SIM Champion will work with the medical, logistics, and AIS staff to evaluate the desired SIM populations, attributes and data definitions to exploit the completed IUID marking. Implementation will evaluate the current serial management capability, and integrate the enhanced item management possibilities into the hospital ship tangible property tracking systems. The Lessons Learned will be applied to the next legacy marking project, the hospital being provided next summer (2010) to the Maritime Prepositioning Force. We will also continue to liaison with our colleagues at the other DoD medical and supply organizations to refine our SIM approach and implementation so the item data may move seamlessly through the DoD information architecture for total item life cycle management.

The SIM Champion will also continue to document new and ongoing efforts for inclusion in future versions of this Appendix demonstrating that, as a SYSCOM, we are meeting the IOC 2010 requirements. S/he will strive for each program and Specific Command to achieve individual IOC in order for the Fleet and all stakeholders to realize the benefits.

5.9 FULL OPERATING CAPACITY (FOC)

Navy Medicine will commence a SIM strategic planning effort to chart a path from the IOC to FOC by 2017. Implementation will proceed as rapidly as possible during this time, noting that this goal is two years past the DoD goal, but the DoD advisory of opportunistic IUID marking and the FDA delay in new acquisition marking sets contextual limits to a realistic Navy Medicine timeline. As forward movement occurs, standardized SIM processes will be developed to leverage lessons learned and ensure optimum efficiency in future efforts. The BUMED SIM Champion will work collaboratively with program managers, clinicians, and logisticians to record and report status of implementation strategies. This will include planning, progress monitoring, and quantitative analyses of outcomes. The SIM Champion will report progress to DASN and other stakeholders.

Supporting metrics for SIM implementation will be determined after socializing SIM concepts and convening key stakeholders. Metrics for consideration include the percentage of candidate SIM populations being assessed, improvements in asset visibility/availability, reduction of defects found by operational users, increase in warranty usage, decrease in replacement orders and spares inventories, reduced inventory cost, and improvement of throughput for replacement or repair.

With the introduction of SIM, the number of data points will grow significantly and it is anticipated that there will be a corresponding change in business rules and criteria for decision-making. This new wealth of previously untapped insight should change the maintainers and logistics providers' tactical approach to reaching enterprise goals and objectives. The BUMED SIM end-state will entail data exchange across functional processes that are SIM item-specific, and re-visioned maintenance doctrine and philosophies which optimize decision-making across programs, enterprises and services. BUMED central resource/IUID-SIM policy will assess readiness to engage in this business process re-engineering when the foundation capabilities of IUID, AIT, and SIM population attributes are adequate to support these more advanced processes.

6.0 CONCLUSION

As demonstrated within this Appendix, BUMED has begun the essential preparation for SIM, performing IUID marking and UII capture, and has begun charting a realistic path to create and institutionalize the major benefits SIM will achieve in Navy medical service. We will work collaboratively on the many facets of this complex issue internally and externally in parallel with our interfacing organizations of DLA, MSC, USMC, Air Force Medical Service, the Army Medical Department, DoD, and the other DON SYSCOMS to realize efficiencies in the face of significant SIM resource challenges. Recognizing that BUMED does manage certain medical items today based on select attributes, this long-standing practice will be enlarged and greatly enhanced with full IUID-enabled SIM. The final outcome for Navy medicine will be improved patient care at reduced cost and increased accountability, fully within the potential achievement of a vibrant and continuously improving SIM program.

NAVAL FACILITIES ENGINEERING COMMAND

APPENDIX TO DON SIM STRATEGY



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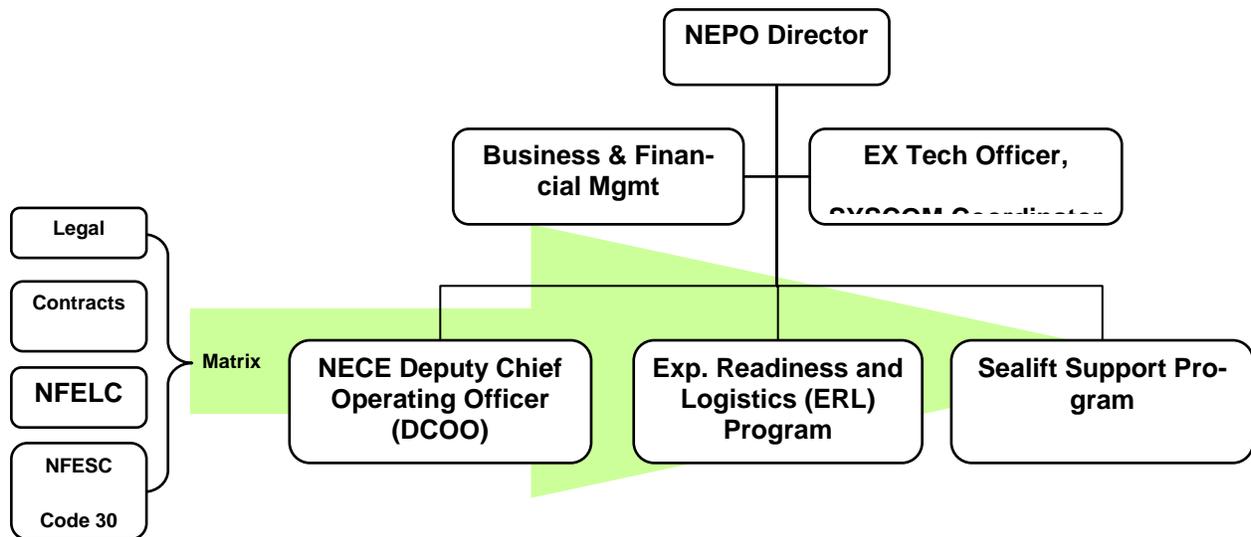
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1.0 INTRODUCTION/BACKGROUND

1.1 MISSION

The Naval Facilities Engineering Command (NAVFAC) Expeditionary Business Line, which is managed by NAVFAC Expeditionary Programs Office (NEPO), supports the Navy’s expeditionary units ashore through initial outfitting and life-cycle management of select Table of Allowance (TOA) equipment and material. This support includes all activities associated with the acquisition, development, production, fielding, sustainment and disposal of this equipment and material, and is performed under the management authority derived from SECNAVINST 5400.15C, which specifically calls out NAVFAC Unique Responsibilities including “Logistics-Over-The-Shore, near shore and ocean facilities infrastructure systems [and] Expeditionary equipment, infrastructure, and IT systems, including Civil Engineering Support Equipment (CESE).”

1.2 ORGANIZATION



1.3 CUSTOMERS

The Expeditionary Business Line’s major customers include the Navy Expeditionary Combat Command (NECC), Naval Beach Groups (NBG), Navy Expeditionary Medical Support Command (NEMSCOM), Naval Special Warfare (NSW) and Helicopter Mine Countermeasures Squadrons.

1.4 UNIQUE RESPONSIBILITIES

NAVFAC is the inventory manager for the Navy’s 2C cognizance (COG) material, which includes CESE, Civil Engineer End Items (CEEI) and sealift support assets. The 2C COG man-

agement responsibilities are overseen by NAVFAC Headquarters and executed by the Naval Facilities Expeditionary Logistics Center (NFELC) in Port Hueneme, CA.

CESE includes tactical, commercial and maintenance vehicles (and their armor), construction equipment (and its armor), aircraft/fire rescue trucks and structural/brush fire trucks.

CEEI includes fabric tanks, refrigerator containers, rowpus and tension fabric shelters.

NAVFAC is the Inter-Service Engineering Agency for the sealift support assets, which include Navy Lighterage (powered and non-powered), Elevated Causeway System (ELCAS), Roll-On/Roll-Off (RO/RO) Discharge facilities, Amphibious Bulk Liquid Transfer system (ABLTS), Light Amphibious Resupply Craft (LARC) and the Improved Navy Lighterage System (INLS). NAVFAC also manages planning yards, including system alteration development, configuration management and availability planning.

NAVFAC's maintenance operating environment is unique. NAVFAC has no organic maintenance depots. The enterprise relies on the Navy's Material Maintenance Management (3-M) System for maintenance management of maintenance worthy equipment. We also rely on maintenance agreements built into acquisition contracts and Inter Service agreements for maintenance management of supported equipment.

1.5 STRATEGIC PARTNERSHIPS

NAVFAC has strategic partnerships with United States Marine Corps (including Blount Island Command (BIC) and Marine Corps Systems Command (MARCORSYSCOM)), NAVSUP (including Navy Operational Logistics Support Center and Fleet and Industrial Supply Center), NAVICP, NAVSEA, SPAWAR, GSA, NAVAIR, Defense Supply Center Philadelphia, DLA, Naval Base Ventura County (Port Hueneme, CA) and Construction Battalion Center (Gulfport, MS).

2.0 NAVFAC Serialized Item Management (SIM) Champion

A SIM Champion shall be designated within NEPO. Responsibilities include:

- Implementation of SIM within NAVFAC – planning, budgeting, operation, administrative and programmatic activities
- Development of SIM Strategy Appendix compliant with DoN strategy, policy and guidance
- Ensuring the SIM Strategy Appendix is reviewed annually and updated as required
- Assess risks and report on risk management strategies
- Act as lead to ensure designated SIM implementation metrics are collected and reported in accordance with agreements and directives
- Engagement with the Office of the Deputy Assistant Secretary of the Navy Acquisition and Logistics Management (ODASN(A&LM)) and other SYSCOMS to ensure successful SIM implementation
- Participation in the DoN LCII WIPT, SIM strategy meetings and related forums

- Help formulate input to create and update policy, doctrine and requirements documents to create a robust SIM developmental and operational environment.
- Engagement with DoD activities to share lessons learned and eliminate duplication of effort

Since a dedicated Champion does not exist within NAVFAC at this time and the small size of NEPO precludes reassigning someone full-time to this effort, the Champion responsibilities will be fulfilled as a collateral duty by the Expeditionary IT Program Manager. NEPO is working to recruit a full time resource to dedicate as the NAVFAC SIM Champion.

3.0 Current NEPO SIM State

3.1 CURRENT PROCESSES

Current SIM processes rely heavily on manual data entry and record keeping.

3.1.1 DD 1342 DoD Property Record

The DoD Property Record is a crucial document in the entire business process and is typically created at the point of receipt. The majority of NAVFAC-managed equipment is originally processed through the Construction Equipment Departments (CEDs) in Port Hueneme, CA and Gulfport, MS; however, equipment is also received directly by the supported commands. The existing process for creating the DD1342, regardless of location, is prone to errors because of multiple steps, each of which depend on manual entry.

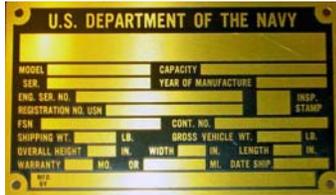
The DD1342 process is largely the same at the CEDs, with minor differences as noted below. CED Port Hueneme has manually collected information on new receipts using a hand-written form. The form is turned over to a clerk who keys the information into a Microsoft Access database with which to produce the DD1342. The DD1342 is printed and sent to NFELC, where it is keyed into the Construction, Automotive and Specialized Equipment Management Information System (CASEMIS), a critical element of the Naval Construction Force Management Information System (NCFMIS). CED Gulfport has a similar procedure in which a military inspector collects the data that is then provided to the clerk, who keys it into a form to submit in PDF format to NFELC.

DD1342s for equipment directly delivered to the supported commands is processed via local processes and submitted to NFELC where it is keyed into CASEMIS.

Ideally, the data-feed into CASEMIS would be via an Item-Unique Identification (IUID)-enabled process; however, the NCFMIS suite of applications is written in legacy code that cannot be readily modified to meet emerging requirements. Fortunately, NAVFAC is in the process of replacing this legacy suite of mainframe applications and will be able to leverage IUID-enabled processes in the future (see 3.2.3 below).

3.1.2 Data Plates

NAVFAC uses a 24-gauge brass data plate with painted template as its equipment data plates. This data plate preceded the DoD IUID policy. All of the required data elements are presented in Human Readable Information (HRI); however, physics preclude use of this media for Machine Readable Information (MRI) required by policy since the brass tarnishes and will not support the contrast needed for the two-dimensional (2D) Data Matrix bar code.



Blank Navy Brass Plate 3.5 x 6' data plate

There is a stock of approximately 7,000 blank data plates at Port Hueneme which supplies Gulfport as well. The current stock of brass plates dates back to a 1967 contract. Plates are installed during initial receipt processing. They are replaced during overhaul when the media appears excessively challenging to read due to tarnish or wear for continued use.

CED Port Hueneme uses a computer-driven engraver to etch information onto the data plate. Information is drawn either from an existing data plate being replaced during overhaul, or from a paper form prepared by the CED administrative staff. CED Gulfport uses a manual letter-by-letter stamp machine. Units that do not process equipment via the CEDs do not install data plates on their equipment.

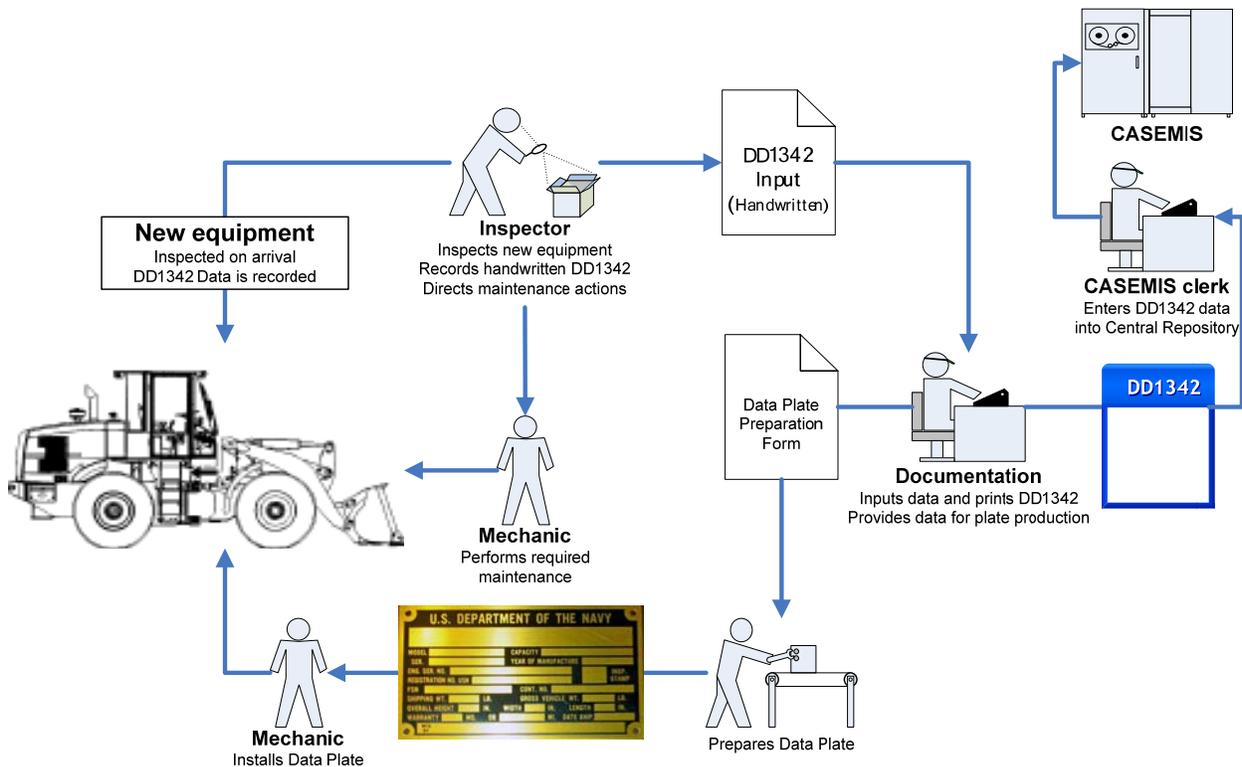


Figure 1 New Receipt Processing – AS-IS

3.2 MAJOR CORPORATE AUTOMATED INFORMATION SYSTEMS (AIS)

AISs shall effectively address SIM program policy, goals and objectives. The IUID mark combined with the AIT barcode scanners, feeds accurate, timely item-level data on any designated attribute to the relevant AISs. Visibility of the UIIs (2D Matrix) via legacy AIS application, modified to accept the IUID constructs, or by way of new enterprise systems, present a means of isolating and analyzing individual items life cycle information. The establishment of effective business processes which support SIM program requirements effectively and interface with existing maintenance systems, while also posturing for the development of future applications, will allow NAVFAC to continue to improve in the areas of data accuracy, better configuration control of assets, and maintenance data collection support.

To execute its 2C COG management responsibilities, NAVFAC uses three major AISs that have already incorporated IUID and/or are in the process of incorporating IUID.

3.2.1 Configuration Data Managers Database – Open Architecture (CDMD-OA)

CDMD-OA is the single Maritime Enterprise Navy approved authoritative Configuration Status Accounting (CSA) system developed to satisfy DoD and DoN acquisition and life cycle configuration management requirements. It provides the Weapon Systems File (WSF) with the equipment configuration data needed by NFELC to determine TOA and supply support computations.

