

**DEPARTMENT OF THE ARMY
INTERFACE STANDARD**

**CONFIGURATION MANAGEMENT
DATA INTERFACE**



AMSC A7407

AREA CMAN

Distribution Statement A. Approved for public release; distribution is unlimited.

AMC-STD-2549A

FOREWORD

1. This U.S. Army Materiel Command Standard (AMC-STD) is approved for use by the Department of the Army and is available for use by all Departments and Agencies of the Department of Defense (DoD).
2. This standard is the result of joint efforts of the military services and industry and is based on sound configuration management principles. It was developed in conjunction with American National Standards Institute/ Electronic Industries Alliance (ANSI/EIA) Standard 649, "National Consensus Standard for Configuration Management." The Government Electronics & Information Technology Association (GEIA) has undertaken a standardization project in partnership with the DoD to develop a new series of related standards that will emerge incrementally as EIA-836. AMC-STD-2549A will be cancelled upon publication of the industry standard(s).
3. While this standard accommodates the maximum range of data potentially required by the Army and other services for configuration management of materiel and supporting technical data, it also provides the tailoring guidance necessary to assure that only the minimum essential data are acquired.
4. This standard has a broad enough scope to ensure correlation among diversified Government and industry users. Use of this standard will improve the cost effectiveness of the generation, maintenance, acquisition, and use of technical data, and will facilitate interoperability of dis-similar data systems by:
 - a. Standardizing a set of neutral data element definitions (DEDs) encompassing values, field lengths, and formats, which are harmonized with other DoD, national, and international standards.
 - b. Providing a set of standard transactions to:
 - (1) Facilitate interaction among industry and Government data systems.
 - (2) Support integrated data and virtual repository environments, reducing redundancy, and facilitating timely access.
5. Beneficial comments that may be of use in improving this document should be addressed to US Army Armament Research, Development and Engineering Center, ATTN: AMSTA-AR-QAW-E, Picatinny Arsenal, NJ 07806-5000 or by electronic mail to: lees@pica.army.mil.

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1 SCOPE

1.1 Scope.

This standard prescribes data elements, data element definitions, and data element relationships. The data relationships are based on business rules derived from the CM principles contained in ANSI/EIA649. Data to be exchanged are arranged in data information packets that share common data elements. Each packet represents a specific data exchange transaction in the form of a sequential bit-stream. The bit-stream representation, which is only one of many ways to transfer data, also provides the basis for other methods such as standard Extensible Markup Language (XML) Document Type Definitions (DTDs). In conjunction with the ANSI/EIA documents, this standard enables the configuration management and integrated data management requirements of DoD 5000.2-R to be implemented in a manner that is consistent with best industry practice.

1.2 Applicability.

This standard applies to all activities responsible for procuring, recording, maintaining, and disseminating configuration management information, contract-deliverable data, or other product information. The applicability of specific appendices is addressed in Section 4.

1.3 Tailoring of requirements.

This standard does not assign configuration management requirements and is never to be cited in its entirety as a requirement; all such requirements are not binding. Requirements of this standard are applicable only to the extent that selected portions of specific data information packets (DIPs) support the data requirements identified in a tasking directive or contract. The selection of DIPs is tailored to suit the life-cycle phase, complexity, size, intended use (including joint and combined interoperability), mission criticality, and logistics support of systems/configuration items (CIs). (See Appendixes A and E.)

2 APPLICABLE DOCUMENTS

This section does not apply to this standard since there are no documents referenced in Sections 3, 4 or 5. Section 6 contains several useful references.

