



# Department of Defense **INSTRUCTION**

**NUMBER** 4151.19

January 9, 2014

Incorporating Change 2, Effective August 31, 2018

---

---

USD(A&S)

**SUBJECT:** Serialized Item Management (SIM) for Life-Cycle Management of Materiel

**References:** See Enclosure 1

1. **PURPOSE.** In accordance with the authority in DoD Directive 5134.01 (Reference (a)), and pursuant to DoD Directive 4151.18 (Reference (b)), this instruction reissues DoD Instruction (DoDI) 4151.19 (Reference (c)) to update established policy and assigned responsibilities for implementing SIM in support of the life-cycle management of materiel.

2. **APPLICABILITY.** This instruction applies to OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities in the DoD (referred to collectively in this instruction as the "DoD Components").

3. **POLICY.** It is DoD policy to:

a. Implement SIM to enable effective and efficient life-cycle management of materiel through the creation, capture, and use of life-cycle item management data (LCIM). LCIM data will:

(1) Help achieve optimum materiel availability at the best total ownership cost.

(2) Provide key performance parameters and key system attributes for weapons systems sustainment.

(3) Be used to:

(a) Improve the effectiveness and efficiency of DoD design, manufacturing, procurement, operations, maintenance, and logistics functions.

(b) Improve weapon system readiness, reliability, and safety.

(c) Reduce ownership cost through enhanced and more efficient sustainment operations.

b. Require that program and item managers, property managers, product support managers, and other functional managers develop, implement, and use SIM capabilities.

c. Identify and employ unique item identifiers (UII), as specified in DoDI 8320.04 (Reference (d)), for populations of items (parts, components, and end items) selected for SIM to capture accurate and timely item-related life-cycle event data.

d. Track and trace life-cycle events of uniquely identified items using automated identification technology (AIT) and automated information systems (AISs) to generate and process LCIM data.

e. Ensure the compatibility and interoperability of SIM-related processes across Military Departments and Defense Agencies and among public and private sector sources that support DoD items.

f. Incorporate and accommodate the materiel tracking and tracing requirements of serial number tracking (SNT) efforts and unique item tracking programs within SIM capabilities consistent with DoD policy, programming, and management for item unique identification (IUID) pursuant to Reference (d), and in accordance with Reference (a), DoDI 5000.02 (Reference (e)), Military Standard (MIL-STD)-129P (Reference (f)), MIL-STD-130N (Reference (g)), DoDI 4140.01 (Reference (h)), and DoD Manual 4140.01 (Reference (i)).


4. RESPONSIBILITIES. See Enclosure 2.

5. PROCEDURES. See Enclosure 3.

6. RELEASABILITY. **Cleared for public release.** This instruction is available on the Directives Division Website at <http://www.esd.whs.mil/DD/>.

7. SUMMARY OF CHANGE 2. This change reassigns the office of primary responsibility for this instruction to the Under Secretary of Defense for Acquisition and Sustainment in accordance with the July 13, 2018 Deputy Secretary of Defense Memorandum (Reference (j)).

8. EFFECTIVE DATE. This instruction: is effective January 9, 2014.



Frank Kendall  
Under Secretary of Defense for  
Acquisition, Technology, and Logistics

Enclosures

1. References
2. Responsibilities
3. Procedures

Glossary

TABLE OF CONTENTS

ENCLOSURE 1: REFERENCES.....5

ENCLOSURE 2: RESPONSIBILITIES.....6

    ASSISTANT SECRETARY OF DEFENSE FOR LOGISTICS  
    AND MATERIEL READINESS (ASD(L&MR)).....6

    ASSISTANT SECRETARY OF DEFENSE FOR ACQUISITION (ASD(A)) .....6

    ASSISTANT SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING  
    (ASD(R&E)).....6