CDMD-OA currently captures the following fields:

- Unique Item Identifier (UII)
- Location (LOC)
- Repairable Identification Code (RIC)
- Equipment Identification Number (EIN)/Component
- Characteristics File (CCF)
- Serial numbers (SN)
- Parent Serial Numbers (PSN)
- Positional Reference Identification (PRID)
- Work Center Responsible for Equipment (WCRE)
- Hierarchical Structure Code (HSC)
- Expanded Ship Work Breakdown, Structure (ESWBS)
- Equipment Functional Description (EFD)
- Quantity (QTY)
- Installation Status Code (ISC)
- Validation Date, Reason Not Validated (RNV) Code
- Allowance Equipage List (AEL)
- Allowance Parts List (APL)
- Identification Number, Parts Number
- Manufacturer's name, Issuing Agency Suppliers Code (SC)
- Commercial and Government Entity (Cage Code)

CDMD-OA is currently being integrated with Maintenance Figure Of Merit (MFOM) by Fleet Forces Command (FFC) to increase SIM capability. The architecture allocates storage of data concerning all individual instances of CDMD-OA-controlled items (those requiring configuration management). MFOM will store item-level data for individual items that are maintenance-worthy by MFOM’s definition, but are not configuration-worthy.

3.2.2 Maintenance Figure of Merit (MFOM)

MFOM is currently being fielded to all surface ships. It is also being configured for pilot testing by NFELC and the CEDs to facilitate NAVFAC’s 2C COG management responsibilities and to evaluate it for potential use by our supported commands.

Previously for FFC, MFOM 2.0 implemented an outcome-based pilot project integrating IUID technology within the MFOM 2.0 shipboard database and advanced maintenance information system known as Mission Requirements Assessments System (MRAS). IUID integration became a part of the shipboard system and its database for the DDG-51 class, a multi-mission guided missile destroyer. MFOM was able to integrate various IUID projects into a single Navy process, establish an interface with existing maintenance databases, identify shipboard legacy equipment to be marked and select and field IUID application technology.

The IUID process data flow for FFC is depicted in the following figure.

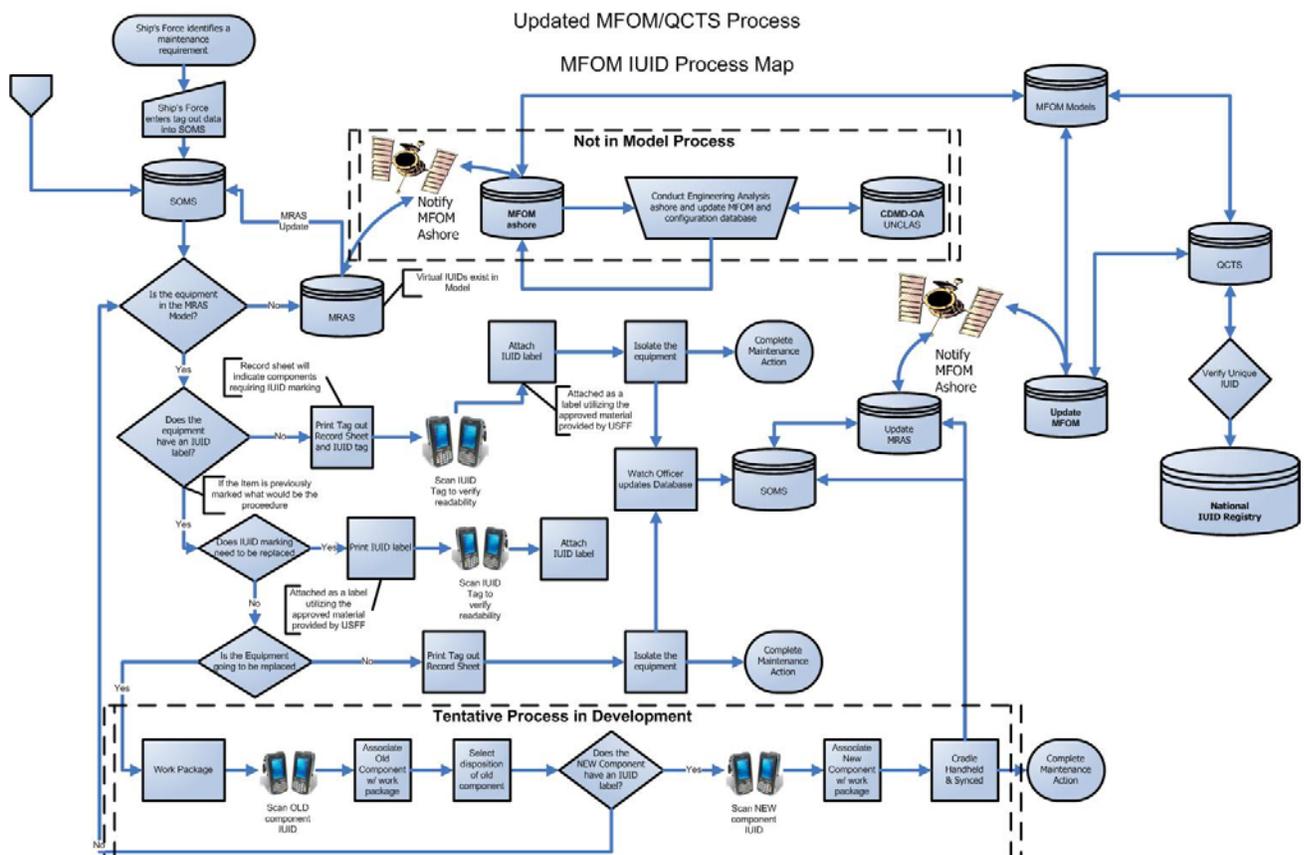


Figure 2 – Current FFC MFOM IUID Map

3.2.3 Expeditionary Management Information System (EXMIS)

The NCFMIS suite of applications that NAVFAC relies on to meet its 2C COG and TOA management responsibilities is being replaced by EXMIS. The core capabilities that EXMIS will provide include:

- Requirements management
- TOA assessment planning
- Fulfillment management
- ILS provisioning
- Inventory management
- Containerization, unpack, pack and ship (CUPS)
- Modernization / sustainment
- Data outputs, reports, archiving and administration

Given the close tie between these capabilities and DoN’s intent for SIM, it is evident that EXMIS will need to address SIM requirements and IUID capabilities as part of the EXMIS solution. Fortunately, NAVFAC has embraced both SIM and IUID in our approach to fielding an EXMIS solution by FY11.

A summary chart of the three major AISs is presented in Figure 3.

Short Name	Full Title	Description	SIM Association
CDMD-OA	Configuration Data Managers Database – Open Architecture	Configuration Status Accounting system that provides the Weapon Systems File with the equipment configuration data needed to determine Table of Allowance and supply support computations.	Currently being integrated with MFOM to increase SIM capability.
MFOM	Maintenance Figure of Merit	Tool that collects maintenance data and calculates material condition readiness values for equipment, shore sites, systems, ships or ship classes against various tasks, missions and warfare areas.	Pilot project integrated IUID technology within the MFOM 2.0 shipboard database and advanced maintenance information system.

Short Name	Full Title	Description	SIM Association
EXMIS	Expeditionary Management Information System	Emerging application which will enable the supported commanders' readiness through materiel management and delivery of supplies, equipment and integrated logistics support services.	SIM is included in the Business Line's critical requirements.

Figure 3 – Relevant NAVFAC AISs to SIM Implementation

4.0 SIM Transition Events

NAVFAC will establish a SIM Integrated Planning Team (SIM IPT) to determine SIM and IUID implementation Transition Events. The team will include NAVFAC, supported TYCOMS, Cross-Functional Team 3 (CFT-3) TOA Total Asset Visibility (TAV) subgroup and ad-hoc support from warehouse and operational SMEs, Blount Island Command (BIC), Maritime Sealift Command (MSC), NAVSEA Warfare Center (NSWC) Corona and Lean Six Sigma Black Belt support.

The SIM IPT will ensure collaboration of all affected units within NAVFAC and the related SYSCOMs such as MARCORSYSCOM work to match the level of SIM for each population of items to the life cycle of item management from acquisition, contracting, transportation, storage, maintenance, logistics and disposal. While SIM depends upon and follows IUID, SIM has a different set of goals, benefits and requirements that must be addressed in its own context.

4.1 PHASE I

4.1.1 Initial Planning Stage

The initial planning stages must include participation from NAVFAC and TYCOM SMEs. Members must focus on the following:

- The MFOM pilot and its application to IUID and SIM implementation
- UII Construct under CDMD-OA/MFOM
- Collection of pedigree data (to include a collection of engineering drawings) – everything you need to make a 2D data matrix
- Marking policy – where, how and when marked (obtain engineering drawings for all equipment)
- Maintenance cycle identification – what passes where/business process
- Identification of affected business process (and the subsequent documentation)
- A complete vendor list (including commercial, other SYSCOM-managed assets and other DOD purchasing agencies (e.g., DLA))
- Training (for Gulfport, MS, and Port Hueneme, CA and other relevant entities)

- Identification of IUID matrix marking, reading and registering software and hardware (partially identified through MFOM 2.0 FFC program)
- Education of vendors
- Examine lessons learned from other DOD SYSCOMS
- Determining SIM populations (see possible categories below)
- Identification of relevant attributes
- Communicate attributes to AIS owners as functional requirements
- Other AIS considerations (e.g. EXMIS, Table of Allowance and Assessment Reporting System (TOAARS), NCFMIS)
- Acquisition strategy
- Budgeting
- Identification of ROI opportunities

The categories to be considered as candidates for SIM are:

- Controlled items, with a possible exception for selected “pilferable” items
- Safety related items (e.g. Critical Safety Items (CSI), Critical Application Items (CAI))
- Government-owned material in the possession of a contractor
- Foreign Military Sales (FMS) items
- Warranted items
- Service-life limited parts (e.g. batteries, rocket motors)
- Personal property
- Repairable items
- Restricted use items
- Sensitive items
- Items requiring periodic maintenance

The end products of the initial planning stage will be a SIM IPT Charter that will clearly define pertinent members and their responsibilities, and an IUID Implementation Plan.

4.1.2 Current IUID Marking Efforts

NAVFAC currently has three IUID efforts underway, based on opportunities presented by partner organizations and the independent DoD IUID DFARS requirement. Initial IUID marking efforts are centering around the MFOM pilot; Blount Island Command (BIC) Maritime Prepositioning Force (MPF) Maintenance Cycle-09 (MMC-09) offload; and CESE Maintenance Contractor Marking.

MFOM and CDMD-OA

The MFOM team is supporting a NAVFAC legacy part IUID marking project, currently being planned for pilot testing under the direction of NFELC. NECC is beginning data modeling for strike group equipment and “kits,” which are slow shipping boxes for particular types of missions, as part of the MFOM IUID/SIM pilot. NECC is also starting assessment of operation-level

labeling hardware and software needs. IUID marking would occur during pre-existing maintenance and logistics activities, with the data loaded initially into MFOM, then backfilled into CDMD-OA.

IUID Partnership with BIC

BIC, a USMC command located on Blount Island, FL, handles Integrated Logistics Overhaul (ILO) for the 1st Naval Construction Division (1NCD), Naval Support Element (NSE), Navy Expeditionary Medical Command (NEMSCOM) and Amphibious Construction Battalion (ACB) assets (CESE, NSE-unique and ACB-unique). These assets are refreshed and maintained on a three and six year maintenance cycle. ILO is completed at the three year point, called a MPF Maintenance Cycle (MMC), in which minor repairs are completed. At the six-year point, many assets are completely refreshed and sent to Maintenance Depot points, including Gulfport. There is a limited window in which to mark many of these assets; they are out at sea or are deployed for up to three years at a time. When they arrive at BIC, it is beneficial to mark assets that are having work done to them during this cycle by the USMC maintenance personnel. Many of the CESE assets are common to both USMC and NAVFAC—it would not be a stretch to have many of the common assets marked in much the same way.

NAVFAC has submitted its initial requirements for marking during the MMC-09 to BIC. It has also submitted its Navy-unique item marking direction and a limited amount of pedigree data. It has been decided between NAVFAC, BIC and DASN (A&LM) that the Quick Compliance Tool Suite (QCTS) (managed by DASN) will be backloaded with NAVFAC data in order to write UID tags and update the registry.

CESE Maintenance Contractor IUID Marking

Currently, NFELC N45 has a contract for CESE under maintenance to be marked in compliance with DFARS clause 252.211-7003. It does not include the marking of subassemblies, subcomponents or collateral. The language reads:

“Item Unique Identification (IUID): The IUID requirement is applicable for the equipment identified in the PWS End Item not to include subassemblies, subcomponents, or collateral. Name plates shall be constructed of aluminum data plate or a stainless steel laser engraved data plate with all information found on the existing brass data plate plus the 2D DataMatrix bar code for IUID compliance, human readable USN. If no existing nameplate is found, the Contractor shall create a new name plate and affix it to the end item and load the IUID information into the IUID register as in compliance with the DFAR 252.211-7003. The 2D Data Matrix bar code shall be imprinted to the nameplate.”

Exact IUID marking processes (plate type, printer, scanning capabilities, UII construct) have not been specified. The SIM IPT will revisit the contract language and seek a no-cost change to the contract to be in full compliance with NAVFAC legacy marking policy.

4.2 PHASE II

4.2.1 SIM IPT Phase II Decisions

Phase II SIM IPT decisions will focus on the following:

- Examining lessons learned from the MFOM pilot
- Examining lessons learned from BIC MMC-09 Offload pilot
- Examining lessons learned from CESE Maintenance Contractor IUID marking
- Identification and documentation of operational unit processes, both in the field and in the warehouse
- IUID software and hardware doctrine and refinement (AIS UII enablement and AIT acquisition)
 - Software and hardware push to the operational units
 - Operational unit training and education
- Identification of all relevant subassemblies, subcomponents and collateral items for 2C COG/CESE assets
- CDMD-OA and MFOM decision points
 - NEPO acceptance
 - TYCOM acceptance
- Data cleansing/transition from legacy AIS
- Other SYSCOM vendor asset integration and decision points
 - How will other SYSCOMS mark our assets?
 - What maintenance and other touch points do we have with these assets?
 - How can we mark these Assets – does the SYSCOM who is responsible for procurement and/or maintenance mark with our money or do we mark ourselves?
 - Collect and Engineering drawings – should have how and where other SYSCOMS have marked the assets
- Further business process changes and identify subsequent documentation changes
 - AIS refinement
 - Additional attribute identification and data definition - with communication to AIS owners as functional requirements
 - Data sharing considerations
 - Navy-ERP Transition Plan
 - EXMIS
 - Acquisition and contracting policy refinement
 - Further commercial vendor education
 - Decision points – is it more cost effective for the contractor to mark it or for us to mark it? If it is more cost effective for us to mark it, where and how will we mark it?
- Identify mobile marking opportunities and form a Mobile Marking Plan
- Identification of Return on Investment (ROI) opportunities, including factors such as
 - use of current business processes such as maintenance or transport
 - speed and scope of SIM implementation for each project and AIS
 - project maturity in the life cycle
 - funding availability

- local or immediate ROI
- potential for wider benefits across NAVFAC, the DON and other DoD elements.
- Establish implementation metrics and report to NEPO and DASN (A&LM)
- Identification of issues, constraints and other problems

4.2.2 Phase II Pilots

In Phase II, the SIM IPT must focus on delivering pilot programs. NAVFAC intends to have at least one pilot functioning by December 2010, as Initial Operating Capability. However, Phase II will be a long process and will continue until FY14, subject to Programmatic funding. SIM IPT Phase II outputs will include a more robust NEPO SIM Implementation Plan Appendix, to be worked yearly in parallel to IPT initiatives and presented yearly in October to senior NAVFAC staff and signed off on by NAVFACHQ. Phase II will also coincide with generating a full IUID Implementation Strategy that will be updated yearly on the same schedule as the DON SIM Implementation Strategy Appendix, and must also be signed off on by NAVFACHQ. This effort will require interfacing with commercial vendors, other Navy SYSCOMS and DOD organizations. Phase II will require a major investment in labor hours as staffing and training augment to all NAVFAC and TYCOM receiving and warehousing points, as well as an initial augment to NFELC staff.

Depot Level Pilots

Since the two major NAVFAC-controlled warehouses—Port Hueneme, CA and Gulfport, MS—are major point of throughput for the 1NCD, they are ideal locations for depot-level pilot programs. In a large number of cases, ILO for the 1NCD is done through Port Hueneme and the resulting assets are sent through Gulfport; or ILO is simply done at Gulfport, given to a 1NCD division at Gulfport and sent to BIC.

A large amount of new 1NCD equipment is sent to Port Hueneme. Also, new equipment for other supported commands flows through Port Hueneme and is sent to the operator. There must be verification and validation of new IUID markings at both receiving points and a check to make sure the IUID record has been sent to the IUID Registry. This will require hardware and software equipment, and trained personnel. Port Hueneme can operate on a smaller scale, but Gulfport takes on such an immense effort with ILO and processing that they will need a more robust capability.

Operational Level Pilots

The SIM IPT will also consider an operational level pilot or pilots. The asset information available in CDMD-OA, as a result of the operation-level MFOM IUID legacy marking, would be available for full SIM analysis, reporting and decision-making. The attribute information and definitions of data characteristics and use, will be determined as part of this pilot. Additional operation-level pilots, such as with TOAARS, will also be considered.

Pilot Metrics

The SIM IPT will establish measures and metrics reporting to gauge progress for each pilot project. These metrics will be evaluated and modified as part of the pilot programs, to provide a basis for implementation measurement during the large-scale activities of Phase III.

4.3 PHASE III

The SIM IPT must carefully consider the lessons learned from Phases I and II and evolve the NAVFAC SIM Implementation Plan Appendix to achieve Full Operating Capacity (FOC) by December 2015. This target date will be subject to programmatic and budgetary constraints.

Phase III will consider the expansion of SIM implementation to all item management business processes and tangible property management AISs, and roll out implementation to those determined to be relevant, and with a significant ROI. The separate but closely related NAVFAC IUID marking initiative must complete legacy item marking and full integration of AIT scanning procedures into current field and floor business processes to support completion of Phase III SIM implementation.