3 DEFINITIONS

3.1 Acronyms/Abbreviations.

Acronyms/Abbreviations of general terms used in this standard are defined as follows:

Acronym/Abbreviation	Meaning
AA	Application Activity
ABL	Allocated Baseline
ACD	Allocated Configuration Documentation
AECMA	Association Europeenne des Constructeurs de Materiel Aerospace
AFB	[U.S.] Air Force Base
AFI	[U.S.] Air Force Instruction
AFR	[U.S.] Air Force Regulation
AGE	Aerospace Ground Equipment
AIS	Automated Information System
AMC	[U.S.] Army Materiel Command
AMSDL	Acquisition Management Systems and Data Requirements Control List
ANSI	American National Standards Institute
AP	Application Protocol
AR	[U.S.] Army Regulation
ARDEC, AR	[U.S. Army] Armament Research, Development and Engineering Center
ASCH	American Standard Code for Information Interchange
ASME	American Society of Mechanical Engineers
ASSIST	Acquisition Streamlining and Standardization Information System
ASTM	American Society for the Testing of Materials

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Acronym/Abbreviation	Meaning
AutoCad	Automated Computer-aided design
CAGE	Commercial and Government Entity
CALS	Continuous Acquisition and Life-cycle Support
CCB	Configuration Control Board, Configuration Change Board
CCBD	Configuration Control Board Directive
CDCA	Current Document Change Authority
CDRL	Contract Data Requirements List
CFR	Code of Federal Regulations
CI	Configuration Item
CITIS	Contractor Integrated Technical Information Service
CLIN	Contract Line Item Number
CM	Configuration Management
CMP	Configuration Management Plan
CPIN	Computer Program Identification Number
CSA	Configuration Status Accounting
CSCI	Computer Software Configuration Item
DCMC	[U.S.] Defense Contract Management Command
DDRS	[U.S.] Department of Defense Data Repository System
DED	Data Element Definition
DFARS	[U.S.] Defense Department Supplement to the Federal Acquisition Regulation
DID	Data Item Description
DIN	Data Item Number, Deutsches Institute fur Normung
DIP	Data Information Packet
DLA	[U.S.] Defense Logistics Agency
DM	Data Management
DOCSUP	Document Supplement
DoD	[U.S.] Department of Defense
DoDD	[U.S.] Department of Defense Directive
DOD-STD	[U.S.] Military Standard
DODISS	[U.S.] Department of Defense Index of Specifications and Standards
DOE	[U.S.] Department of Energy
DOT	[U.S.] Department of Transportation
DTD	Document Type Definition
DTIC	[U.S.] Defense Technical Information Center
DWG	Drawing
ECP	Engineering Change Proposal
EIA	Electronic Industries Association
Email, E-Mail	Electronic mail
EMD	Engineering and Manufacturing Development
FBL	Functional Baseline
FCA	Functional Configuration Audit
FCD	Functional Configuration Documentation
FFT	First Flight Test
FIPS	Federal Information Processing Standards
FSC	[U.S.] Federal Supply Class
G&A	General and Administrative
GEIA	Government Electronics & Information Technology Association
GENDOC	General Document
GFD	Government-Furnished Documents
GFE	Government-Furnished Equipment
GFP	Government-Furnished Property
GPO	Government Printing Office
HWCI	Hardware Configuration Item
IBM	International Business Machine Corporation

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Acronym/Abbreviation	Meaning
ICD	Interface Control Drawing, Interface Control Documentation, International Code Designator
IDEF1X	Integration Definition for Information Modeling
IEEE	Institute of Electrical and Electronics Engineering
IGES	Initial Graphics Exchange Specification
IPT	Integrated Product Team
ISO	International Standardization Organization
MACHALT	Machinery Alteration
MICOM	[U.S. Army] Missile Command
MIL	[U.S.] Military Specification
MIL-DTL	[U.S.] Military Detail Specification
MIL-HDBK	[U.S.] Military Handbook
MIL-PRF	[U.S.] Military Performance Specification
MIL-STD	[U.S.] Military Standard
MODINST	Modification Instruction
MS	[U.S.] Military Standard
MWO	Modification Work Order
NAS	[U.S.] National Aerospace Standard
NATO	North Atlantic Treaty Organization
NAVAIR	[U.S.] Naval Air Systems Command
NAVAIRINST	[U.S.] Naval Air Systems Command Instruction
NAVMATINST	[U.S.] Naval Materiel Systems Command Instruction
NOR	Notice of Revision
NSCM	NATO Supply Code for Manufacturers
NSN	National Stock Number
OPNAVINST	Instruction
OS	[U.S.] Naval Surface Warfare Center
OSD	[U.S.] Office of the Secretary of Defense
PAN	Procuring Activity Number
PBL	Product Baseline
PCA	Physical Configuration Audit
PCD	Product Configuration Documentation
PD&RR	Program Definition and Risk Reduction
PDM	Product Data Management [System]
PDR	Preliminary Design Review
PIN	Part or Identification Number
POC	Point of Contact
RAC	Rapid Action Change [order]
RFD	Request For Deviation
SAE	Society of Automotive Engineers
SD	Standardization Document
SDR	System Design Review
SFR	System Functional Review
SOW	Statement of Work
SPEC	Specification
SSAN	Social Security Account Number
SSR	Software Specification Review
STANAG	Standard NATO Agreement
STDDOC	Standardization Document
STEP	Standard for the Exchange of Product model data
SW	Software
SWDOC	Software Documentation
TCTO	Time-compliance Technical Order
TM, TECHMAN	Technical Manual