    SECRETARIES OF THE MILITARY DEPARTMENTS AND DIRECTORS OF THE  
    DEFENSE AGENCIES .....6

ENCLOSURE 3: PROCEDURES.....8

    GENERAL.....8

        Uniquely Identified Items .....8

        SIM Goals .....8

    DESIGNATION OF POPULATIONS FOR SIM .....8

        Unique Tracking Requirements .....8

        Categories of Items .....8

    CAPTURE OF LCIM DATA .....9

    AIT/AIS TECHNOLOGY SUPPORTING SIM .....9

    USE OF LCIM DATA.....10

        Objectives for LCIM Data Usage .....10

        Enhancement of Life-Cycle Management AISs .....11

GLOSSARY .....13

    PART I: ABBREVIATIONS AND ACRONYMS .....13

    PART II: DEFINITIONS.....13

ENCLOSURE 1

REFERENCES

- (a) DoD Directive 5134.01, "Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L))," December 9, 2005, as amended
- (b) DoD Directive 4151.18, "Maintenance of Military Materiel," March 31, 2004
- (c) DoD Instruction 4151.19, "Serialized Item Management (SIM) for Materiel Maintenance," December 26, 2006 (hereby cancelled)
- (d) DoD Instruction 8320.04, "Item Unique Identification (IUID) Standards for Tangible Personal Property," September 3, 2015
- (e) DoD Instruction 5000.02, "Operation of the Defense Acquisition System," January 7, 2015, as amended
- (f) Military Standard MIL-STD-129P, "Department of Defense Standard Practice: Military Marking for Shipment and Storage," September 19, 2007, as amended
- (g) Military Standard MIL-STD-130N, "Department of Defense Standard Practice: Identification Marking of U.S. Military Property," November 16, 2012, as amended
- (h) DoD Instruction 4140.01, "DoD Supply Chain Materiel Management Policy," December 14, 2011
- (i) DoD Manual 4140.01, "DoD Supply Chain Materiel Management Procedures," dates vary by volume
- (j) Deputy Secretary of Defense Memorandum, "Establishment of the Office of the Under Secretary of Defense for Research and Engineering and the Office of the Under Secretary of Defense for Acquisition and Sustainment," July 13, 2018
- (k) Defense Acquisition University, "Defense Acquisition Guidebook," current edition<sup>1</sup>
- (l) Office of the Chairman of the Joint Chiefs of Staff, "Manual for the Operation of the Joint Capabilities Integration and Development System", current edition<sup>2</sup>
- (m) DoD Instruction 4151.22, "Condition Based Maintenance Plus (CBM+) for Materiel Maintenance," October 16, 2012
- (n) DoD Instruction 5000.64, "Accountability and Management of DoD Equipment and Other Accountable Property", April 27, 2017, as amended
- (o) DoD 4160.21-M, "Defense Materiel Disposition Manual," August 18, 1997
- (p) DoD 4160.28-M, Volume 3, "Defense Demilitarization: Procedural Guidance," June 7, 2011
- (q) DoD Instruction 2030.08, "Implementation of Trade Security Controls (TSC) for Transfers of DoD Munitions List (USML) and Commerce Control List (CCL) Personal Property to Parties Outside DoD Control," February 19, 2015, as amended
- (r) DoD Guidebook, "Product Support Manager Guidebook," April 2011

---

<sup>1</sup> Available at <https://dag.dau.mil/Pages/Default.aspx>

<sup>2</sup> Available at [https://www.intelink.gov/wiki/JCIDS\\_Manual](https://www.intelink.gov/wiki/JCIDS_Manual)

ENCLOSURE 2

RESPONSIBILITIES

1. ASSISTANT SECRETARY OF DEFENSE FOR LOGISTICS AND MATERIEL READINESS (ASD(L&MR)). Under the authority, direction, and control of the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)), the ASD(L&MR):

- a. Develops policy for implementing and leveraging SIM capabilities throughout the materiel life cycle.
- b. Monitors and oversees the overall planning, implementation, and operation of SIM capabilities across DoD in accordance with this instruction.
- c. Ensures SIM capabilities are integrated in logistics operations to enable effective and efficient life-cycle management.