The second major focus will be the transition or interfacing of all applicable NAVFAC AISs to Navy-ERP. Additional and alternative architectures for maximizing SIM benefits, for instance a distributed Service-Oriented Architecture aggregate of legacy systems, will also be considered. This effort must occur in close coordination with Navy-ERP and the other SYSCOMS given NAVFAC's support role, and those SYSCOMS' architecture approaches may determine much of the NAVFAC approach.

The third focus of Phase III is initiation of business process re-engineering to exploit the total asset visibility information capability from SIM implementation. As DLA, NAVICP and the Hardware SYSCOMS also implement IUID and SIM, future potential benefits will continue to increase as new visions for business process re-engineering emerge. The expectation is that SIM's possibilities exceed the current ability to envision the full change potential of true total asset visibility, through IUID and SIM.

Finally, Continuous Process Improvement (CPI) will begin during Phase III as an institutionalization of the IPT activities, in preparation for termination of the IPT. CPI will commence with a review of measures and metrics, and establish post-FOC improvement directions, and adjust SIM metrics for long-term process improvement.

Further definition of Phase III focus points will become more robust as SIM Implementation continues.

5.0 Budgeting

To be determined; NAVFAC is evaluating SIM requirements against its current programs of record. NEPO will determine SIM POM/PR resource requirements in coordination with Program

Executive Offices (PEO) and Program Manager staff, and provide those requirements to the Navy. A Program Objective Memorandum (POM) has yet to be submitted.

NAVAL SEA SYSTEMS COMMAND
APPENDIX TO DON SIM STRATEGY



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1.0 INTRODUCTION

The purpose of this document is to assist Naval Sea Systems Command (NAVSEA) Program Managers (PM) and affiliated Program Executive Officers (PEO), and their Logistics Managers and functional specialists with guidance and background for Serialized Item Management (SIM) planning in accordance with DoD and DoN policy.

NAVSEA enables communication across all elements on an enterprise-wide basis. As the single process owner for warfighting readiness, it is accountable for coordinating and fielding readiness-related initiatives. Among those, serialized item management (SIM) is recognized as a transformational initiative in which we are committed to promoting a successful SIM environment for asset management and material maintenance.

2.0 CORPORATE GOALS

NAVSEA's Strategic Priorities—Current Readiness, Future Capability, and People—are aligned with the strategic direction of the Navy's leadership. They are also all enhanced with the benefits achievable through SIM. The objectives for each are measurable and define the desired end state. At a high level, each objective has associated corresponding SIM benefits as described below.

- **Current Readiness:** Current Readiness refers to the operations our Navy and Marine Corps are conducting today. Our role in support of these operations is sometimes referred to as “sustainment” in that we help support the systems and aircraft presently in use by the Fleet. SIM will reduce the cost of operations through optimizing the use of existing assets, reducing investments in spares, increasing operational availability without additional costs, and leaning investments in material management functions. At the lower level, SIM specific goals would include, but are not limited to – improved end-to-end management, decrease cycle times and Repair Turnaround Times (RTAT), increase the ability to accurately forecast material availability and reliability, enhance warranty management, better assess depot performance, identify items that repeatedly fail to confirm if they are beyond economic repair, and reduce carcass losses.
- **Future Capability:** Future Capability refers to our responsibility to develop, test, and field ship platforms, new aircraft and systems that give our Sailors and Marines technological and operational superiority over their adversaries. From a SIM perspective, the adoption of smart concepts, technology insertion for data collection, and modernized information systems will support decision making using prognostics in a condition-based maintenance (CBM) and reliability centered maintenance (RCM) atmosphere.
- **People:** At the foundation are the people of the NAVSEA, whose technical, business, and leadership excellence sustain the levels of Current Readiness our Sailors and Marines need today, and who will deliver the future capability they will need tomorrow. SIM, whether as a toolset for maintainers in a hanger bay or logisticians conducting analyses,

will enhance productivity and professional skills by enabling the individual to spend less time on burdensome, administrative data gathering or exception resolution tasks.

2.1 RELATIONSHIP TO OTHER DON ORGANIZATIONS

The processes that drive NAVSEA readiness and costs span a number of commands, among them:

- Commander, Naval Air Forces (CNAF)
- Deputy Commandant, US Marine Corps Aviation (USMC AVN)
- Commander, US Fleet Forces Command (CUSFFC)
- Commander, Naval Air Forces Reserve (CNAFR)
- Naval Education & Training Command (NETC)
- Naval Air Systems Command (NAVAIR)
- Space and Naval Warfare Systems Command (SPAWAR)
- Naval Supply Systems Command (NAVSUP)
- Naval Inventory Control Point (NAVICP)
- Commander, Naval Installations Command (CNIC)
- United States Transportation Command (USTRANSCOM)
- Defense Logistics Agency (DLA)

Most of these activities are part of enterprise partnership models serving the mission objectives and goals in meeting the challenges of protecting U.S. vital interests surrounding wartime and peacetime operations. Together, these organizations form the end-to-end supply chain processes that support the Naval Aviation Enterprise (NAE) and Surface Warfare Enterprise (SWE) mission. Coordination of SIM implementation with all organizations is a planned and essential task to establish a broad SIM culture from system acquisition through sustainment and disposal. Although each activity is embarking on SIM initiatives specific to their mission, requirements and processes, the common cross-entity foundation will be item unique identification (IUID) and a robust data sharing architecture. NAVSEA provides integral participation to all enterprises, particularly the Surface Warfare Enterprise (SWE).

3.0 CURRENT STATE

Historically, successful variants of SIM have been used within NAVSEA for decades utilizing Configuration Data Managers Database - Open Architecture (CDMD-OA) and will provide the core capabilities for formalized SIM enablement. NAVSEA has already used selected attributes to manage commodities and embraced innovative maintenance concepts.

3.1 PARTICIPATION IN THE DASN (A&LM) LCII WIPT

In 2008, NAVSEA 04L Senior Executive Service (SES) Leader for the Logistics and Fleet Support Directorate signed the DASN (A&LM) DoN Life Cycle Item Identification (LCII) Working Level IPT Charter committing to participation in the coordination and issue resolution related to

implementing initiatives associated with Life Cycle Item Identification, such as Item Unique Identification (IUID), Serialized Item Management (SIM), and emerging next generation material identification/tracking technologies to support diverse Navy and Marine Corps missions in air, space, land, surface, and subsurface environments.

4.0 NAVSEA SIM CHAMPION

NAVSEA 04L2 fills the role of SIM Champion and assists DASN (A&LM) with guidance generation and also facilitates and coordinates this NAVSEA SIM Plan Appendix ongoing development and implementation.

The NAVSEA 04L2 SIM Champion actively engages with DASN (A&LM) and other Navy and DoD activities to ensure progress is made towards successful SIM implementation.

NAVSEA 04L2 SIM Champion's performance is evaluated on the success of SIM implementation. NAVSEA 04L2 SIM Champion is conducting a series of IPT working groups aimed at narrowing down AIS or providing interfacing links to one overall AIS, which might reduce or eliminate the separately managed programs existing today.

NAVSEA 04L2 SIM Champion's responsibilities / accomplishments are:

- Development of a Communication Plan to educate and collaborate with internally and externally
- Engagement with DoD activities to share lessons learned and eliminate duplication of effort
- Development of SIM Plans compliant with DON strategy, policy, guidance, and timelines
- Identification of functional requirements for IUID SIM-enablement to AIS providers
- Progress reporting of metrics to DASN (A&LM) and others
- Participation in the DoN LCII WIPT, SIM strategy meetings and related forums
- Initial and periodic updates to this NAVSEA SIM Plan appendix
- Close work with stakeholders to ensure identification of SIM POM / PR requirements
- Coordination of requirements presentation to resource sponsors

5.0 NAVSEA SIM-RELATED INITIATIVES

NAVSEA is currently transforming lifecycle management of equipment by focusing on effective and efficient program and sustainment management practices and leveraging the tenets of continuous process improvement in order to document "as is" processes, identify gaps and formulate new processes which include improved alignment and resource planning. At the same time, NAVSEA is working to improve functional alignment and resource planning through the Competency Aligned Organization (CAO) initiative.

5.1 SIM IMPLEMENTATION IN MAINTENANCE AND SUPPLY

NAVSEA is working with Program Managers (PM), and affiliated Program Executive Offices (PEO) as well as Fleet customers at the organizational and intermediate levels of maintenance to have items marked with IUID in order to enable serialized item management. Several programs are being marked by PBL-Organic (PBL-O) activities utilizing current funding to accomplish SIM and IUID marking / registration. The newly revised NAVSEA Program Managers Guide to the Application of Performance Based Logistics, 08 October 2008 is NAVSEA’s product support strategy that supports SIM implementation practices.

The requirement for IUID is codified in various DoD policy documents; however, there is little guidance concerning the use of unique identification (UID) to support improved maintenance and materiel management processes. *The Concept of Operations (CONOPS) for IUID-Enabled Maintenance in Support of DoD Materiel Readiness* describes:

1. the fundamental purpose of IUID and its position as an element of automatic information technology (AIT),
2. the significance of uniquely identifying repairable items within supportability processes and life cycle events,
3. how a fully optimized automated information system (AIS) can improve maintenance and weapon system support using serialized item management (SIM),

Planning efforts are underway with depot personnel to support SIM utilizing the ADUSD Depot CONOPS of January 2007. The first step of any SIM planning is implementing IUID. Below is our program planning for the initial institutionalization of the SIM concept. Marking and data capture management capabilities will utilize templates from the CONOPS to develop and update the Table below.

DESCRIPTION
PHASE I - Conduct Preliminary Research and Planning
1. Establish IUID team
2. Initiate preliminary research and planning efforts
3. Develop an IPT Plan of Action and Milestones
4. Research candidate items for IUID marking
5. Research parts marking sourcing options, whether organic or contract
6. Determine local serialization schema alternatives
7. Initiate eng analyses to determine best marking alternatives relative to engineering requirements
8. Explore material process flow options & associated data requirements
9. Determine quality control requirements
10. Initiate associated costs analyses & define funding responsibility

ties
11. Map current processes
PHASE II - Determine New Business Environment/Develop a Marking Plan
1. Develop an implementation schedule for initial items targeted for IUID
2. Implement a coordinated local serialization schema
3. Address marking requirements & coordinate approach with PMO & Cog Field Activities
4. Obtain approved technical data
5. Ensure defined eng instructions address process determining where/how to mark
6. Develop process changes to material specs and engineering documentation
7. Establish sourcing option (organic or contract)
8. Determine & map the layout of the new business environment
9. Ready parts marking capability
10. Establish a local database for IUID data or integrate into an existing system
11. Develop/obtain a communications interface with the DoD UID registry
12. Obtain materials, supplies & equipment, facilities and operator training
13. Establish depot IUID implementation mgt structure
14. Draft Command doctrine
15. Establish quality control processes
16. Prepare budget estimates, define fiscal responsibility
17. Create a marking plan for initial parts targeted
PHASE III - Execute Marking Plan for Remaining IUID Items
1. Implement the marking plan for initial items targeted
2. Executing parts marking on targeted items and registering in the UID registry
3. Documenting experiences
4. Measure performance outcomes identified in Phase II Steps 7 and 8
5. Develop a full implementation plan for all other IUID items
6. Finalize doctrine
7. Review and adjust funding requirements as necessary
8. Execute the implementation plan.
9. Initiate a continuous process improvement program

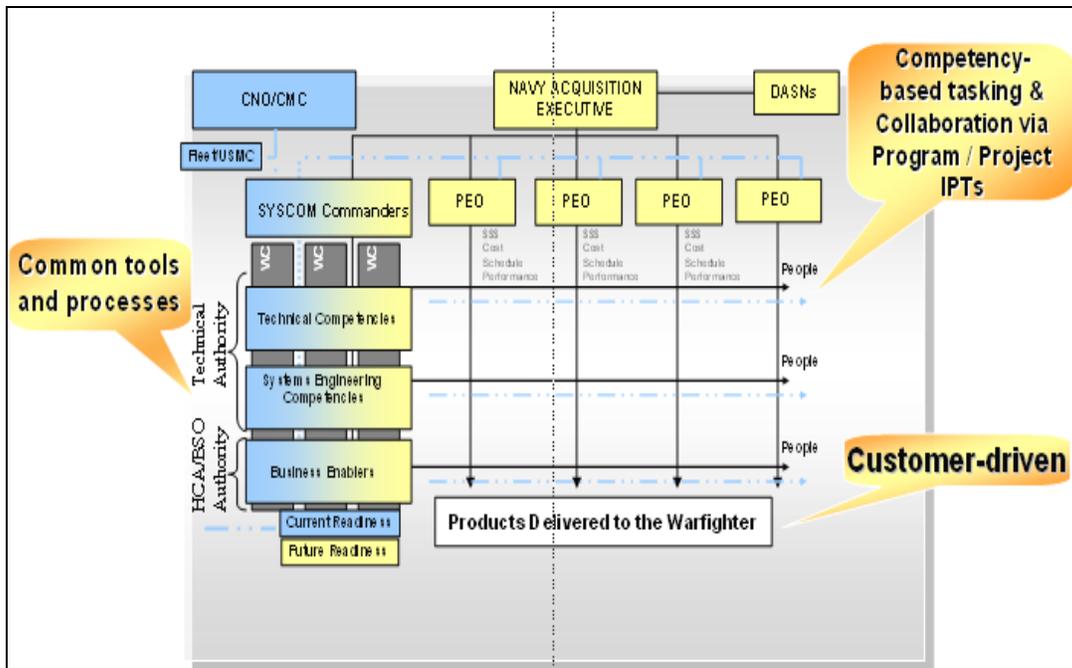
5.2 COMPETENCY-ALIGNED ORGANIZATION

NAVSEA 04L2 SIM Champion will keep other competencies informed and involved in SIM implementation. These include the Comptroller, Contracting, Supply, Engineering and Corporate Operations. The newly created NAVSEA UID/IUID IPTWG will meet routinely to discuss lessons learned, and share success stories with implementation strategies.

The figure below provides ASN (RD&A) structural guidance for this effort. Engaging in this effort ensures that NAVSEA Subject Matter Experts (SME) are aligned to enable standardization of processes and tools while functionally providing services as needed to a myriad of programs and projects in all stages of their lifecycle. This provides the framework for the SIM Champion to extend direction and assistance in the implementation of SIM efforts. As SIM is integrated throughout the NAVSEA CAO, the following actions are taking place:

- Formally document which assets require marking and tracking
- Provide greater planning tools to the warfighter, program manager and all stakeholders
- Ensure optimum warranty management
- More quickly and accurately manage parts for greater traceability
- Strive to reduce maintenance cost while improving reliability
- Improve data entry, processing and analysis while reducing cost

ASN (RDA) STRUCTURAL GUIDANCE FOR CAO



5.3 NAVY ENTERPRISE RESOURCE PLANNING (NAVY-ERP)

Currently, NAVSEA is in the process of conducting resource planning efforts for implementation of Navy- ERP, along with other Navy SYSCOMs, PMs and PEOs. Early Navy-ERP deployment will be focused on financial functionality with plans to incorporate part or all of the following functions in later deployments over the next two years:

- A. Environmental Health and Safety
- B. Warehouse Management
- C. Physical Inventory
- D. Consignment
- E. Serial Number Tracking
- F. Enterprise Buyer Professional (Part of Plan Supply)
- G. Inventory Management
- H. Order Fulfillment
- I. Supply And Demand Processing
- J. Consignment
- K. Supply Forecasting
- L. Regional Hazmat
- M. Financial Management Board (FMB) Unique Support
- N. Allowance
- O. Carcass Tracking
- P. Supplier Relationship Management
- Q. Packaging/Handling/Storage & Transportation
- R. Repairables Management

5.4 OTHER AIS RESOURCES RELEVANT TO SIM

The following table provides information as to AISs that NAVSEA is or will be utilizing for SIM implementation. Following the table, CDMD-OA and CMIS briefs are provided as additional details relative to their use as “Key” in NAVSEA operations as they relate within PM and PEO. NAVSEA 04L2 has formed an UID/IUID IPTWG to determine how SYSCOMs, PMs and PEOs might also use additional systems beyond those listed below, such as Maintenance Figure of Merit (MFOM) and Quick Compliance Tool Suite (QCTS) as a potential components and interfaces for an integrated SIM environment.

NAME	DESCRIPTION	SIM ASSOCIATION
CDMD-OA – Configuration Data Managers Database Open Architecture	Tracks configuration of equipment being installed on NAVSEA platforms.	Discussions are in-process regarding utilizing this AIS to track IUID, the primary SIM enabler.
CMIS - Configuration Management Information System	Joint DoD Application supporting configuration, engineering, and technical data management functions; provides data to operators, maintainers, and logistics personnel for DoD weapon systems or tracked assets	SIM assists with collating data from multiple sources to enable comprehensive configuration postures

NAME	DESCRIPTION	SIM ASSOCIATION
CMPPro - Configuration Management Professional	Supports equipment configuration management and tracks IUID information.	SIM assists with collating data from multiple sources to enable comprehensive configuration postures
COLTS - Catalog Ordering Logistics Tracking System	Records maintenance, equipment structure changes and parts consumption. Calculates spare part inventories and pushes appropriate equipment to the Fleet and supporting activities. Also calculates stock level quantities to support central PBL and Inventory Control Point (ICP) efforts.	SIM assists with collating data from multiple sources to enable comprehensive configuration postures
IS - Inventory Suite	Provides inventory management functions.	SIM assists with collating data from multiple sources to enable comprehensive configuration postures
JEDMICS - Joint Engineering Data Management Information and Control System	DOD standard engineering data management/repository system; manages engineering drawings and supports logistics business functions, such as maintenance, repair, procurement and re-engineering provides a means to convert, store, and receive information from original hard copy media	SIM assists with collating data from multiple sources to enable comprehensive analysis with greater information detail
JTDI - Joint Technical Data Integration	Integrated data environment enabling warfighters worldwide to access technical, supply, and maintenance data from authoritative sources in digital form	SIM adds capability for connecting item documents based on specific item configuration
MEASURE - Metrology Automated System for Uniform Recall and Reporting	Supports the Navy's Metrology and Calibration (METCAL) Program by provides users with access to calibration production, recall and inventory tracking data for support equipment requiring calibration	SIM maintains linkage of related data sets to item maintenance actions and fleet usage
N-ERP - Navy Enterprise Resource Program	An integrated business management system that modernizes and standardizes Navy business operations. Provides management visibility across the Navy, and increases effectiveness and efficiency	As a core business system, SIM capability is essential to instituting enterprise wide usage of SIM
SIMS - Supply Inventory Management System	Provides inventory management functions.	SIM assists with collating data from multiple sources to enable comprehensive configuration postures

5.4.1 Configuration Data Managers Database Open Architecture (CDMD-OA)

NAVSEA presently utilizes CDMD-OA and is actively working with SYSCOMs, PMs and PEOs to integrate SIM requirements within CDMD-OA and Maintenance Figure of Merit (MFOM) data fields. As this is a relatively new and developing effort, more information will be provided in updates to this Appendix as work progresses with SYSCOMs, PEOs and Program Managers.