Acronym/Abbreviation	Meaning
TO	[USAF] Technical Order
TOPS	Technical Order Page Supplement
TPS	Test Program Set
URL	Uniform Resource Locator
U.S.	United States [of America]
USAF	United States Air Force
UTC	Universal Coordinated Time
VECP	Value Engineering Change Proposal
XML	Extensibility Markup Language

3.2 Definitions.

Definitions for configuration management terms used in this standard are consistent with ANSI/EIA 649. The terms defined below are used primarily in Appendix C.

- 3.2.1 Affected Document. (1) The document that will require change as a result of approval of an Engineering Change Proposal (ECP) (2) The document that contains the requirements for which a Request For Deviation (RFD) is being submitted or (3) The document that is being changed by a Notice of Revision (NOR).
- 3.2.2 Allocated Baseline (ABL). The approved allocated configuration documentation.
- 3.2.3 Allocated Configuration Documentation (ACD). The documentation describing a CI's functional, performance, interoperability, and interface requirements that are allocated from those of a system or higher level configuration item; interface requirements with interfacing configuration items; and the verifications required to confirm the achievement of those specified requirements.
- 3.2.4 Application Activity (AA). An activity that has selected an item or a document for use on programs under its control. However, it is not the current document change authority.
- 3.2.5 Approval. The agreement that a configuration item or document is complete and suitable for its intended use.
- 3.2.6 Approved Document (or Data). Document that has been approved by an appropriate authority and is the official (identified) version of the document until replaced by another approved version.
- 3.2.7 Archived Document (or Data). Working, Released or approved document that is to be retained for historical purposes
- 3.2.8 Assembly. A number of basic parts or subassemblies, or any combination thereof, joined together to perform a specific function. Typical examples are: electric generator, audio-frequency amplifier, power supply.
- 3.2.9 Component. A single part, or any combination of parts, subassemblies, and assemblies mounted together.
- 3.2.10 Computer database. See Database.
- 3.2.11 Computer software. See Software.
- 3.2.12 Computer Software Configuration Item (CSCI). A configuration item that is computer software.
- 3.2.13 Computer software documentation. Technical data or information, including computer listings, regardless of media, which document the requirements, design, or details of computer software; explain the capabilities and limitations of the software; or provide operating instructions for using or supporting computer software.
- 3.2.14 Configuration. The performance, functional, and physical attributes of an existing or planned product, or a combination of products.