2. ASSISTANT SECRETARY OF DEFENSE FOR ACQUISITION (ASD(A)). Under the authority, direction, and control of the USD(AT&L), the ASD(A):

- a. As part of program oversight responsibilities, ensures SIM capabilities are integrated in acquisition programs to enable effective and efficient life-cycle management in accordance with the Defense Acquisition Guidebook (Reference (k)).
- b. Considers SIM enablers (e.g., IUID, AIS, and AIT) during program support reviews and other oversight reviews.

3. ASSISTANT SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING (ASD(R&E)). Under the authority, direction, and control of the USD(AT&L), the ASD(R&E):

- a. Supports the development and transition of promising SIM technologies that enable the efficient and effective capture, transfer, storage, and analysis of LCIM data.
- b. Monitors and reviews program planning documentation regarding the implementation of SIM capabilities for weapon systems in accordance with the systems engineering process outlined in Enclosure 12 of Reference (e).

4. SECRETARIES OF THE MILITARY DEPARTMENTS AND DIRECTORS OF THE DEFENSE AGENCIES. The Secretaries of the Military Departments and the Directors of the Defense Agencies:

- a. Support SIM by:
  - (1) Designating a focal point for SIM efforts within their respective DoD Components.
  - (2) Ensuring that all organizational levels within their respective DoD Components align with SIM goals, policy, and plans.
- b. Plan SIM implementation, establish requirements, provide resources, and implement SIM in accordance with the guidance in Enclosure 3 of this instruction. Establish an enterprise architecture that supports SIM capabilities, including AIT and AIS integration.
- c. Provide oversight of SIM capabilities, requirements, plans, programs, training, transition and performance; provide periodic updates of SIM status and performance when requested by the ASD(L&MR).
- d. Ensure that program executive officers, program managers, product support managers, and operational and support activities comply with SIM guidance outlined in this instruction. This includes how to effectively and efficiently implement SIM using best practices of acquisition, systems engineering, and change management processes.
- e. Coordinate with other DoD Components and the private sector on SIM implementation, including, but not limited to, common items, data requirements, and AIS operations.
- f. Give special consideration to items that are used, maintained, or otherwise supported by more than one of the DoD Components or in the private sector. DoD Component coordination of SIM applications for each such items should focus on ensuring inter-Component or inter-sector compatibility and commonality. SIM architecture structure and supporting AIT and AISs will provide for sharing appropriate data across the DoD Components and, when appropriate, across sectors in accordance with the Joint Capabilities Integration and Development System Manual (Reference (1)).
- g. Implement common SIM solutions to the maximum extent possible.
- h. Establish supporting metrics to manage SIM implementation and measures of effectiveness to understand resultant outcomes.
- i. Ensure that physical marking and data error discrepancy resolution processes are implemented that minimize impacts on readiness, cost, and safety.

ENCLOSURE 3

PROCEDURES

1. GENERAL

a. Uniquely Identified Items. SIM capabilities will facilitate the effective management of populations of select items throughout their life cycle using data associated with a unique item by its UII. These capabilities will focus on using comprehensive and timely life-cycle data about each uniquely identified item.

b. SIM Goals. The goal of SIM is the effective management of populations of select items throughout their life cycle using data associated to a unique item by its UII. SIM capabilities will:

- (1) Focus on providing and using comprehensive, timely data about each uniquely identified item to effectively manage life-cycle materiel.
- (2) Integrate with applicable life-cycle management processes.
- (3) Include planning and implementation strategies to migrate from existing SNT efforts.
- (4) Leverage AIT and AIS capabilities to efficiently collect, store, and distribute LCIM.
- (5) Build on continuing process, operational improvements, and inventory optimization.

2. DESIGNATION OF POPULATIONS FOR SIM

a. Unique Tracking Requirements. SIM implementations will designate populations of items to uniquely track and manage within their life-cycle management initiatives. In addition to other statutory, regulatory, and policy-mandated requirements, selection of these populations will be based on the magnitude of potential benefits to operations and sustainment, cost effectiveness, management capabilities, and information availability.

b. Categories of Items. When designating items to track and manage within SIM and selecting populations, it is essential to consider, at a minimum:

- (1) Items that require periodic test, calibration, or safety inspection.
- (2) Depot level repairables.
- (3) Other repairable items, down to and including, sub-component repairables.
- (4) High-cost and high-demand non-repairable items.