5.4.2 Configuration Management Information System

NAVSEA recognizes the difficulty of having different AISs for different programs under their purview and is reviewing CMIS, managed by NAVAIR. The CMIS Program is a DoD/Navy web based software system for determining various information related to configuration identification, status accounting, control and auditing, with a potential to track serialized and non-serialized items.

Although this effort is focused on configuration management, NAVSEA is investigating potential interfaces with other systems currently being used by the diverse portfolio of programs within supported PEOs to perform SIM efforts.

Other AISs used to serially track and manage inventory includes Inventory Suite, CM-PRO, COLTS and SIMS. The NAVSEA SIM Champion will be conducting a series of IPTs and/or working groups aimed at narrowing down AIS's or providing interfacing links to one overall AIS which might reduce or eliminate the separately managed programs existing today.

6.0 SIM SPECIFICS

The benefits of SIM at NAVSEA will be enabled by Item Unique Identification (IUID) and realized through relational use of the Unique Item Identifier (UII). Data associated with IUID marking by itself will not provide the desired benefit to the Fleet and other stakeholders. Data associated with the UII has a myriad of attributes that will allow for identification of an item's uniqueness, improved asset visibility, and more accurate inventory management.

6.1 BENEFITS

Serialized Item Management (SIM) is "Key" in NAVSEA's efforts to more accurately track maintenance, reliability, cost and readiness drivers, and aid in shaping decisions on quantities and placement of spare parts, level and depth of maintenance tasks, system design/re-design and retrofit timeline planning.

As alluded to in the above paragraph on NAVSEA's CAO initiative, NAVSEA is linking previously separate activities as part of the BRAC initiative. As we continue to evolve into CAO roles, previously stove-piped systems/programs will be combined ensuring greater visibility and overarching use of metrics. The implementation of SIM is instrumental in this effort, as it will integrate material tracking activities, allowing for a unified SIM effort, where previously each Program Office and supporting activity managed within their own programs.

6.2 IDENTIFICATION OF SIM POPULATIONS

The DoDI 8320.04, "Item Unique Identification (IUID) Standards for Tangible Personal Property," dated June 16, 2008 mandates IUID requirements for qualifying items delivered to the Government under contract, in inventory and in-use if one or more of the following criteria apply. The below requirements are included as part of the SIM population at NAVSEA:

- Items for which the Government's unit acquisition cost is \$5,000 or more
- Items for which the Government's unit acquisition cost is less than \$5,000, when identified by the requiring activity as DoD serially managed, mission essential or controlled inventory
- Regardless of value, (a) any DoD serially managed subassembly, component, or part embedded within an item and, (b) the parent item that contains the embedded subassembly, component or part

The above items form the basic SIM population, with additional items added as decided by each program and supporting stakeholders.

NAVSEA programs and supporting ISEA's have and will continue to identify specific parts, components, and end items to be serially managed. SIM populations are selected based on a variety of factors within the following categories:

- Controlled items
- Safety related items
- Government owned property in the possession of a contractor (PIPC)
- Foreign Military Sales (FMS) items
- Warranted items
- Service-life limited parts (e.g., batteries, rocket motors)
- Personal property
- Repairable items
- Restricted use items
- Sensitive items
- Items requiring periodic maintenance
- Other items selected by Program Management personnel

6.3 SIM IDENTIFICATION OF ATTRIBUTES/ DATA ELEMENTS

The DOD SIM strategy as outlined in DoDI 4151.19 of December 26, 2006, Serialized Item Management (SIM) for Materiel Maintenance, of 26 December 2006 establishes a SIM program where activities identify populations of select items (parts, components, and end items); marks all items in each population with a unique item identifier (UII); and generates, collects, and analyzes maintenance, logistics, and usage data about each item. NAVSEA is embracing the above strategies and continues to work towards compliance as discussed within this Appendix.

The following is a summary of important NAVSEA SIM attributes:

- Operational time
- Configuration
- Cost
- Historical information of the warfighter.
- Operational Time: Overall operational time will increase as items are tracked during their lifecycle due to the more accurate documentation/tracking of data utilizing the SIM method-

ology, as enabled by IUID and updated AIS's. This data will also be used by the manufacturer to make decisions with respect to improving design.

- Configuration: Configuration management
- Contractual information
- Custodial information

These attributes are collected throughout an item's life cycle and are articulated as data elements captured and recorded in the several AISs mentioned above. These essential attributes assist management in making important planning and execution decisions which impact program development.

6.4 SIM DATA CHARACTERISTICS DEFINITION AND USE

The following factors are being utilized by NAVSEA under the SIM program initiative:

- **Performance Measures:** Allows for accurate tracking of availability and failure rates. Program managers with access this data and make optimum maintenance and operational decision to improve overall readiness and availability in support of items is becoming seamless throughout NAVSEA as we evolve to CDMD-OA and Maintenance Figure of Merit (MFOM). Managers will be able to access SIM data enabling decisions involving upgrades and modifications to be more easily planned and executed.
- **Cost:** The ability of NAVSEA to serially manage items from a higher level utilizing CDMD-OA will ultimately reduce life cycle sustainment cost due to more accurate, collaborative and efficient use of data.
- **Historical Information:** NAVSEA IPTWG is recording pertinent data to create operational and maintenance history and will utilize this information for planning improvements and prognostic maintenance.
- **Contractual Information:** All new contracts requiring item marking are incorporating the IUID DFARS clause. Availability of accurate information within the Wide Area Work Flow (WAWF) allows for timely processing of warranty information and provides real time ownership data. The WAWF also enables the manufacturer timely payment of invoices thereby encouraging its use by DoD manufacturers.

6.5 SIM RESOURCE REQUIREMENTS AND BUSINESS CASE ANALYSIS (BCA)

NAVSEA requires additional resources including equipment, software and personnel to successfully execute SIM. To this end, additional internal and external stakeholders are being involved. The NAVSEA 04L2 SIM Champion understands that these requirements currently are considered as being additional to efforts performed by technical experts, however is working to engrain them within everyday jobs. Unfunded requirements are being discussed with DASN (A&LM) to address funding issues and ensure awareness at all levels.

NAVSEA will execute a Communications Plan to educate the diverse areas within NAVSEA that require efforts to ensure the success of SIM. Program Managers are developing budgets and planning for SIM with each new POM cycle. For each program, Business Case Analyses (BCA)

will be performed to ensure that cost savings are associated with conducting SIM implementation utilizing PBL BCA Guide dated 08 August 2008.

NAVSEA is also documenting unfunded requirements and leveraging other more popular, funded efforts such as CDMD-OA and MFOM. Recent discussions with SPAWAR, NAVAIR, NAVSUP, COMFISCS and Fleet Forces Command (FFC) indicate that a linkage of SYSCOM efforts could produce better results with regard to budgetary planning efforts and NAVSEA is collaboratively working this.

6.6 *STAKEHOLDERS*

SIM benefits a variety of personnel associated with NAVSEA programs and many have a stake in successful implementation. A summary of some of the key NAVSEA SIM stakeholders and each role is shown below.

STAKEHOLDER	SUMMARY OF PRIMARY SIM ROLE
DASN (A&LM)	DoN SIM policy guidance, cross stakeholder coordination.
DLA	Provide receiving/shipping capability for IUID/SIM data collection and interface.
FFC, CNAF, CNSF, NNWC (Fleet) and Fleet Enterprises (such as the NNFE, NAE, SWE)	Application of SIM practices in logistics and maintenance sustainment operations.
NAVAIR and Fleet Readiness Centers	IUID parts marking/registration. Application of SIM-derived logic for production and rework planning/execution.
NAVSUP, COMFISCS, NAVICP, NAVFAC	Software support for select AIS's used within the Navy (including SPAWAR and the Fleet) providing functionality and interfaces. Institute SIM-derived logic for acquisition, allocation, issue and life-cycle planning / decisions.
NETC	Training provider to incorporate SIM curriculum in "A" and "C" schools.
PEO's	Ensure acquisition efforts plan for SIM budgeting and implementation.
SPAWARSYSCOM and SPAWARSYSCENS	Lead and facilitate aligned management of equipment in the areas of engineering, maintenance (all levels) and supply support. Implement SIM within new and legacy equipment programs (all phases of their lifecycle).
USTRANSCOM	Provide asset visibility and interfaces using IUID data during distribution.

6.7 *INITIAL OPERATING CAPABILITY (IOC) BY 2010*

Each PM and PEO are responsible for and must achieve IOC in order for the mass benefits of SIM to begin to be realized by the Fleet and all stakeholders. The NAVSEA SIM Champion will

continue to work closely with Program Managers and affiliated Program Executive Offices, providing guidance and policy in order to meet their IOC requirements by 2010. NAVSEA will continue to plan for additional implementation, and will continue to work closely with PM and affiliated PEOs on acquisition and sustainment programs which will greatly benefit the Navy and other services due to its joint application.

6.8 FULL OPERATING CAPABILITY (FOC) BY 2015

Each PM and PEO are responsible for and must achieve FOC in order for the mass benefits of SIM to be fully realized by the Fleet and all stakeholders. Standardized processes must be developed to leverage lessons learned and ensure optimum efficiency in future efforts. Additional programs will utilize and refine these processes. Although considered to be close to impossible to achieve for older legacy equipment spread throughout the world, PM and affiliated PEO should conduct a Business Case Analysis to determine if the extensive work required to locate and incorporate SIM into older legacy equipment is worth the effort. The NAVSEA SIM champion will continue to work closely with PMs and PEOs towards achievement by December 2015.

Pre-designated measures and metrics should be tracked and monitored throughout the process and PMs and PEOs should continue to report metrics and implementation progress to DASN and other stakeholders.

7.0 AUTOMATIC IDENTIFICATION TECHNOLOGY (AIT)

NAVSEA's goals for the use of AIT and SIM are to enable stakeholders to make a variety of critical programmatic, engineering and supply chain decisions based on timely and reliable data.

The NAVSEA UID/IUID IPTWG is working towards ensuring that data collection, comprehension and application are as simple and straightforward as possible. AIT is a suite of forever changing technologies that enable and facilitate the accurate capture and rapid transmission of machine-readable data to an AIS, thereby enhancing the readiness of deploying forces, with improved knowledge of equipment, personnel, and capabilities in support of respective missions.

NAVSEA will continue to utilize AIT as a key element in achieving Total Asset Visibility (TAV) and improved inventory management, along with the program management and engineering benefits mentioned previously.

NAVSEA will continue to participate on the DASN LCII WIPT and OSD Forums in order to provide opportunities to learn from other services and activities on which new equipment, rules, tools, and processes best satisfy SIM requirements.

8.0 OTHER CONSIDERATIONS AND CONCLUSION

NAVSEA is continuing to POM and seek other avenues for funding to familiarize / train employees on SIM, mark and track equipment using new and modified AISs, and identify risks and progress via Independent Logistics Assessments (ILAs).

In conclusion, by keeping the end goals of fully relational databases / AISs in sight, we will collaboratively work the many facets of this complex issue internally and externally in parallel and begin to more quickly realize efficiencies while working to overcome funding and resource challenges. The NAVSEA SIM Champion will continue to work with DASN (A&LM) to update this Appendix on yearly basis or as requested.

NAVAL SUPPLY SYSTEMS COMMAND
APPENDIX TO DON SIM STRATEGY



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July 2009

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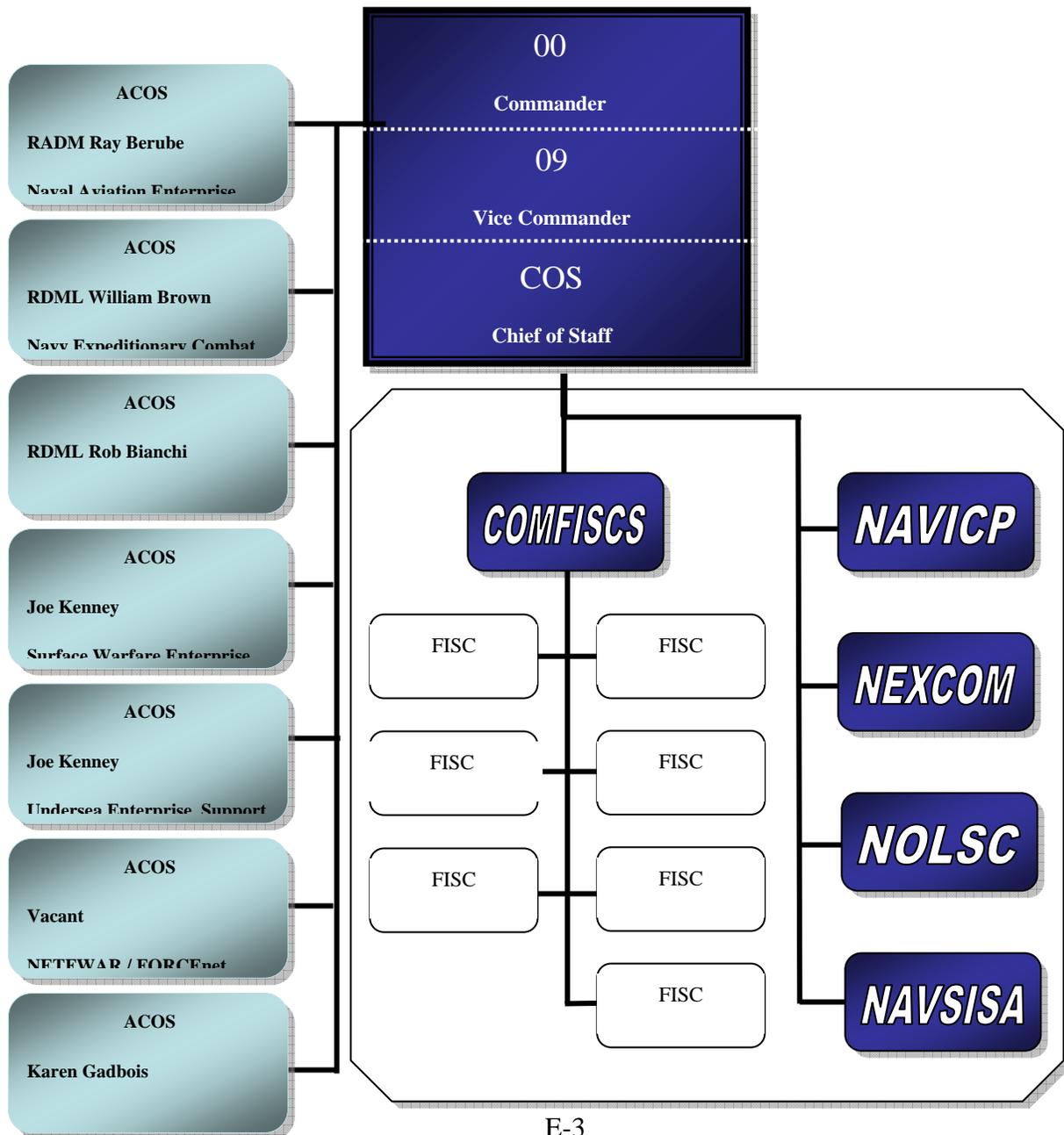
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1.0 NAVAL SUPPLY SYSTEMS COMMAND (NAVSUP)

1.1 NAVSUP ORGANIZATION

Naval Supply Systems Command (NAVSUP) provides a variety of products and services directly to Combatant Commanders and virtually all elements of the other Department of the Navy (DoN) hardware systems commands (SYSCOM). NAVSUP is organizationally configured to affect a customer facing posture to the maximum extent possible. Figure 1 below provides a large scale view of the NAVSUP claimancy.

Figure 1



1.2 NAVSUP MISSION

NAVSUP's mission is to provide Navy, Marine Corps, Joint and Allied Forces with products and services that deliver combat capability through logistics. This is accomplished primarily through the management of supply chains that provide material for Navy aircraft, surface ships, submarines and their associated weapon systems. NAVSUP provides centralized inventory management for Navy's non-nuclear ordnance stockpile and a wide range of base operating and waterfront logistics support services. This is comprised of coordinating material deliveries, contracting for supplies and services, and providing material management and warehousing services.

2.0 NAVSUP SIM CHAMPION

2.1 NAVSUP SIM CHAMPION

The NAVSUP SIM Champion will be the IUID Project Manager within the Navy Automatic Identification Technology (AIT) Office acting under the NAVSUP Chief Information Officer (CIO).