- 3.2.15 Configuration audit. See: Functional Configuration Audit (FCA), and Physical Configuration Audit (PCA).
- 3.2.16 Configuration baseline (baseline). (1) Configuration of an item, formally established at a specific point in time, which serves as a reference for further activities. (2) An approved and released document, or a set of documents, each of a specific revision; the purpose of which is to provide a defined basis for managing change. (3) The currently approved and released configuration documentation. (4) A released set of files comprising a software version and associated configuration documentation. See: Allocated Baseline (ABL), Functional Baseline (FBL), and Product Baseline (PBL).
- 3.2.17 Configuration control. (1) A systematic process which ensures that changes to released configuration documentation are properly identified, documented, evaluated for impact, approved by an appropriate level of authority, incorporated, and verified. (2) The configuration management activity concerning: the systematic proposal, justification, evaluation, coordination, and disposition of proposed changes; and the implementation of all approved and released changes into (a) the applicable configurations of a product, (b) associated product information, and (c) supporting and interfacing products and their associated product information.
- 3.2.18 Configuration Control Board (CCB). A board composed of technical and administrative representatives who recommend approval or disapproval of proposed engineering changes to, and proposed deviations from, a CI's current approved configuration documentation.
- 3.2.19 Configuration Control Board Directive (CCBD). The document that records the Engineering Change Proposal (ECP) or Request for Deviation (RFD) approval (or disapproval) and, if approved, provides the direction to the Performing Activities to incorporate the ECP or RFD into the identified contract(s) and tasking directives, and incorporate the ECP into the technical documents.
- 3.2.20 Configuration documentation. Technical information, the purpose of which is to identify and define a product's performance, functional, and physical attributes (e.g., specifications, drawings). (See also: Allocated Configuration Documentation [ACD], Functional Configuration Documentation [FCD], and Product Configuration Documentation [PCD].)
- 3.2.21 Configuration identification. Activities comprising determination of the product structure, selection of configuration items, documenting the configuration item's physical and functional characteristics including interfaces and subsequent changes and allocating identification characteristics or numbers to the configuration items and their documents.
- 3.2.22 Configuration Item (CI). Aggregation of hardware, software, processed materials, services, or any of its discrete portions, that is designated for configuration management and treated as a single entity in the configuration management process.
Note: The terms "CI" and "Product" are identified as aliases in ANSI/EIA 649 and are used interchangeably within this standard.
- 3.2.23 Configuration Management (CM). A management process for establishing and maintaining consistency of a product's performance, functional, and physical attributes with its requirements, design and operational information throughout its life.
- 3.2.24 Configuration Management Plan (CMP). The document defining the organization and procedures for the configuration management of a specific product or program.
- 3.2.25 Configuration Status Accounting (CSA). Formalized recording and reporting of the established configuration documents, the status of proposed changes, and the status of the implementation of approved changes.
- 3.2.26 Contract. As used herein, denotes the document (for example, contract, memorandum of agreement/ understanding, purchase order) used to implement a binding agreement between a tasking activity (e.g., *buyer*) and a performing activity (e.g., *seller*).
- 3.2.27 Contractual acceptance of data. The action taken by the tasking activity signifying that an item submitted or delivered by the performing activity complies with the requirements of the contract.

- 3.2.28 Current Document Change Authority (CDCA). The activity currently responsible for the content of a drawing, specification, or other document and which has the sole authority for approval of changes to that document. (See also: Application Activity [AA], Approval, Document Custodian.)
- 3.2.29 Data. Recorded information of any nature (including administrative, managerial, financial, and technical) regardless of medium or characteristics. (See also: Data item, Document.)
- 3.2.30 Database. A collection of related data stored in one or more computerized files in a manner that can be accessed by users or computer programs via a database management system.
- 3.2.31 Data item. A document or collection of documents that must be submitted by the performing activity to the procuring or tasking activity to fulfill a contract or tasking directive for the delivery of information.
- 3.2.32 Defect. Any nonconformance of a characteristic with specified requirements.
- 3.2.33 Deficiencies. Deficiencies consist of two types:
- a. conditions or characteristics in an item which are not in accordance with the item's approved configuration documentation; or
 - b. inadequate (or erroneous) configuration documentation which has resulted, or may result, in units of the item that do not meet the requirements for the item.
- 3.2.34 Defining Document. The document that describes the physical attributes of a part, component, assembly, subassembly, or system.
- 3.2.35 Design change. See Engineering change.
- 3.2.36 Deviation. A specific written authorization to depart from a particular requirement(s) of an item's current approved configuration documentation for a specific number of units or a specified period of time, and to accept an item which is found to depart from specified requirements, but nevertheless is considered suitable for use "as is" or after repair by an approved method. (A deviation differs from an engineering change in that an approved engineering change requires corresponding revision of the item's current approved configuration documentation, whereas a deviation does not.)
- 3.2.37 Distribution Statement. A statement used in marking a technical document to denote the extent of its availability for distribution, release, and disclosure without need for additional approvals and authorizations from the controlling DoD office.
- 3.2.38 Document. A self-contained body of information or data that can be packaged for delivery on a single medium. Some examples of documents are: drawings, reports, standards, databases, application software, engineering designs, virtual part-models, etc.
- 3.2.39 Document custodian. The activity charged with the physical and electronic safekeeping and maintenance of the "original" document.
- 3.2.40 Document representation. (1) A set of digital files which collectively represent the entire document. (For example: a set of raster files or a set of Initial Graphics Exchange Specification (IGES) files.) A document may have more than one document representation. (2) A document in a non-digital form. (For example: paper, punched card set, or stable-base drawing.)
- 3.2.41 Engineering change. Any alteration to a product or its approved configuration documentation.
- 3.2.42 Engineering Change Proposal (ECP). The documentation by which a proposed engineering change is described, justified, and submitted to the current document change authority for approval or disapproval of the design change in the item and its documentation.
- 3.2.43 Exchange protocol: Agreed upon rules that govern transmitting and receiving data.