- (5) Life-limited, time-controlled, and critical items.
- (6) Items under warranty.
- (7) Items susceptible to counterfeiting.
- (8) Items that require technical directive tracking.
- (9) Items with a Classified, Sensitive, or Pilferable Controlled Inventory item code.
- (10) Items requiring an accountable property record, including government-furnished property and materiel.
- (11) Items requiring intensive visibility and management.
- (12) Other items that are serially managed, as determined by the requiring activity.

3. CAPTURE OF LCIM DATA. Once the categories of items to track and manage within SIM have been identified, it is essential to define and gather data on common life-cycle events that are significant in the life of the item. Such events constitute a basic traceability of the item: who has had it, where and how has it operated and for how long, and what has been done to sustain it. The capture of data should be done in a manner that causes the least additional workload on the sustaining personnel. Automated capture should be done wherever possible.

a. LCIM data begins with initial design, specifications, manufacturing, and acquisition data and extends to usage, supply, accountability, custody, ownership, valuation, sustainment cost, warranty, modification, configuration, reliability, availability, maintainability, performance, and maintenance history data collected in various AISs.

b. Relevant LCIM data supports decision makers in providing optimal system availability and reliability at the best sustainment cost across the system's entire life cycle.

4. AIT/AIS TECHNOLOGY SUPPORTING SIM. SIM implementation will use AIT/AIS to improve the accuracy of information recorded and shared on materiel assets throughout their life cycles. AIT/AIS will strengthen the ability to achieve greater accuracy and precision in both maintenance and physical inventory management. New AIT/AIS or existing AIT/AIS systems must be developed or upgraded to comply with the capture of LCIM data, as described in section 3 of this enclosure.

a. The use of AIT/AIS technology will provide the capability to electronically:

- (1) Associate operators and maintainers to the items they operate and maintain.

(2) Validate that operators and maintainers are certified on the items they are operating and maintaining.

(3) Launch maintenance procedures and technical data.

(4) Update parent-child relationships (e.g., configuration) during disassembly and assembly.

(5) Record and report the custody and condition of items in maintenance.

(6) Record maintenance and inspection actions at the point of maintenance (location, time, and date as it occurs).

b. Maintenance management activities will use AIT/AIS technology to provide the capability to:

(1) Track item location, custody, and status through the field and sustainment maintenance process.

(2) Record item configuration changes in the system of record.

(3) Validate that markings are in place and operational.

(4) Capture positive item identification.

(5) Perform field and sustainment level inventory management.

(6) Retrieve essential maintenance information during the maintenance process.

(7) Support precision maintenance and performance management with history and technical information.

(8) Automatically provide repair requirements (technical directives, time change or time-based actions, etc.).

(9) Support reliability analysis (e.g., bad actors, reliability-centered maintenance, or condition-based maintenance plus (CBM+) as defined in DoDI 4151.22 (Reference (m))) with maintenance history tracking.

## 5. USE OF LCIM DATA

a. Objectives for LCIM Data Usage. SIM capabilities will be developed and structured to provide LCIM data about specific items and item populations, including data useful in:

- (1) Creating acquisition, operational, logistics, and maintenance histories for the life of the items.
- (2) Providing information for weapon systems' functional performance.
- (3) Performing property accountability and materiel valuation functions in accordance with the requirements of DoDI 5000.64 (Reference (n)).
- (4) Conducting reliability, availability, maintainability, supportability, and safety assessments.
- (5) Performing engineering, configuration management, and safety risk management.
- (6) Planning, managing, and executing CBM+.
- (7) Ensuring item applicability (e.g., to higher assemblies and end items).
- (8) Supply chain operations, including procurement, receipt, distribution, storage, issuance, and disposal.
- (9) Exercising contract warranty provisions.
- (10) Preventing the procurement or use of counterfeit parts.
- (11) Disposing of excess serialized items in accordance with the requirements of DoD 4160.21-M (Reference (o)), and demilitarizing condemned serialized items in accordance with the requirements of DoD 4160.28-M (Reference (p)) and DoDI 2030.08 (Reference (q)).
- (12) Management resources and controlling of life-cycle costs.
- (13) Providing visibility and control of intensively managed items (e.g., small arms or nuclear weapons-related materiel).