2.2 RESPONSIBILITIES

The role of NAVSUP SIM Champion will not be considered an additional duty. Core responsibilities are consistent with duties and responsibilities already defined for the IUID Project Manager (PM). The IUID PM will be responsible for the following:

- Participate as an active member of the LCII WG.
- Act as primary functional liaison between SYSCOMS, DASN, COCOMS, other Component Services and DoD Agencies with respect to IUID and SIM related information and activities.
- Act as lead to facilitate development of NAVSUP SIM Plan compliant with OSD and DoN policy and guidelines.
- Act as lead to ensure designated IUID and SIM metrics are collected and reported on in accordance with agreements and directives.
- Ensure the NAVSUP SIM Plan appendix is reviewed at least annually and updated as required.
- Assess risks and report on risk management strategies.
- Help formulate input to create and update policy, doctrine and requirements documents to create a robust SIM developmental and operational environment.

3.0 NAVSUP SIM STRATEGY

3.1 STRATEGY OVERVIEW

NAVSUP is not a process owner for organic, intermediate or large scale depot maintenance activities. Neither does NAVSUP possess PEO or Program Management responsibilities for

ACAT 1D and similar large scale acquisition programs. NAVSUP's direct engagement with SIM will be more limited in scope manifesting itself primarily as one of a support role. In this capacity NAVSUP's major contribution will be to work with SYSCOMs, OSD and other component services and DoD Agencies, as appropriate, to facilitate standardization in the application of Automatic Identification Technology (AIT) and AIS interoperability as they pertain to SIM. Planning for a fully functional SIM program will take place in those areas where NAVSUP possesses direct oversight and responsibility for SIM actions for SIM enabled material. This includes collecting, managing and distributing information and reports to the wider Naval community to complete an asset's information portrait where such information is resident uniquely within the NAVSUP claimancy.

NAVSUP recognizes that the implementation of SIM will be a long-term process affecting and affected by other efforts such as specific Enterprise Resource Planning (ERP) development underway within Navy and DLA and the POM process among others. Additionally, while the DoN strategic approach to SIM strategic planning is for each SYSCOM to develop its own plan NAVSUP is mindful of the necessity to develop and operate in a collaborative environment for a common goal. This is important considering NAVSUP's role in providing a level of support to other SYSCOMs in certain areas. This necessitates a more generic start working quickly toward a comprehensive and actionable SIM strategy as NAVSUP gains clarity regarding content and intent of other SIM strategy documents.

The long lead time to achieve a common DoN SIM implementation will almost assuredly drive significant changes to any plan crafted today. This is due to emerging technologies, real world contingencies and the likelihood that legacy SIM-enabled material will not completely be IUID marked until well into the next decade. This does not obviate NAVSUP's responsibility to push forward in developing a robust SIM strategy. It does dictate a measured approach to achieve realistic objectives and goals over the duration of the anticipated implementation window. To mitigate these issues NAVSUP assumes a posture of incremental development. This approach dictates a more general plan crafted and adopted early in the process with increasingly detailed additions added as the resourcing and operating requirement (including IT) are more clearly defined.

3.2 LIFE CYCLE ITEM IDENTIFICATION WORKING GROUP (LCII WG)

NAVSUP will actively participate and support the LCII WG chartered in 2008. NAVSUP's principal representative will be the SIM Champion but may include other supporting representatives from time to time as appropriate.

3.3 IUID

NAVSUP recognizes that the success of SIM is predicated in large part upon Item Unique Identification (IUID). The ability to uniquely associate an item with its pedigree data using a Unique Item Identifier (UII) is a foundational element upon which the SIM program is constructed. A robust and actionable IUID plan will help lead to meeting the twin OSD requirements to 1) mark new acquisition items of tangible personal property being recorded into DoD ownership and ac-

countability records; and 2) to mark legacy tangible personal property items that meet one or more of the requirements for marking with IUID. Among others this plan will include elements of the following areas addressed in greater detail below:

- Legacy part marking
- Contracts construction for acquisition of new parts
- Warrantees
- Product Data Quality Reporting

3.3.1 Legacy Part Marking

NAVSUP will work with internal NAVSUP activities and external DoN/DoD activities and organizations to effect an actionable plan(s) to identify and mark items and register the associated Unique Item Identifiers (UII) for NAVSUP owned and managed assets meeting the requirements for IUID.

3.3.2 Contracts Construction for Acquisition of New Parts

NAVSUP will act, commensurate with available resources, to work with NAVSUP contracting activities to ensure acquisition personnel are properly executing the requirement to include IUID into contracts for tangible personal property. This will be accomplished by using the OSD IUID Quality Assurance Guide and similar educational tools combined with oversight by cognizant points of authority within NAVSUP. The effort will address not only the requirement to include the IUID DFARS Clause 252.211-7003 but also how to properly address IUID in the following sections of a standard format government contract:

- Section B – Supplies or Services and Prices / Cost
- Section C – Description / Specifications / Statement of Work
- Section E – Inspection and Acceptance
- Section F – Deliveries or Performance; and
- Section I – Contract Clauses

3.3.3 Warrantees

Beginning in the Initial Operating Capability (IOC) phase (see paragraph 3.4 below) effort will be made to work with Hardware Systems Commands (HSC) to leverage IUID to enhance the ability to quickly and accurately identify warrantee status for individual assets at the lowest level of repair; e.g., organizational (O) level repair. Using the associated pedigree data captured in the IUID Registry and associated data in other databases the warrantee status would be assessed and the item transported to the appropriate point for warrantee action under a suspended condition code until disposition is determined. This capability is dependent upon the DoD IUID Registry incorporating more robust warrantee information within its database accessible for review.

This warrantee status check would include the presence or absence of a warrantee; the conditions under which the warrantee is actionable (e.g., number of operating hours); and location(s) of return points for warrantee servicing including designated POCs. This effort would take the form

of working with HSCs and fleet elements to develop a process for warrantee status checks at the lowest repair level practicable and coordination and information exchange with ATAC sites, Coordination between HSCs, designated overhaul points and contractually identified warrantee points will be required to support SIM goals in this area.

3.3.4 Product Data Quality Reporting

The ability to consistently provide the warfighter with end items and repair parts of the highest quality is dependent on the ability to easily and accurately capture product quality information for use in Mean Time Between Failure (MTBF) trend analysis and contractor performance monitoring. The insertion of IUID into this process provides a level of detail and usefulness not previously attainable.

Specific incidences of product quality deficiency are currently being captured using the Product Quality Deficiency Report (SF 368). Data is captured with a level of detail down to the National Stock Number. Guidance on the use of this form and the operation of the supported product quality data management process is delineated in SECNAVINST 4855.3b dated 22 December 2005 and entitled, "PRODUCT DATA REPORTING AND EVALUATION PROGRAM (PDREP). The insertion of IUID into this process would allow more detailed and accurate trending and analysis to the level of individual assets.

NAVSUP will coordinate with NAVSEA (PDREP functional manager) to determine the feasibility of incorporating IUID functionality into the PQDR reporting system. NAVSUP will work with NAVICP to use this additional level of detail, when available in PDREP business processes, to increase the level of detail with which assets can be managed.

For example, the MTBF for a set of like items identified individually using IUID might be conducted with one segment of the assets showing an MTBF well below the mean and another group with an MTBF clearly above the mean. Root cause analysis could be conducted with a result that the two groups were consistently repaired at two separate sites or levels of repair. Analysis of the repair processes at the two sites may reveal the site with a reduced MTBF had a poorly managed training program for maintenance and repair of these items. The other site had a superior training program. Improving the training at the first site by using lessons learned from the second would likely improve the overall MTBF for the universe of items ultimately improving the Ao for that item group and consequently enhancing support to the war fighter. In another example, the root cause analysis of the specific items with a reduced MTBF might reveal a flaw in the overall maintenance philosophy leading to a change in the level of repair.

Beginning in the Initial Operating Capability (IOC) phase (see paragraph 3.4 below) effort will be made to work with NAVSEA to determine the feasibility of including IUID into the PDREP process and develop information flows and business rules to pass information to NAVSUP Item Managers.

3.4 INITIAL OPERATING CAPACITY (IOC)

IOC planning is comprised of 1) identification of milestones; and 2) development of a timeline. Further, because NAVSUP will likely provide some measure of support for other SYSCOMs with respect to elements of AIT/AIS/data management IOC planning will occur in two parts that may be implemented in a non-sequential manner. They are:

- NAVSUP unique SIM planning
- Collaborative planning efforts with other SYSCOMS/DASN(A&LM)

The number of NAVSUP owned and managed SIM candidate assets is expected to be a relatively small sub-set of the full universe of Navy SIM candidates. Without direct responsibility for intermediate and depot level maintenance activities and actions NAVSUP will focus IOC actions toward the identification and designation of SIM candidate assets within its sphere of responsibility and facilitating the standardization of AIT across the Navy Enterprise in support of IUID/SIM.

In pursuit of IOC the SIM Champion will reach out to COMFISCS, NEXCOM, NAVSISA, NOLSC and NAVICP on behalf of DASN and the other SYSCOM SIM Champions to affect full bi-directional communication of the concept and vision, benefits, requirements and actions leading to goal achievement. The NAVSUP SIM Champion will also treat each NAVSUP ACOS a key stakeholder in the SIM IOC planning process.

3.5 FULL OPERATING CAPACITY (FOC)

The FOC for SIM is predicated on attainment of two major goals. First, all, or at least, the preponderance of Navy owned assets identified as SIM candidates must be IUID-enabled. Second, IUID and SIM functionalities must both be embedded within Navy's ERP system. It is likely that a fully robust Navy SIM program is also dependent upon IUID and SIM functionalities embedded within DLA's ERP system as well. These and associated dependent actions / goals will require dedicated and sustained long term funding.

In the NAVSUP FOC model data capture, management and information transfer for Navy owned SIM candidate assets managed by NAVSUP/NAVICP will be accomplished primarily with ERP. This will include any identified current AIS' that will be incorporated into the ERP system as a 'bolt-on' such as Ordnance Information System (OIS).

In pursuit of FOC the SIM Champion will reach out to COMFISCS, NEXCOM, NAVSISA, NOLSC and NAVICP on behalf of DASN and the other SYSCOM SIM Champions to affect full bi-directional communication of the concept and vision, benefits, requirements and actions leading to goal achievement. The NAVSUP SIM Champion will also treat each NAVSUP ACOS a key stakeholder in the SIM FOC planning process.

3.6 AIT/AIS

The use of automatic identification technology and automated information systems are fundamental to a successful SIM program. NAVSUP has identified the following AIS' as integral to moving DoN forward toward achieving a FOC SIM business model.

- Electronic Retrograde Management System (eRMS)
- Contractor Asset Visibility System (CAV)
- Ordnance Information System (OIS)
- One Touch Supply (OTS)
- Navy Enterprise Resource Management Systems (ERP)¹

The incorporation of SIM functionality into these AIS' will require agreement on Navy SIM business rules that, in turn, allow the identification of specific data elements required to operate in the SIM business environment. NAVSUP will work with Enterprise business partners for both AIS support and business rule development as well as other SYSCOMs and DASN to design appropriate business rules and initiate planning for identification of associated data elements.

Note 1: Specific functional, resourcing and planning issues for Navy ERP are outside the scope of this appendix and are addressed separately in the body of the Navy SIM Strategy.

3.7 METRICS

A system of metrics is designed to measure deviation from a pre-defined quantified goal or objective. Inherent is the ability to recognize deviations and take appropriate action to return to a state of homeostasis. In developing a DoN SIM plan two separate but related strategic goals are in place. First is the effort to plan for and implement a SIM program. Second is the requirement to transition into an operational mode. Each of these requires a different set of metrics.

A separate but critical use of metrics is to aid in perpetuating an operational atmosphere of continuous process improvement (CPI). As deviations are recognized as trends with management focus applied through the conduct of root cause analysis and similar management tools it is to be expected that possible improvements to existing processes will be recognized. NAVSUP will develop metrics but also a plan to use and manage metrics to ensure both optimal functioning of the SIM strategy and the ability to use metric driven data in conjunction with other indicators to foster an environment of CPI across the claimancy and among the DoN enterprise.

Of immediate importance is the development of a system of metrics for the planning and implementation phase of the program. This effort will begin concurrent with other SIM planning actions. These metrics should reflect adherence to the planned actions necessary to develop and implement SIM across the Navy. Some of these metrics will be universal in requirement and definition across DoN. Others will be unique to an individual SYSCOM. NAVSUP will collaborate with DASN(A&LM) and other SYSCOMs to identify those metrics with more universal application collaborating to standardize data format, data element capture requirements, report-

ing formats, AIT/AIS issues and data collection and analysis methodologies. A metric system unique to NAVSUP IUID/SIM requirements will be developed as required.

The development of metrics for an operational SIM program will be held in abeyance until greater clarity is established regarding the resourcing, function and construct of the DoN SIM program.

3.8 RISK MANAGEMENT

Risk management is the process of deciding how to identify and manage possible events that might affect a project positively (opportunities) or negatively (threats). The amount of effort expended on risk management planning should be directly proportional to the actual level of risk involved and to the importance of the project to the organization. Risk management involves first identifying risks using qualitative and/or quantitative methods. The next phase is crafting a realistic risk response plan.

The DoD SIM strategy may encounter opportunities and threats from various sources such as:

- Funding – i.e., a reduction or increase in availability
- Personnel – i.e., an unscheduled loss or addition
- Policy – i.e., a change in priority, accountability or responsibility
- AIS/AIT – i.e., a significant technological change or redirection of assets
- Real world contingencies – i.e., a world action that would affect one of more of the above

NAVSUP will initiate risk management as part of the initial SIM planning for both NAVSUP unique and collaborative SIM planning efforts. Where NAVSUP provides a supportive role to other SYSCOMs NAVSUP will contribute to a larger risk management process.

4.0 RESOURCE REQUIREMENTS

4.1 GENERAL

NAVSUP anticipates that recognition of the value of SIM (and it's foundational element IUID) will increase across DoN. This will occur because 1) as the value of IUID/SIM becomes clearer a greater emphasis on resourcing from existing funding streams will likely occur; and 2) as the quantified and qualified value of IUID/SIM is recognized a greater effort will be placed to obtain funding via POM leading to eventual normalization of resourcing. At the current time resourcing from other funding streams is problematic resulting in SIM/IUID efforts being more sparsely resourced requiring a measured and realistic approach to goal attainment. Over time resourcing should increase allowing more robust program goal attainment.

4.2 PURPOSES

The application of financial and personnel resources will be to any and all of the following:

- AIS enhancement
- AIT standardization (economy of scale purchases for DoN)
- IUID implementation
- Policy development (NAVSUP specific and in tandem with DASN(A&LM))
- Education/training outreach to NAVSUP activities (i.e., contracting, ICP)

4.3 BUDGET

Realistic and actionable budget plans are crafted using the twin tools of real and anticipated funding assessments and specific, well defined goals and milestones to create a time-phased plan for the use of money. NAVSUP will develop a budget planning strategy that reflects the realities of current and anticipated resourcing opportunities measured against specific IUID/SIM actions and goals being developed within the claimancy and across DoN. This budget planning process must consider requirements to include IUID and SIM functionalities within both Navy and DLA ongoing ERP efforts including time frames and milestones. Initial budget planning will be more notional becoming normalized and funding streams are identified.

5.0 CONTACT NAVSUP

5.1 COMMENTS AND QUESTIONS

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SPACE AND NAVAL WARFARE SYSTEMS COMMAND
APPENDIX TO DON SIM STRATEGY



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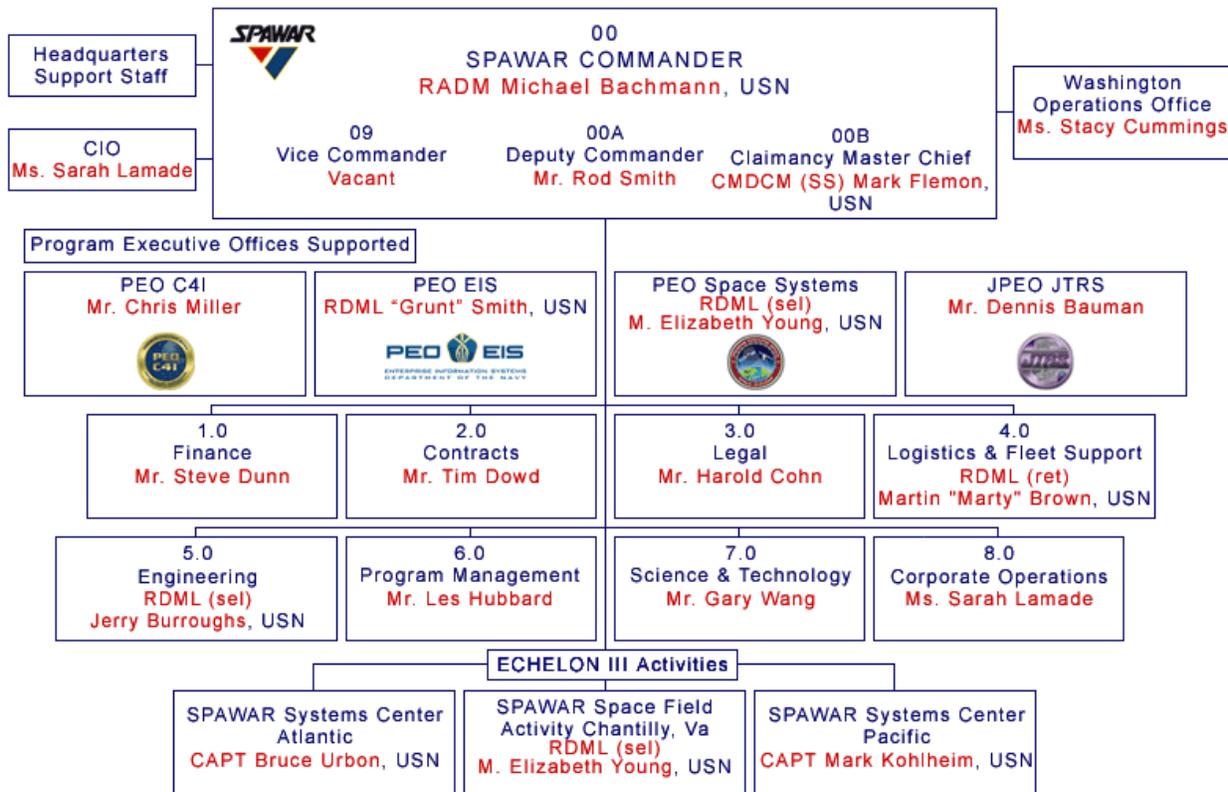
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1.0 SPAWAR ORGANIZATION

Team SPAWAR consists of the Space and Naval Warfare Systems Command, the Space and Naval Warfare Systems Center Atlantic (SSC LANT), the Space and Naval Warfare Systems Center Pacific (SSC PAC), and supported Program Executive Offices (PEOs), including PEO Command, Control, Communications, Computers and Intelligence (C4I), PEO Enterprise Information Systems (EIS) and PEO Space Systems. Figure 1 below provides the Team SPAWAR organization as of December 2008 which is downloadable from the SPAWAR Public Website at: <http://enterprise.spawar.navy.mil>.