- 3.2.44 Firmware. The combination of a hardware device and computer instructions or computer data that reside as read only software on the hardware device.
- 3.2.45 Fit. The ability of an item to physically interface or interconnect with or become an integral part of another item.
- 3.2.46 Form. The shape, size, dimensions, mass, weight, and other physical parameters that uniquely characterize an item. For software, form denotes the language and media.
- 3.2.47 Function. The action or actions that an item is designed to perform.
- 3.2.48 Functional Baseline (FBL). The approved functional configuration of an item and its documentation.
- 3.2.49 Functional characteristics. Quantitative performance parameters and design constraints, including operational and logistic parameters and their respective tolerances. Functional characteristics include all performance parameters, such as range, speed, lethality, reliability, maintainability, and safety.
- 3.2.50 Functional Configuration Audit (FCA). The formal examination of functional characteristics of a configuration item, or system to verify that the item has achieved the requirements specified in its functional and/or allocated configuration documentation.
- 3.2.51 Functional Configuration Documentation (FCD). The documentation describing the system's functional, performance, interoperability, and interface requirements and the verifications required to demonstrate the achievement of those specified requirements.
- 3.2.52 Hardware. Products made of material and their components (mechanical, electrical, electronic, hydraulic, pneumatic). Computer software and technical documentation are excluded.
- 3.2.53 Hardware Configuration Item (HWCI). See Configuration Item (CI).
- 3.2.54 Interchangeable item. A product which possesses such functional and physical attributes as to be equivalent in performance to another product of similar or identical purposes; and is capable of being exchanged for the other product without selection for fit or performance, and without alteration of the products themselves or of adjoining products, except for adjustment.
- 3.2.55 Interface. The performance, functional, and physical characteristics required to exist at a common boundary.
- 3.2.56 Interface control. The process of identifying, documenting, and controlling all performance, functional and physical attributes relevant to the interfacing of two or more products provided by one or more organizations.
- 3.2.57 Interface Control Documentation (ICD). Interface control drawing or other documentation that depicts physical, functional, performance, and test interfaces of related or co-functioning products.
- 3.2.58 Interoperability. The ability to exchange information and operate effectively together.
- 3.2.59 Item. A nonspecific term used to denote any product, including systems, materiel, parts, subassemblies, sets, accessories, etc.
- 3.2.60 Life cycle cost. The total cost to the tasking activity of acquisition and ownership of an item over its life cycle. As applicable, it includes the cost of development, production, support, and, disposal.
- 3.2.61 Lot number. An identifying number consisting of alpha and numeric characters which, in conjunction with a manufacturer's identifying Commercial and Government Entity (CAGE) Code and a Product-Tracking Base-Identifier, uniquely identifies a group of units of the same item which are manufactured or assembled by one producer under uniform conditions and which are expected to function in a uniform manner.