b. Enabling Life-Cycle Management AISs. Life-cycle management processes will be structured to support the tenets of SIM capabilities. Legacy, emerging, developing, or planned AISs will effectively comply with and incorporate SIM goals, policy, and requirements. Implementing activities will employ effective and efficient methods for the assessment of existing life-cycle management processes; they will also adopt a systems engineering approach to integrating or replacing existing SNT systems in the transition to SIM. Processes will be developed to:

- (1) Assess and re-engineer acquisition, operational, logistics, and maintenance processes by invoking the systems engineering approach and employing continuous process improvement to leverage SIM capabilities.

(2) Implement AIT to automate the capture of LCIM data to facilitate re-engineered, SIM-centric life-cycle management processes.

(3) Integrate SIM processes and AIT capabilities into applicable AISs that enable efficient life-cycle management and visibility of designated SIM items.

GLOSSARY

PART I. ABBREVIATIONS AND ACRONYMS

ASD(A)	Assistant Secretary of Defense for Acquisition
ASD(L&MR)	Assistant Secretary of Defense for Logistics and Materiel Readiness
ASD(R&E)	Assistant Secretary of Defense for Research and Engineering
AIS	automated information system
AIT	automated identification technology
CBM+	condition-based maintenance plus
DoDI	DoD Instruction
IUID	item unique identification
LCIM	life-cycle item management
MIL-STD	Military Standard
SIM	serialized item management
SNT	serial number tracking
UII	unique item identifier
USD(AT&L)	Under Secretary of Defense for Acquisition, Technology, and Logistics

PART II. DEFINITIONS

Unless otherwise noted, these terms and their definitions are for the purposes of this instruction.

AIS. A system of computer hardware, computer software, data, or telecommunications that performs functions such as collecting, processing, storing, transmitting, and displaying information. AISs are the information processors that accept, process, store, and pass AIT data.

AIT. A suite of technologies that automatically captures data, thereby enhancing the ability to identify, track, document, and control assets (e.g., materiel) and deploying and redeploying forces, equipment, personnel, and sustainment cargo. AIT encompasses a variety of data storage or carrier technologies, such as linear bar codes, two-dimensional symbols, magnetic strips, integrated circuit cards, optical laser discs, or satellite tracking transponders and radio frequency transponders.

IUID. A system of establishing globally ubiquitous unique identifiers on items of supply within DoD, which serves to distinguish a discrete entity or relationship from other like and unlike entities or relationships.

LCIM data. Item-related data that supports product life-cycle management and spans an item's complete life cycle. It begins with initial design, specifications, manufacturing, and acquisition data that include use, supply, accountability, custody, ownership, valuation, sustainment cost, warranty, modification, configuration, reliability, availability, maintainability, performance, and maintenance history data collected in various AISs. Relevant maintenance, logistics, and acquisition data supports analysis on specific populations and on each item throughout its life cycle.

product support manager. Defined in the Product Support Manager Guidebook (Reference (r)).

SIM. Programs and techniques that use LCIM data to track the performance of uniquely identified items throughout their life cycle. The overarching goal of these programs and techniques is to enable managers achieve optimum weapon system materiel availability at the best total ownership cost through the use of effective and efficient life-cycle management practices.

SNT. A process used to identify and trace major end items, assembly, subassembly, and individual components through their life in inventory, maintenance, and operational systems.

UII. A set of data elements, permanently marked on items, that is globally unique and unambiguous and never changes, in order to provide traceability of the item throughout its total life cycle. The term includes a concatenated UII or a DoD-recognized unique identification equivalent.