Figure 1 - Team SPAWAR Organization Chart



2.0 NAVAL NETWORK FORCENET ENTERPRISE (NNFE)

SPAWAR is a member of the NNFE. The mission of the NNFE is described below and available for download from the public website <http://www.netwarcom.navy.mil/nnfe/nnfe.htm>:

“Lead the execution of FORCENet and optimize the employment of Information Operations (IO), Signals Intelligence (SIGINT), and Space Capabilities. Develop, deliver and sustain end-to-end Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) capabilities for secure,

interoperable, and integrated sensors, weapons and networks to Naval Forces across the range of warfighting.”

In addition to the NNFE, SPAWAR provides integral participation to other enterprises, particularly the Surface Warfare Enterprise (SWE).

3.0 PARTICIPATION IN THE DASN (A&LM) LCII WIPT

In 2008, SPAWARSCOM 4.0 Senior Executive Service (SES) Leader for the Logistics and Fleet Support Directorate signed the DASN (Acquisition and Logistics Management - A&LM) DoN Life Cycle Item Identification (LCII) Working Level Integrated Product Team (WIPT) Charter committing to participate in the coordination and issue resolution related to implementing initiatives associated with Life Cycle Item Identification (LCII), including Item Unique Identification (IUID), Serialized Item Management (SIM), and emerging next generation material identification / tracking technologies to support diverse Navy and Marine Corps missions in air, space, land, surface, and subsurface environments.

4.0 SPAWAR SIM CHAMPION

The SPAWARSCOM Technical Director (TD) for Supply Chain Management (SCM), Code 4.3.2 is located within the Integrated Logistics Support (ILS) Department (Code 4.3) at the Logistics and Fleet Support Directorate (Code 4.0), and is the SIM Champion at Team SPAWAR responsible for day to day strategic planning, budgeting implementation and managing progress associated with SIM Programs. At present, Ms. Barbara A. Hauenstein (barbara.hauenstein@navy.mil, (619) 524-7822) fulfills this role as SIM Champion and is assisted by a small support staff within SPAWARSCOM and an extended organization via the Competency Aligned Organization (CAO) which reaches out to SCM personnel throughout the entire Team SPAWAR organization, including SSC LANT and SSC PAC. This Team is known as the Automated Information Technology (AIT) Team and provides technical assistance in the area of IUID implementation.

The TD for SCM reports SIM progress on a regular basis to the SPAWARSCOM Integrated Logistics Support Department Head (Code 4.3) and the Logistics and Fleet Support Directorate (Code 4.0), with additional support and participation when necessary to ensure smooth SIM implementation within Team SPAWAR. The SIM Champion also assists DASN (A&LM) with guidance generation and continued coordination of the development and implementation of the Team SPAWAR SIM Plan Appendix. The SIM Champion actively engages with DASN (A&LM) and other Navy and DoD activities to ensure progress is made towards successful SIM implementation.

Below are details of the Team SPAWAR SIM Champion responsibilities / accomplishments:

- Development of a Communications Plan to educate / collaborate with stakeholders
- Engagement with DoD activities to share lessons learned and eliminate duplication of efforts
- Development of SIM Plans compliant with DON strategy, policy, guidance, and timelines
- Identification of functional requirements for IUID SIM-enablement to AIS providers

- Progress reporting of metrics to DASN (A&LM) and others
- Participation in the DoN LCII WIPT, SIM strategy meetings and related forums
- Initial and periodic updates to this SPAWAR SIM Plan appendix
- Closely work with stakeholders to ensure identification of SIM Program Objective Memorandum (POM) / Purchase Request (PR) requirements
- Coordination of requirements presentation to resource sponsors

5.0 TEAM SPAWAR INITIATIVES RELATED TO SIM

Team SPAWAR is currently transforming lifecycle management of C4I equipment by focusing on effective and efficient program and sustainment management practices. SPAWAR is also leveraging the tenets of continuous process improvement in order to document as-is processes, identify gaps and formulate new processes. At the same time, SPAWAR is working to improve functional alignment and resource planning through the CAO initiative.

5.1 SIM IMPLEMENTATION INITIATIVE IN MAINTENANCE AND SUPPLY

SPAWAR is working closely with Program Executive Offices (PEOs), Program Managers, NAVSUP and NAVICP towards the successful implementation of IUID, a key enabler of SIM. The SIM Champion and Team SPAWAR’s AIT Team is also working closely with Fleet customers at the organizational and intermediate levels of maintenance, to implement IUID in order to enable SIM. SIM is currently being implemented at PBL-Organic (PBL-O) activities at SSC LANT (Charleston and St. Juliens Creek) and SSC PAC. Some of these efforts are utilizing current maintenance and readiness funding to accomplish SIM and IUID marking / registration.

As part of SIM implementation, SPAWAR is working to educate and train Fleet customers on new processes of material preparation and marking by the Organizational and Intermediate levels prior to shipment of equipment for depot repair. The SPAWAR Depot is also planning to offer IUID marking and registration to Fleet customers for completion during the depot repair process under the “Ship to Shop Program.” The worksheet below was generated utilizing the ADUSD Depot CONOPS of January 2007 and depicts the status of IUID marking and registration efforts which contribute to the SIM program. Enterprise Resource Planning (ERP) will be fully integrated throughout the NAVY and SPAWAR in the near future. Total Life Cycle Management (TLCM) functions will be part of the fully integrated ERP throughout Team SPAWAR. Resource planning, to include maintenance decisions, inventory, serialized number tracking, supply forecasting and carcass tracking, are just a few of the categories of TLCM that will be enhanced with SIM and ERP integration.

Table 1 – Preliminary SPAWAR Depot IUID CONOPS

TASK	STEP	DESCRIPTION
PHASE I - Conduct Preliminary Research and Planning Efforts - 37% COMPLETED		
1.		Establish IUID team
2.		Initiate preliminary research and planning efforts
	2.a.	Develop an IPT Plan of Action and Milestones

	2.b.	Research candidate items for IUID marking
	2.c.	Research parts marking sourcing options, whether organic or contract
	2.d.	Determine local serialization schema alternatives
	2.e.	Initiate eng analyses to determine best marking alternatives relative to eng rqmts
	2.f.	Explore material process flow options & associated data rqmts
	2.g.	Determine quality control requirements
	2.h.	Initiate associated costs analyses & define funding responsibilities
3.		Map current processes
PHASE II - Determine New Business Environment / Develop a Marking Plan - 9% COMPLETED		
1.		Develop an implementation schedule for initial items targeted for IUID
2.		Implement a coordinated local serialization schema
3.		Address marking rqmts & coordinate approach with PMO & Cog Field Activities
	3.a.	Obtain approved technical data
	3.b.	Ensure defined eng instructions address process determining where / how to mark
	3.c.	Develop process changes to material specs and eng documentation
TASK	STEP	DESCRIPTION
PHASE II - CONTINUED		
4.		Establish sourcing option (organic or contract)
5.		Determine & map the layout of the new business environment
6.		Ready parts marking capability
	6.a.	Establish a local database for IUID data or integrate into an existing system
	6.b.	Develop / obtain a communications interface with the DoD UID registry
	6.c. – e.	Obtain materials, supplies & equipment, facilities and operator training
7.		Establish depot IUID implementation mgt structure
8.		Draft Command doctrine
9.		Establish quality control processes
10.		Prepare budget estimates, define fiscal responsibility
11.		Create a marking plan for initial parts targeted
PHASE III - Execute Marking Plan for Remaining IUID Items (IN-PROCESS)		
1.		Implement the marking plan for initial items targeted
	1.a.	Executing parts marking on targeted items and registering in the UID registry
	1.b.	Documenting experiences
	1.c.	Measure performance outcomes identified in Phase 2 Steps 7 and 8
2.		Develop a full implementation plan for all other IUID items
3.		Finalize doctrine
4.		Review and adjust funding requirements as necessary
5.		Execute the implementation plan.
6.		Initiate a continuous process improvement program

5.2 COMPETENCY ALIGNED ORGANIZATION (CAO)

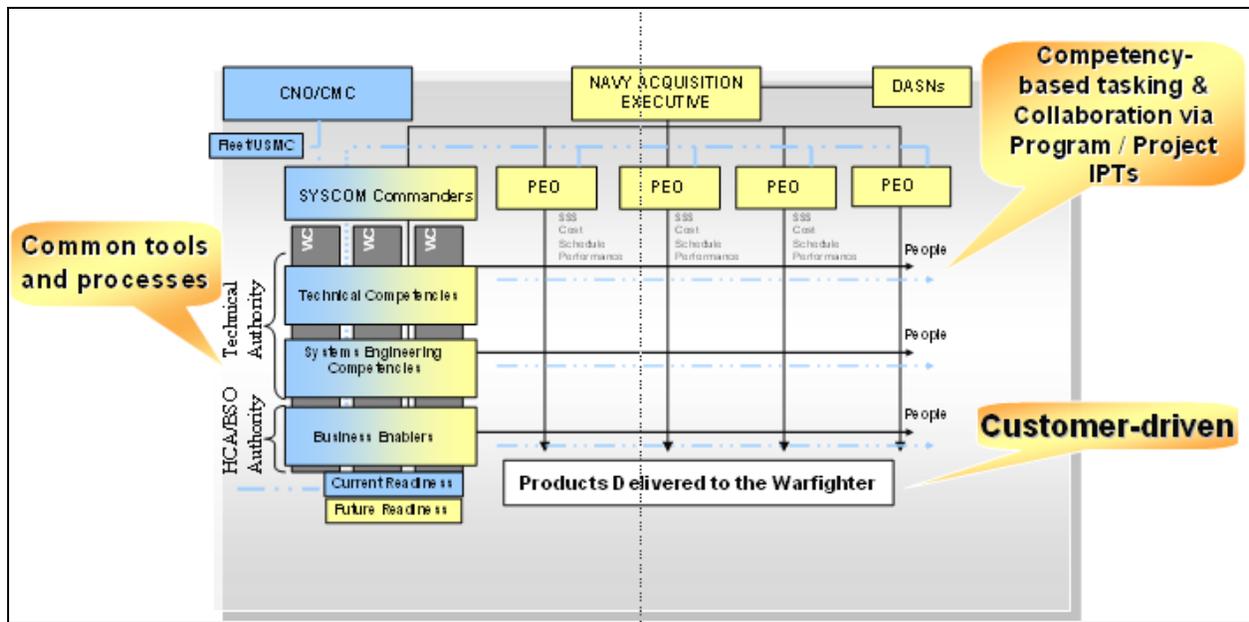
Although still in the early stages of transitioning to this model, Team SPAWAR is a Competency Aligned Organization (CAO) which is utilizing ASN (RD&A) structural guidance to transform

business processes. Engaging in this effort ensures that SPAWAR Subject Matter Experts are aligned to enable standardization of processes and tools while functionally providing services as needed to a myriad of programs and projects in all stages of their lifecycle. This provides the framework for the SIM Champion to extend direction and assistance in the implementation of SIM efforts.

By utilizing the new CAO Model, the SIM Champion will keep other competencies informed and involved in SIM implementation. These include the Comptroller, Contracting, Supply, Engineering and Corporate Operations. A Supply Chain IPT (SCIPT) is being created and will meet routinely to discuss lessons learned, and share success stories with implementation strategies.

This collaboration will ensure improved supply, maintenance and distribution decisions. This will also provide decision makers the tools to decide when and how to mark existing items in their inventory. Successful implementation of IUID will allow the effects of SIM be felt across Team SPAWAR. The SIM Champion will closely monitor IUID implementation and SIM throughout Team SPAWAR.

Figure 2 – ASN (RD&A) Structural Guidance for CAO



5.3 NAVY-ENTERPRISE RESOURCE PLANNING (NAVY-ERP)

Currently, SPAWAR is in-process of conducting resource planning efforts for implementation of Navy-ERP, along with other Navy Systems Commands (SYSCOMs). Early Navy-ERP deployment will be focused on financial functionality with plans to incorporate part or all of the following functions in later deployments over the next two years.

1. Serial Number Tracking
2. Automatic Identification Technology
 - a. Item Unique Identification (IUID)
 - b. Radio Frequency Identification (RFID)
3. Environmental Health and Safety
4. Warehouse Management
5. Physical Inventory
6. Consignment
7. Inventory Management
8. Order Fulfillment
9. Supply and Demand Processing
10. Consignment
11. Supply Forecasting
12. Hazmat Management
13. Allowancing
14. Carcass Tracking
15. Packaging, Handling, Storage & Transportation
16. Repairables Management

5.4 OTHER AIS RESOURCES RELEVANT TO SIM

Although a great deal of effort is being expended on Navy-ERP implementation to ensure it includes attributes for performing SIM, in December 2008 DASN (A&LM) encouraged the SYS-COMs to focus on current and near future AISs, rather than basing SIM implementation strategy on Navy-ERP. The below table displays the SPAWAR family of AISs that SPAWAR uses now or will use in the future to execute SIM implementation.

Although included in the table, CDMD-OA may not currently have enough capability to hold SIM data, however, given the enhancements which NAVSEA is planning, capture of IUID within CDMD-OA will become one method of capturing and enabling SIM in the near future.

CMIS is another information system which is not currently utilized, but is instead in the planning stages and will be used by activities doing business with PEO C4I. It is expected that CMIS will help Team SPAWAR move towards compliance with SIM and IUID enablement in the next three years. A Supply Chain Management AIT / SIM IPT is being formed now to determine how SPAWAR might also use the recently demonstrated Navy Quick Compliance Tool Suite (QCTS) Program as a potential interface for the below noted systems.

Table 2 – AISs Relevant to SIM Implementation

NAME	DESCRIPTION	SIM ASSOCIATION
CDMD-OA – Configuration Data Managers Database Open Architecture	Tracks configuration of equipment being installed on NAVSEA platforms.	Discussions are in-process regarding utilizing this AIS to track IUID, the primary SIM enabler.
CMIS - Configuration Management Information System	<u>Future Use.</u> Joint DoD Application supporting configuration, engineering, and technical data management functions; provides data to operators, maintainers, and logistics personnel for DoD weapon systems or tracked assets	SIM assists with collating data from multiple sources to enable comprehensive configuration postures

CMPro - Configuration Management Professional	Supports equipment configuration management and tracks IUID information.	SIM assists with collating data from multiple sources to enable comprehensive configuration postures
COLTS - Catalog Ordering Logistics Tracking System	Records maintenance, equipment structure changes and parts consumption. Calculates spare part inventories and pushes appropriate equipment to the Fleet and supporting activities. Also calculates stock level quantities to support central PBL and Inventory Control Point (ICP) efforts.	SIM assists with collating data from multiple sources to enable comprehensive configuration postures
IS - Inventory Suite	Provides inventory management functions.	SIM assists with collating data from multiple sources to enable comprehensive configuration postures
JEDMICS - Joint Engineering Data Management Information and Control System	DOD standard engineering data management / repository system; manages engineering drawings and supports logistics business functions, such as maintenance, repair, procurement and re-engineering provides a means to convert, store, and receive information from original hard copy media	SIM assists with collating data from multiple sources to enable comprehensive analysis with greater information detail
JTDI - Joint Technical Data Integration	Integrated data environment enabling warfighters worldwide to access technical, supply, and maintenance data from authoritative sources in digital form	SIM adds capability for connecting item documents based on specific item configuration
MEASURE - Metrology Automated System for Uniform Recall and Reporting	Supports the Navy's Metrology and Calibration (METCAL) Program by provides users with access to calibration production, recall and inventory tracking data for support equipment requiring calibration	SIM maintains linkage of related data sets to item maintenance actions and fleet usage
N-ERP - Navy Enterprise Resource Program	<u>Future Use:</u> An integrated business management system that modernizes and standardizes Navy business operations. Provides management visibility across the Navy, and increases effectiveness and efficiency	As a core business system, SIM capability is essential to instituting enterprise wide usage of SIM
SIMS - Supply Inventory Management System	Provides inventory management functions.	SIM assists with collating data from multiple sources to enable comprehensive configuration postures

5.5 CDMD-OA

SPAWAR utilizes Configuration Data Manager's Database-Open Architecture (CDMD-OA) and is actively working with NAVSEA to integrate SIM requirements within CDMD-OA and Maintenance Figure of Merit (MFOM) data fields. This is a relatively new and developing effort, therefore more information will be provided in updates to this Appendix.