- 3.2.62 Materiel. A generic term covering systems, equipment, stores, supplies, and spares, including related documentation, manuals, computer hardware, and software.
- 3.2.63 Nomenclature. (1) The combination of a Government-assigned designation and an approved item name. (2) Names assigned to kinds and groups of products. (3) Formal designations assigned to products by customer or supplier (such as model number, or model type, design differentiation, specific design series or configuration.)
- 3.2.64 Nonconformance. The failure of a unit or product to meet a specified requirement.
- 3.2.65 Nonrecurring costs. As applied to an ECP, one-time costs that will be incurred if an engineering change is approved and which are independent of the quantity of items changed, such as cost of redesign or development testing.
- 3.2.66 Notice of Revision (NOR). A document used to define revisions to approved configuration documentation which require revision after Engineering Change Proposal approval. May also be known as a Drawing Change Notice, Advance Drawing Change Notice, Alteration Notice, Change In Design, Engineering Change Notice, Engineering Change Order, Engineering Notice or Engineering Order. (See also Engineering Change Proposal [ECP].)
- 3.2.67 Original. The CDCA's documents or digital document representation and associated source data file(s) of record.
- 3.2.68 Original design activity. The design activity originally responsible for the design and identification of an item whose drawing number and activity identification is shown in the title block of the drawings and associated documents.
- 3.2.69 Part. For the purposes of this standard, the generic term "part" is used to describe both parts and materials. Parts are: (1) one or more pieces joined together that are not normally subjected to disassembly, (2) subassemblies, or (3) assemblies of parts and materials. Materials are substances that are applied to parts or out of which a part is made.
- 3.2.70 Performing activity. An activity performing any of the requirements contained in a contract or tasking directive. A "Performing Activity" can be either a contractor or Government activity.
- 3.2.71 Physical characteristics (attributes). Quantitative and qualitative expressions of material features, such as composition, dimensions, finishes, form, fit, and their respective tolerances.
- 3.2.72 Physical Configuration Audit (PCA). The formal examination of the "as-built" configuration of a configuration item against its physical characteristics as defined in its product configuration documentation to establish or verify the configuration item's product baseline.
- 3.2.73 Product Baseline (PBL). The approved product configuration of an item and its documentation.
- 3.2.74 Product Configuration Documentation (PCD). A CI's detail design documentation including those verifications necessary for accepting product deliveries (first article and acceptance inspections.) Based on program production/procurement strategies, the design information contained in the PCD can be as simple as identifying a specific part number or as complex as full design disclosure.
- 3.2.75 Product-tracking base-identifier. An unchanging identifier used as a base for the assignment of serial numbers to uniquely identify individual units of an item or lot numbers to uniquely identify groups of units of an item. The product-tracking identifier is used rather than the Part or Identifying Number (PIN) because the PIN is altered to reflect a new configuration when the item it identifies is modified. The same product-tracking base-identifier may be used for several similar items (usually defined by a common document) and requires that each such item is assigned serial or lot numbers distinct from each other such item.
- 3.2.76 Product Tracking Identifier. A generic term that refers to the sequentially assigned alphanumeric identifier applied to a product to differentiate units of the product or groups of the product. This may be a Government serial (or hull) number, manufacturer's serial number, lot number or date code.