5.6 CMIS

PEO C4I recognizes the difficulty of having different AIS's for different programs under their purview and is moving towards use of a government tool known as Configuration Management Information System (CMIS), which is managed by NAVAIR. The CMIS Program is a DoD / Navy web based software system for determining information related to configuration identification, status accounting, control and auditing, with a potential to track serialized and non-serialized items. Although this effort is focused on configuration management, SPAWAR is in-

investigating potential interfaces with other systems currently being used by the diverse portfolio of programs within supported PEOs to perform SIM efforts.

Because of the history of Team SPAWAR activities and their diverse origins, sponsors and supporting activities, the SIM Champion will be conducting a series of IPTs and / or working groups in order to narrow down AISs or provide interfacing links to one tool to enable better centralized asset visibility and SIM.

6.0 SIM SPECIFICS

6.1 BENEFITS

The key to SIM is a database that can store, automatically analyze its contents and share relevant information to users (managers, maintainers, PHS&T organizations and administrators) without compromising security while still having the bandwidth to handle added traffic.

The benefits of SIM at Team SPAWAR will reflect the above and be enabled by IUID and realized through relational use of the UII. IUID marking by itself does not provide the desired benefit to the Fleet and other stakeholders, however, data associated with the UII and relational use of this data with other AIS's within the Fleet and other stakeholders will allow for identification of an item's uniqueness, improved asset visibility and accurate inventory management and tracking.

Serialized Item Management (SIM) will enable SPAWAR's efforts to accurately track maintenance, reliability, cost and readiness drivers and aid in shaping decisions on quantities and placement of spare parts, level and depth of maintenance tasks, system design / re-design and retrofit timeline planning.

SPAWAR recently linked several previously separate Echelon III field activities as part of the Base Realignment and Closure (BRAC) initiative. Multiple Systems Centers have been organized into two Centers. These two are identified as SSC LANT and SSC PAC. As SPAWAR continues to transform with CAO, previously stove-piped systems / programs will be combined to ensure greater visibility and centralized use of metrics. The implementation of SIM is instrumental in this effort, as it will integrate material tracking activities and enable a centralized Team SPAWAR SIM effort.

As we integrate SIM throughout Team SPAWAR, we are beginning to:

- Formally document which assets require marking and tracking
- Provide greater planning tools to the warfighter, program manager and all stakeholders
- Ensure optimum warranty management
- More quickly and accurately manage parts for greater traceability
- Strive to reduce maintenance cost while improving reliability
- Improve data entry, processing and analysis while reducing cost

6.2 IDENTIFICATION OF SIM POPULATION

The DoDI 8320.04, “Item Unique Identification (IUID) Standards for Tangible Personal Property,” dated June 16, 2008 mandates IUID requirements for qualifying items delivered to the Government under contract, in inventory and in-use if one or more of the following criteria apply. These DoDI 8320.04 requirements are part of the SIM population at SPAWAR with additional items added by each program, when necessary:

- Items for which the Government’s unit acquisition cost is \$5,000 or more
- Items for which the Government’s unit acquisition cost is less than \$5,000, when identified by the requiring activity as DoD serially managed, mission essential or controlled inventory
- When the Government’s unit acquisition cost is less than \$5,000 and the requiring activity determines that permanent identification is required
- Regardless of value, (a) any DoD serially managed subassembly, component, or part embedded within an item and, (b) the parent item that contains the embedded subassembly, component or part

Team SPAWAR programs and supporting In-Service Engineering Agents (ISEAs) identify specific parts, components, and end items to be serially managed. SIM populations are selected based on a variety of factors within the following categories:

- Controlled items
- Safety related items
- Government owned property in the possession of a contractor (PIPC)
- Foreign Military Sales (FMS) items
- Warranted items
- Service-life limited parts
- Personal property
- Repairable items
- Restricted use items
- Sensitive items
- Items requiring periodic maintenance

The following programs of record are being tracked by SIM and have an IUID Plan in place at this time. The IUID Plans are updated on a regular basis to reflect progress and new planning efforts (please note that as the Program Executive Offices adapt to ever changing requirements, programs may be moved to new or different PMWs, with changes noted in each iteration of this Team SPAWAR SIM Plan):

PMW	PROGRAM
140	DJC2
150	C2P/CDLMS
150	GCCS-J
150	GCCS-M
150	JSS

PMW	PROGRAM
150	JTIDS
150	NTCSS
150	TBMCS
160	ADNS
160	CENTRIXS-M
160	ISNS
160	JCDX
160	KG-3X
160	NAVMACS II/SMS
160	SCI NETWORKS
160	SUBLAN
170	AEHF-NMT
170	BFEM 66
170	CDL-N
170	CSEL
170	CWSP/WSC-8(V)1/2
170	DWTS
170	GBS
170	GPS (AIR)
170	GPS/WRN-6
170	HFRG
170	INMARSAT
170	NAVSSI
170	NAVWAR AIR PHASE 1, 2A, 2B
170	NAVWAR SEA PH 1A, 1B, 2
170	NESP
170	SHF SATCOM/WSC-6(V)
170	SINGARS
170	SMQ-11/ FMQ-17
170	TV DTS
180	ASOS
180	BGPHESES-ST
180	CDF
180	COBLU
180	CTT/JTT
180	METMF(R)
180	NEXRAD-PUPS
180	SSEE INCR D
180	SSEE INCR E
180	SSEE INCR F
180	SWR

PMW	PROGRAM
180	TESS/NITES 2000/NITES IV
770	BBS
770	CSRR
770	DMR
770	OE-538/BRC
770	SLVR
770	SUB HDR
770	VALUE
780	MIDS LVT
780	TAC MOBILE
790	EMS
790	JMINI
790	NCW
790	Tactical Switching
770	CSD (COMMS AT SPEED & DEPTH)

6.3 IDENTIFICATION OF ATTRIBUTES/DATA ELEMENTS

The DOD SIM strategy as laid out in DoDI 4151.19 of December 26, 2006, “Serialized Item Management (SIM) for Materiel Maintenance,” establishes a serialized item management program where activities identify populations of select items (parts, components, and end items), mark all items in each population with a unique item identifier (UII) and generate, collect, and analyze maintenance, logistics, and usage data about each item. Team SPAWAR is embracing these strategies and has identified the following as important SPAWAR SIM attributes:

- Measures of performance (availability, reliability, maintainability, etc.)
- Operational time
- Configuration
- Cost
- Historical information
- Contractual information
- Custodial information

These attributes are collected throughout an item’s life cycle and are articulated as data elements captured and recorded in the specific AIS’s used by the Program. These essential attributes assist management in making important planning and execution decisions which impact program development.

6.4 DATA CHARACTERISTICS DEFINITION AND USE

The following factors are being utilized by Team SPAWAR under the SIM program / initiative:

- Performance Measures. Allows for accurate tracking of availability and failure rates. Stakeholders with access to this data have a solid foundation from which to make logical maintenance and operational decisions to improve overall readiness and availability in support of the warfighter
- Operational Time. Overall operational time data is used by the program / manufacturer to make decisions with respect to improving design
- Configuration. Configuration management of items is becoming seamless throughout Team SPAWAR as we evolve to CMIS and N-ERP. Managers will be able to access SIM data in order to make better decisions involving upgrades and modifications
- Cost. SPAWAR will serially manage items to reduce life cycle sustainment cost
- Historical Information. Team SPAWAR is recording pertinent data to create operational and maintenance history and will utilize this information for planning improvements and prognostic maintenance
- Contractual Information. New SPAWAR contracts requiring item marking are incorporating the IUID DFARS clause. Availability of accurate information within the Wide Area Work Flow (WAWF) allows for timely processing of warranty information and provides real time ownership data. The WAWF also enables the manufacturer timely payment of invoices thereby encouraging its use by DoD manufacturers

6.5 RESOURCE REQUIREMENTS AND BUSINESS CASE ANALYSIS (BCA)

SPAWAR requires many resources including equipment, software and personnel to successfully execute SIM. To address this issue, SPAWAR is collaborating with internal and external stakeholders. SPAWAR is working to engrain SIM within the competency and is executing a Communications Plan in order to educate the diverse organization to ensure success. Program Managers are developing budgets and planning for SIM with each new POM cycle. Unfunded requirements are being documented and discussed with DASN (A&LM) and OPNAV to address funding issues and ensure awareness at all levels. SPAWAR is working with other, funded efforts such as MFOM, in order to leverage use of funding lines that ultimately benefit the Fleet under the MFOM concept. Collaborative efforts with NAVSEA, NAVAIR, NAVSUP, COMFISCS and Fleet Forces Command (FFC) indicate that a linkage of efforts could produce better results with regard to budgetary planning and execution. One example of this is close work with NAVAIR on SPAWAR Performance Based Logistics (PBL) activities where NAVAIR is standardizing marking by providing equipment and training to technical personnel on PMA-213 programs. Another example is a close effort with COMFISCS, NAVSUP and DASN on a Crypto Initiative which will provide benefits to all services.

In addition to processes previously noted for SIM management of repairables, similar processes exist for the accounting and accountability of other personal property, sponsor-owned materials, government furnished equipment/material/property (including special tools and special test equipment), and foreign military sales. For each program, business case analyses (BCA) will be performed to ensure that cost savings are associated with conducting SIM implementation. New or existing information systems will be IUID-enabled for material management purposes but full SIM-enablement will only be instituted where these business case analyses warrant a return on investment. As a minimum, consideration will be given to selecting item populations from within the following categories:

- Repairable items down to and including lowest replaceable units (LRUs)
- Life-limited, time-controlled, or other items with records
- Items that require engineering change tracking at the part number level

6.6 STAKEHOLDERS

SIM benefits a variety of stakeholders associated with Team SPAWAR C4I Programs that have an interest in successful implementation. A summary is shown below in Table 3.

Table 3 – Stakeholders

STAKEHOLDER	SUMMARY OF PRIMARY SIM ROLE
DASN (A&LM)	DoN SIM policy guidance, cross stakeholder coordination.
DLA	Provide receiving / shipping capability for IUID / SIM data collection and interface.
FFC, CNAF, CNSF, NNWC (Fleet) and Fleet Enterprises (such as the NNFE, NAE, SWE)	Application of SIM practices in logistics and maintenance sustainment operations.
NAVAIR and Fleet Readiness Centers	IUID parts marking / registration. Application of SIM-derived logic for production and rework planning / execution.
NAVSEA	Collaborative management of processes and data for shipboard assets.
NAVSUP, COMFISCS, NAVICP, NAVFAC	Software support for select AIS's used within the Navy (including SPAWAR and the Fleet) providing functionality and interfaces. Institute SIM-derived logic for acquisition, allocation, issue and life-cycle planning / decisions.
NETC	Training provider to incorporate SIM curriculum in "A" and "C" schools.
PEOs	Ensure acquisition efforts plan for SIM budgeting and implementation.
SPAWARSYSCOM and SPAWARSYSCENS	Lead and facilitate aligned management of equipment in the areas of engineering, maintenance (all levels) and supply support. Implement SIM within new and legacy equipment programs (all phases of their lifecycle).
USTRANSCOM	Provide asset visibility and interfaces using IUID data during distribution.

6.7 INITIAL OPERATIONAL CAPACITY (IOC) BY 2010

SPAWAR has achieved success with SIM implementation on several programs, as documented in the SPAWAR Initiatives data call of 2008 and sent to NAVSUP and DASN (A&LM) where they are kept on file. The SIM Champion will continue to document new and ongoing efforts for inclusion in future versions of this Appendix demonstrating that, as a SYSCOM, we have already met the IOC requirements which were required by 2010 and also strive for each program to achieve individual IOC in order for the Fleet and all stakeholders to realize the benefits. We continue to plan for further implementation and are working closely with COMFISCS and DASN (A&LM) on a Crypto program SIM initiative which will greatly benefit the Navy and other services due to its joint application.

6.8 FULL OPERATIONAL CAPACITY (IOC) BY 2015

SPAWAR is defining metrics required for FOC and working towards achieving FOC by December 2015. As forward movement occurs, standardized IUID processes are being developed to leverage lessons learned and ensure optimum efficiency in future efforts. Additional programs will utilize and refine these processes over the next six years. SPAWAR will conduct or leverage existing Business Case Analyses (BCAs) to determine the benefits versus cost of SIM implementation. Since NAVICP provides the funding and planning efforts for depot maintenance, SPAWAR is working to implement IUID at the SPAWAR Depot and coordinate back with NAVICP to target depot repair as a key opportunity to mark legacy items in order to most efficiently enable SIM. Team SPAWAR will work collaboratively with Program Managers to record and report status of implementation strategies. This will include planning, progress monitoring, risk management and quantitative analyses of outcomes. The SPAWAR SIM Champion and AIT Team will report progress to DASN and other stakeholders.

The critical metric for defining success will be measurable improvements to readiness objectives. Supporting metrics for SIM implementation will be determined after socializing SIM concepts and convening key stakeholders. Candidate metrics for consideration include the percentage of SIM populations being assessed, improvements in asset visibility/availability, reduction of defects found by operational users, increase in warranty usage, decrease in spares inventories, and improvement of throughput for repairs.

Using metrics along with process owner feedback from stakeholders, SIM lessons learned shall be developed for knowledge sharing and to preclude redundancies. Lessons learned will cover the areas of IUID, AIS modernization and SIM migration activities. The essence of lessons learned will be to document what did and did not go well, what may be lacking, a description of events that caused deviations from plans, an assessment of technical methods and tools, recommendations (system, process or data), and useful measurements. SIM lessons learned will be collaboratively shared among stakeholders and used for revising SIM implementation strategies as necessary.

7.0 AUTOMATIC IDENTIFICATION TECHNOLOGY (AIT)

SPAWAR goals for the use of AIT and SIM are to enable stakeholders to make a variety of critical programmatic, engineering and supply chain decisions based on timely and reliable data. SPAWAR is working to ensure that data collection, comprehension and application are simple and straightforward.

AIT is a suite of forever changing technologies that enable and facilitate the accurate capture and rapid transmission of machine-readable data to an AIS. This enhances the readiness of deploying fleet forces, with improved knowledge of Team SPAWAR C4I equipment, personnel, and capabilities. SPAWAR will continue to utilize AIT as a key element in achieving Total Asset Visibility (TAV) and improved inventory management, along with the program management and engineering benefits mentioned previously. As improvements to AIT are being made, Team SPAWAR will plan/budget and procure AIT equipment to meet the warfighters, logisticians, and maintainers needs in order to experience the full benefits of SIM.

The below table lists the types and locations of AIT hardware being used by Team SPAWAR. At this time the noted equipment, along with usage of contractor provided IUID marking capability is sufficient to implement IUID and SIM in accordance with current strategies. As programs continue to implement IUID and enable SIM, new equipment will be evaluated and Business Case Analysis results will assist in determining whether to procure equipment and mark within the Government or whether to outsource this effort to third parties or perhaps even other services who are able to perform this effort in the most cost efficient manner while still meeting the timeline requirements of the program.

Team SPAWAR will also continue to participate on the DASN LCII WIPT and OSD Forums which will provide a plethora of opportunities to learn from other services and activities on which new equipment and efforts will best provide the tools that to satisfy SIM requirements.

Table 4 – SPAWAR AIT Equipment and Hardware

PM	EQUIPMENT / SOFTWARE
SPAWAR IS PROVIDING TWELVE WORKSTATIONS WITH FOLLOWING HARDWARE	
	Two Intermec 751G Color Readers. One stationary barcode label printer (Part #PMG4), IP4B, GEN 2, CIR Antenna, 1w 915mhz, FCC RoHS, Holster and shoulder straps, attachable handheld triggers
	Battery Charger, two pack, AC12 RoHS. Battery Pack, IP4 Scan Handle RoHS. AC Power Cord RoHS. Universal Adapter, 12V / 215a, Power Supply, wccc RoHS
	GEN2 RFID Conversion Kit Consisting of: Roll of Plastic 4"X6" Labels, Resin Ribbon for Plastic Labels
PEO EIS	
	Limited requirements since have primarily software programs. Received labels for 10 NSIPS Servers from SSC LANT (St. Juliens Creek)
PEO Space Systems - PMW 146	
	Reader Part # 014-HE1510U
	RVSI Hawkeye Model 1510 kit / 2D data matrix / Kaiser Reprstander RS 1 5510 / 5511
	Gerber Edge FX Printer Model #GsPFTP3. Gerber Scientific Products. Prints 600X300 DPI.

PEO C4I - PMW 140, 150, 160, 170 equipment marked by SSC LANT / St. Juliens Creek	
	Symbol 9090G RFID handheld barcode scanner, SATO CL412E Printer, SATO CT410 Printer, Siemens UID Verifier
PEO C4I - PMW 170 additional equipment (different systems) being marked by SSC PAC / MILSATCOM	
	Printronixs SL500r pRFID Series Printer
	Symbol Handheld Mobile Computer MC 9090-G (pRFID) Series Scanner
	Cognex Dataman 7500 Verifier
	Symbol 6707 series tethered UID reader
	Universal Laser (30Watt CO2)
	Marking Equipment: Tesa Tape, 2”X1” mylar labels
	4”X2” paper labels with imbedded Alien Squiggle Gen 2 squiggle pRFID tag
PEO C4I - PMW120 - Utilize SSC PAC and LANT Facilities, Personnel and Equipment	
	Some marking an registration is being performed under PBL-Os using ePrint and Bartender s/w plus Intermec Handheld scanner / Terminal (CK31) and Intermec PM4i Printer
	Zebra 300 dpi thermal transfer RFID / UID capable printer.
	I-GUIDES 2-D Matrix Readers (2 each)
	I-GUIDES 2-D Matrix Verification Unit (1 each)
	I-GUIDES Software licenses and maintenance agreements
PEO C4I - PMW 790	
	Timeplex ST-1000, Link / 2+, MiniLink / 2+, Marconi TNX-1100

8.0 OTHER CONSIDERATIONS

Incorporating SIM within Team SPAWAR will include collaboration with the following: acquisition and life cycle support efforts, fleet maintenance activities, fleet operations, wholesale supply and transportation, and depot maintenance.

The common element for SIM-enablement across these efforts is accomplished by marking populations of select items (parts, components, and end items) with a Unique Item Identifier (UII) and enabling collection and analysis of data over the life-cycle and throughout the supply chain. Those efforts and the relationship to SIM are:

- Acquisition – new programs and re-procurements will incorporate SIM concepts within support and maintenance planning efforts, IUID strategies will be fully evolved, pedigree data will be collected and relevant SIM attributes will be defined.
- Fleet Operations – operational requirements planning will define SIM end-item resourcing/allowances and deployment of SIM assets.
- Fleet Maintenance – “O” and “I” level activities will manage asset induction, maintenance processes and disposition (RFI, non-RFI, Beyond Capability of Maintenance (BCM) using the UII for specific SIM items.
- Wholesale Supply/Transportation – distribution to and from ATAC and DLA depots will include IUID for material visibility, requisition, tracking, order fulfillment and status recording.
- Depot Maintenance – rework of SIM assets will be managed by the UII and depot workload management analysis will be support IUID data collection.

Team SPAWAR will define data generation, entry and collection thresholds within each respective process (i.e., receipt, issue, transfer, custody, maintenance, removal/replacement).

9.0 CONCLUSION

Team SPAWAR continues to budget/POM, collaborate with other activities and seek other avenues for funding to familiarize / train employees on SIM, mark and track equipment using new and modified AIS's and identify risks and progress via Independent Logistics Analyses (ILAs).

SPAWAR is also utilizing continuous process improvement tools such as Lean Six Sigma (LSS) to ensure that current SIM processes are defined, with gaps identified and eliminated. SIM benefits all levels of supply and maintenance (organizational, intermediate and depot) and SPAWAR will ensure optimum use of SIM precepts to further SIM efforts.

As demonstrated within this Appendix, SPAWAR has begun performing IUID marking and UII capture and is beginning to realize the vast capability that this will achieve. By keeping the end goals of fully relational databases / AISs in sight, we will collaboratively work the many facets of this complex issue internally and externally in parallel. This will enable SPAWAR and the Navy to more quickly realize efficiencies while working to overcome funding and resource challenges. The SPAWAR SIM Champion will work with DASN (A&LM) to update this Appendix on a yearly basis or as requested.

UNITED STATES MARINE CORPS
APPENDIX TO DON SIM STRATEGY
(Ground-Based Equipment Only)



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1.0 INTRODUCTION/BACKGROUND

The Marine Corps is undertaking a generational change in its capabilities to effectively manage the lifecycle of its equipment. This change has goals defined through several initiatives, where the future state is a continuously improving set of processes and technologies that serve to achieve mission capability (readiness goals) through improved reliability and maintainability of equipment, while minimizing ownership cost.

In order to provide decision makers with more credible data and a better understanding of the performance of equipment in its actual environment, an investment in product data acquisition, attribution, management, information systems, and life cycle modeling and simulation is required. Serialized item information on reliability, cost and readiness drivers will aid in shaping decisions on quantities and placement of spare parts, best overhaul candidates, effective warranty design, level and depth of maintenance tasks, Performance Based Agreement/Logistics (PBA/PBL), design, and investments in redesign or retrofit timeline planning. These decisions will be improved by access to credible serialized information. Past and predicted utilization, operating environment, logistics performance of our equipment and embedded components are key criteria in the decision making process. Historically, the Marine Corps utilizes numerous programs to serially track items of equipment. Duplication often occurs either through data entry or lack of manufacturer's compliance. By embracing IUID, human errors will be eliminated and the uniqueness of NIIN and serial number will be established.

The Marine Corps SIM plan will be implemented in two phases. Phase one will be to identify, by NIIN, all items that require serially managing. IOC will begin with a small segment for entry into Temporary Data Storage (TDS). The Marine Corps will begin by marking all Marine Corps Automated Readiness Evaluation System (MARES) Reportable Equipment, as identified in Marine Corps Bulletin 3000, dated March 2007. Once IOC is completed, phase two will commence by marking remaining items and entering them into the TDS. The Marine Corps anticipates FOC by December 2015. This effort will provide actionable information to stakeholders that are supporting decisions as varied as tactical employment to long range force planning.

2.0 Concept

Serialized Item Management (SIM) is a foundational capability to achieving the future vision of Marine Corps equipment lifecycle management, but not as a standalone program. SIM drives requirements for most programs and enterprise initiatives. For example, SIM is an inherent attribute of the USMC Enterprise Resource Planning (ERP) solution, Global Combat Support System-Marine Corps (GCSS-MC), but also drives questions about what information needs to be managed serially on each system. Since operational, environmental and logistics chain events affect each item differently, SIM may drive requirements for on-board sensors in one application to collect operational usage; a new set of data interfaces between Automatic Information Systems (AIS) for another item, or collecting contractor maintenance tasks performed for another item.

The end state for the Marine Corps is Sense and Respond Logistics (S&RL), where SIM conjoins Item Unique Identification (IUID) with enabled information technology to provide knowledge and predictive based management for components within a system. This is due to the ability to capture condition and usage of discrete items at the source and share them throughout the enterprise without manual transcription or intervention. S&RL builds upon SIM to enact the processes and technologies to instantly align the authority, processes and resources within the enterprise to adapt to changing conditions or realization of unknown inherent attributes within a system design in order to mitigate affects on readiness and resources. The DON “Serialized Management Strategy” further defines SIM and directs that all DOD serially managed items will be UII marked. The OSD Memo dated Dec 9, 2008 changed the mandatory, Unique Item Identifier (UII) marking completion date to December 15, 2015 for class II (Expendables) and Class IX (Repair Parts) items, as well as all embedded assets that meet the Item Unique Identification (IUID) criteria.

3.0 SIM Champion

The Marine Corps SIM Champion will be located at Headquarters Marine Corps, Installations and Logistics, Life Cycle and Policy. This billet holder will have the following responsibilities:

1. Participate as an active member of the LCII WG.
2. Act as primary functional liaison between SYSCOM, LOGCOM, P&R, Fleet units, other Component Services and DoD Agencies with respect to IUID and SIM related information and activities.
3. Act as lead to facilitate development of the USMC’s SIM Plan compliant with OSD and DoN policy and guidelines.
4. Act as lead to ensure designated IUID and SIM metrics are collected and reported in accordance with agreements and directives.
5. Ensure the USMC SIM Plan appendix is reviewed at least annually and updated as required.
6. Help formulate input to create and update policy, doctrine and requirements documents to create a robust SIM developmental and operational environment.

4.0 Key Elements

4.1 DATA ACQUISITION

The BUMED SIM Champion will be the IUID Project Manager within the Navy Automatic Identification Technology (AIT) Office acting under the NAVSUP Chief Information Officer (CIO).

4.1.1 Embedded Platform Logistics (EPLS)

The Marine Corps is installing equipment-based sensor-suites on several of its fleets through the EPLS in order to collect accurate source data on the condition and usage of the equipment.

4.1.2 Enhanced Maintenance Support System (EMSS)

Through use of near-vehicle portable maintenance devices, Marine maintainers can electronically relate sensor, fault, and troubleshooting data to enterprise reference data, and initiate supply and maintenance tasks. These EMSS provides an information gateway between the platforms and the enterprise.

4.1.3 Automated Information Technology (AIT)

AIT provides a means to electronically scan Machine Readable information (MRI) such as IUID matrices into AISs, reducing errors typically introduced through manual means.

4.2 DATA ATTRIBUTION

The primary means for attributing pedigree, usage, maintenance, warranty, status, and configuration data to serially managed equipment is through the application of IUID. The Marine Corps intends to be compliant with OSD IUID policy by physically marking all qualified equipment by December 2015.

4.2.1 Assign UII

Assignment and registration of permanent, globally unique “Unique Item Identifiers” (UII).

4.2.2 Place the Mark

Physical marking of all serially managed items with the UII in MRI provides the linkage between the physical world and the data environment that maintains all related attributed data.

4.2.3 Use the Mark

In order for the UII to be useful in SIM, all AIS that collect, maintain or use serialized data attributable to the unique items should use UII as key relational reference in defining the item. Additionally, this metadata should be available to stakeholders throughout the enterprise.

4.3 PRODUCT DATA MANAGEMENT

The Marine Corps future state relies upon accurate, current, and complete information on all significant items in its inventory, available to decision makers in a timely manner. Historically, information such as budgetary, acquisition, technical reference, supply and maintenance about a single item would reside within a multitude of information systems, with limited ability to correlate serialized information across these domains in an automated manner. This information will remain invisible or unusable to Marine decision makers unless it is shared across these domains and often translated into a format usable to the decision maker. Combining information systems into a single enterprise information system such as an Enterprise Resource Planning (ERP) environment allows a preponderance of the information to be available to the decision maker without having access to a multitude of systems, or having data manually transcribed.

There is a point, however where information important to a decision or a process is generated or utilized (supplier, allied or inter-service support, etc.) in applications that remain external to this enterprise environment, so it must still be shared across these domains. PDM defines shared data points, translations standards, and common definitions in order to assure data shared across domains is in the correct format for use by each information system. The development of these shared data points can be inclusive to multiple information systems, therefore each system will have to maintain one data exchange requirement for all systems, vice one for each system if it were all direct system-to-system exchanges. This capability allows data to be entered once, and used throughout the cross-domain environment, avoiding transcription effort and error, and providing for current and historical asset information to be available to a much larger audience.

4.4 INFORMATION SYSTEMS

The preponderance of logistics information within the Marine Corps enterprise will be initiated or coalesce within GCSS-MC. Remaining legacy information systems will be reviewed for serialized management capabilities and IUID compliance. Individual decisions will be made to the cost/benefit relationship for adding serialized management functionality to legacy systems, or by what means the existing serialized information is attributed to discrete UII for non-IUID compliant systems, (e.g. serialized information is managed internally by item serial number, but attributed to UII within GCSS-MC). Through integration of equipment, logistics chain transactions and historical information in a single enterprise information system, GCSS-MC, there is no need to transcribe or translate data between logistics command and control, supply, and maintenance stakeholders. Additionally, since GCSS-MC inherently manages discrete items of equipment serially, and can utilize UII for serialization, GCSS-MC can exchange serialized activity with external IUID compliant joint, legacy, and commercial entity information systems leveraging the UII as a relational data key.

4.5 APPLIED SIM

4.5.1 Autonomic Logistics (AL)

AL is a “tactical” approach to collecting and utilizing data to automate and synchronize logistics, troubleshooting, maintenance and supply to support current operations. It links and builds upon programs of record such as EPLS, EMSS and Interactive Electronic Technical Manuals (IETMs) to present and where possible - act upon condition, discrete item configuration and supply position information in order to improve the speed at which the logistics chain can respond to equipment failures, while reducing the troubleshooting, research, and manual entry burden on personnel.

4.5.2 Life Cycle Modeling and Simulation

The Marine Corps has initiated projects to model equipment lifecycle logistics chain activities in order to better understand how changes in mission profile/environment, maintenance and supply affect equipment availability or resource utilization. Initial forays show promise on the power of planning using predictions compared to using past trends, however the lack of attributable serialized historical input data hides transient and non-linear activity, and limits the utility of modeling

and simulation to long term, or large fleet predictions. Improved serialized information that is attributable to discrete item histories will improve the ability to explain outliers within a population, describe failure distributions, and shed light on the impacts that age, operating environment, and maintenance activity have on the reliability of components.

4.5.3 Total Life Cycle Management Assessment Tools (TLCM AT)

TLCM Assessment Tools are the first attempts into using predictive models to support lifecycle decisions. The capabilities identified through use of TLCM AT can identify new processes that leverage the insight gained through predictive modeling that is not currently available to decision makers. Source data requirements and sensitivity analyses to changes to input data can identify which serialized item attributes are important to predictive models, and may drive new data collection requirements at the equipment level. TLCM AT currently uses standalone equipment models in a detached mode run by modeling and simulation experts. As lifecycle predictive modeling capabilities and its data environment evolve, elements will be embedded within automated processes to self-synchronize logistics support with the dynamic equipment-operating environment.

5.0 Implementation Timeline

The following describes the implementation timelines of each of the elements defined that are critical to USMC implementation of SIM.

5.1 *EMBEDDED PLATFORM LOGISTICS SYSTEM (EPLS)*

5.1.1 EPLS

EPLS will be installed on all Light Armored Vehicles (LAV), Amphibious Assault Vehicles (AAV) and some Medium Tactical Vehicle Replacement (MTVR) by 4th quarter fiscal year 2009. EPLS is planned for all relevant Marine Corps equipment by 2015.

5.1.2 Automatic Identification Technology

The Marine Corps has a limited capability for AIT already, but is expanding upon the quantity and capability of existing AIT readers and the associated information systems to leverage automated capture of IUID machine-readable information in addition to current capabilities for 1 or 2 dimensional barcodes or RFID. This complement of AIT capability is planned to be in place by 2015.

5.2 *DATA ATTRIBUTION*

5.2.1 Marine Corps Automated Readiness Evaluation System (MARES) Reportable Equipment

The Marine Corps plans to mark an estimated **130,000** end items, plus associated repairable items in advance of the fielding of GCSS-MC to leverage IUID serialization within its initial install

base. This effort is estimated to include over 1 million discrete items being marked and registered with IUID before December 2015. This campaign scope is defined as the equipment that support the 36 functional areas that are reportable under the Marine Corps Automated Readiness Reporting System (MARES), and will actively seek and apply IUID markings at their field or storage location, as well during depot maintenance.

5.2.2 Non-MARES Reportable Equipment / Legacy Equipment

Remaining equipment will be marked in accordance with the relevant IUID Implementation Plan developed by each PM, with the intent of having all inventory items marked and registered by December 2015, less systems planned to phase out of inventory by 2013. The Marine Corps has chartered an enterprise IUID working group to work with individual PMs to assist in development, standardization, and execution of IUID planning efforts to support completion of this goal.

5.3 *PRODUCT DATA MANAGEMENT (PDM)*

The Marine Corps is expanding upon a TLCM scenario analysis, and future logistics operational architecture planning to identify the extent and industry standards needed to implement a PDM strategy. This will culminate in a USMC PDM strategy document by October 2009. The timeline for PDM implementation will be defined within the strategy document, as it is dependent upon the extent and complexity of shared data or data translation requirements that are defined within the planning effort.

5.4 *GCSS-MC IMPLEMENTATION*

GCSS-MC initiates a phased implementation of its Block I capability at all Marine locations between 2nd and 3rd quarter fiscal year 2010 through 2nd quarter fiscal year 2013. One of GCSS-MC's capabilities is to generate unique serial numbers. The Marine Corps intends to serial track items of equipment that do not meet IUID criteria. An example would be computer ADPE assets. Additionally, the Marine Corps will track hazardous items by shelf life and lot number.

5.5 *MODELING SIM*

5.5.1 AL

The Marine Corps plan is to have a complete AL solution in place by 2015.

5.5.2 TLCM AT

The Marine Corps has licensed and fully developed baseline models for five weapon systems in the TLCM AT predictive modeling application. Aside from use in ongoing analyses supported by the current data environment, initial trials are being implemented to explore the data sensitivity and accuracy improvements through the use of serialized data at the repairable level. The application inherently can replace default or average reliability, and consumption data with any available discrete data for each identified component, both installed or throughout the logistics

chain. Based upon demand, further equipment models will be developed and used to support TLMC decisions affecting the Marine Corps.

5.5.3 TLMC Predictive Modeling Group

The Marine Corps has chartered a predictive modeling working group to focus on current and future state data, software application, policies and organizational requirements to support further mainstream application of predictive models within TLMC processes and decision-making.

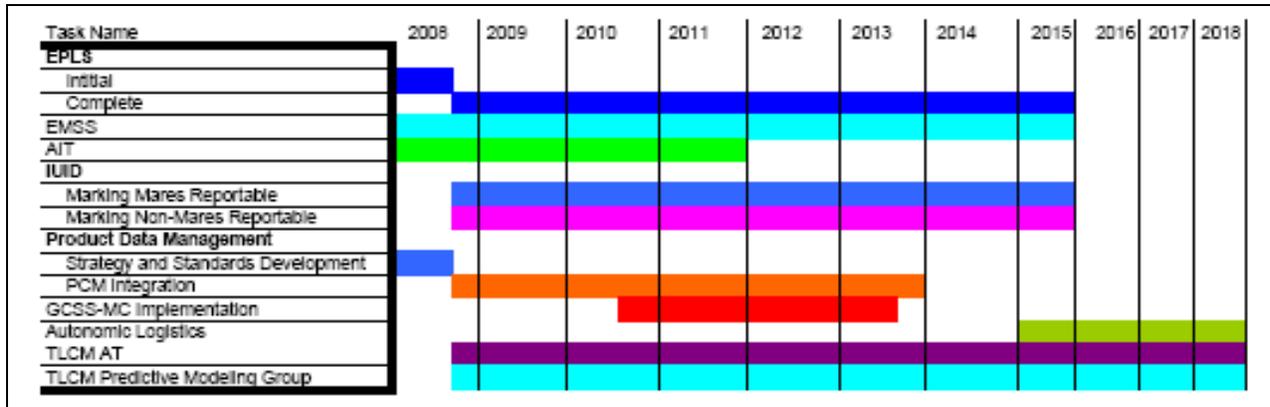


Figure 1: SIM Elements Implementation Timeline (in Fiscal Years)