- 3.2.77 Recurring costs. Costs that are incurred on a per-unit basis for each item changed or for each service or document ordered.
- 3.2.78 Reference Document. Design activity standards, drawings, specifications, or other documents referenced on drawings or lists.
- 3.2.79 Release. The designation by the originating activity that a document representation or software version is approved by the appropriate authority and is subject to configuration change management procedures.
- 3.2.80 Released Document (Data): (1) Document that has been released after review and internal approvals. (2) Document that has been provided to others outside the originating group or team for use (as opposed to for comment).
- 3.2.81 Repair. A procedure which reduces, but does not completely eliminate, a nonconformance. Repair is distinguished from rework in that the characteristic after repair still does not completely conform to the applicable drawings, specifications, or contract requirements.
- 3.2.82 Repairable Item. Any part or assembly which, upon failure or malfunction, is intended to be repaired or reworked.
- 3.2.83 Replacement item. An item which is interchangeable with another item, but which differs physically from the original item in that the installation of the replacement item requires operations such as drilling, reaming, cutting, filing, shimming, etc., in addition to the normal application and methods of attachment.
- 3.2.84 Retrofit. The incorporation of new design parts or software code, resulting from an approved engineering change, to a product's current approved product configuration documentation into products already delivered to and accepted by customers.
- 3.2.85 Retrofit Instruction. The document that provides specific, step-by-step instructions about the installation of parts in delivered units to bring their configuration up to that approved by an ECP. (Sometimes referred to as Alteration Instruction, Modification Work Order, Technical Directive, or Time Compliance Technical Order.)
- 3.2.86 Rework. A procedure applied to a product to eliminate a nonconformance to the drawings, specifications, or contract requirements that will completely eliminate the nonconformance and result in a product that conforms completely.
- 3.2.87 Serial number. An identifying number consisting of alpha and numeric characters which is assigned sequentially in the order of manufacture or final test and which, in conjunction with a manufacturer's identifying CAGE code, uniquely identifies a single item within a group of similar items identified by a common product-tracking base-identifier.
- 3.2.88 Software. Computer programs and computer databases.
- 3.2.89 Specification. A document that explicitly states essential technical attributes/requirements for a product and procedures to determine that the product's performance meets its requirements/attributes.
- 3.2.90 Substitute item. An item that possesses such functional and physical characteristics as to be capable of being exchanged for another item only under specified conditions or in particular applications and without alteration of the items themselves or of adjoining items.
- 3.2.91 Supporting Document. A document that provides additional technical information to support a request for engineering change/deviation (ECP/RFD).
- 3.2.92 Support equipment. Equipment and computer software required to maintain, test, or operate a product or facility in its intended environment.
- 3.2.93 Survivability. The capability of a system to avoid or withstand a hostile environment without suffering an abortive impairment of its ability to accomplish its designated mission.

- 3.2.94 System. A self-sufficient unit in its intended operational environment, which includes all equipment, related facilities, material, software, services, and personnel required for its operation and support.
- 3.2.95 Tasking activity. An activity that imposes the requirements contained in a contract or tasking directive on a performing activity, (for example, a Government Contracting Activity that awards a contract to a contractor, a Government Program Management Office that tasks another Government activity, or a contractor that tasks a subcontractor.)
- 3.2.96 Technical data. Technical data is recorded information (regardless of the form or method of recording) of a scientific or technical nature (including computer software documentation.)
- 3.2.97 Technical data package. A technical description of an item adequate for supporting an acquisition strategy, production, engineering, and logistics support. The description defines the required design configuration and procedures required to ensure adequacy of item performance. It consists of all applicable technical data such as drawings and associated lists, specifications, standards, performance requirements, quality assurance provisions, and packaging details.
- 3.2.98 Technical documentation. See Technical data.
- 3.2.99 Technical reviews. A series of system engineering activities by which the technical progress on a project is assessed relative to its technical or contractual requirements. The reviews are conducted at logical transition points in the development effort to identify and correct problems resulting from the work completed thus far before the problems can disrupt or delay the technical progress. The reviews provide a method for the performing activity and tasking activity to determine that the development of a configuration item and its documentation have a high probability of meeting contract requirements.
- 3.2.100 Training equipment. All types of maintenance and operator training hardware, devices, audio-visual training aids, and related software which are:
- a. used to train maintenance and operator personnel by depicting, simulating, or portraying the operational or maintenance characteristics of an item or facility;
 - b. kept consistent in design, construction, and configuration with such items in order to provide required training capability.
- 3.2.101 Version. (1) One of several sequentially created configurations of a data product. (2) A supplementary identifier used to distinguish a changed body or set of computer-based data (software) from the previous configuration with the same primary identifier. Version identifiers are usually associated with data (such as files, databases and software) used by, or maintained in, computers.
- 3.2.102 Waiver. See Deviation.
- 3.2.103 Working Document (Data). Document that has not been released; any document that is currently controlled solely by the originator including new versions of the document that were previously released, submitted, or approved.

4 GENERAL

4.1 General.

In accordance with DoD 5000.2-R, DoD activities shall have “An integrated data management system to capture and control the technical baseline (configuration documentation, technical data, and technical manuals); provide data correlation and traceability among requirements, designs, decisions, rationale, and other related program planning, and reporting, support configuration procedures, and serve as a ready reference for the systems engineering effort.” The selection of data is based on the acquisition and logistic support strategies for the system/CI and the Government Concept of Operations for the acquisition program. During each phase of the acquisition life cycle and stage of the product maturity life cycle (see Figure 1), product and configuration management data products are chosen using the tailoring guidelines in Table A-I of Appendix A. The data is normally accessed from or captured in a product information database. The Government is responsible for assuring that the database or set of interconnected databases is maintained throughout the product life cycle. DIPs defined in Appendix D are a means to interchange data between product information databases (see Section 5). The database schema (data model) in Appendix B (to be published)

and the data dictionary in Appendix C is used to determine the standard neutral definitions of, and the relationships between the data elements invoked in the selected data information packets.

Acquisition Life Cycle Phase:	Program Definition & Risk Reduction		Engineering & Manufacturing Development	Production, Fielding/Deployment, & Operational Support and Demilitarization & Disposal	
Product Design Maturity Life Cycle Stage:	System Definition	Allocated Performance Definition	Design Definition	Production, Operations & Support	Post Production Operations & Support (including Demilitarization & Disposal)

Figure 1. Correlation of acquisition life cycle phase and product design maturity life cycle stage

4.2 Tasking activity responsibilities.

In order to apply the contents of this standard to aid in selecting the minimum essential data, the following actions are taken by the procuring (or tasking) activity:

4.2.1 Tasking activity decisions.

- a. Prior to the program definition and risk reduction phase of the acquisition life cycle (or the system definition stage of the design maturity life-cycle), the tasking activity determines the acquisition strategy to be used for the design, development, production, operations, and support of the item. This decision is reviewed prior to each subsequent phase of the product’s acquisition life cycle.
- b. Prior to the Production, Operations and Support stage of the acquisition life cycle, the tasking activity determines what agency(s) will be responsible for implementing the various aspects of the logistics support strategy.
- c. Prior to each acquisition life cycle phase, the tasking activity determines (or updates) the Government concept of operations for use of electronic information.

4.2.2 Ordering information.

After the decisions in 4.2.1 are made, Appendix A is used as a guide to determine the data product-related information to be included in the Statement of Work (SOW) and Contract Data Requirements List (CDRL) or internal tasking directive. Appendix A is utilized by the activity generating the SOW and CDRL (either tasking activity or performing activity) or by the activity evaluating the content of the SOW/CDRL submitted with a proposal.

Note: Appendix A provides a step-by-step procedure for determining the minimum data products that are necessary to efficiently support production and post-production logistics support, and to ensure that it is acquired in the format appropriate to the specific item and program. Use of this Appendix helps prevent sub-optimization of the total life cycle support of the product by identifying information that must be obtained from the manufacturer for use after production is completed.

4.3 Performing activity responsibilities.

4.3.1 Creation of data, documents, or data items. Performing activities develop information in accordance with the requirements of the SOW and standard company and industry practices.

4.3.2 Delivery of CM data, documents, or other data items. Information is delivered in accordance with the requirements contained in the CDRL. When the DIP in this standard is required by the contract, the information to be delivered is formatted in accordance with the DIP and delivered by means of the exchange protocol established by the contract.

4.4 Applicability of appendixes B and C.

4.4.1 Appendix B (to be published) defines a database schema (data model) for configuration management data, product data, and contract-deliverable data. It is used as a reference for the relationships/business rules associated with the data elements in the DIP selected for acquisition. When a CM System, Product Data Management (PDM) System, or Contract

Data Management (DM) System is being acquired, the portions of Appendix B (to be published) pertinent to the system are to be specifically cited for compliance.

- 4.4.2 The data dictionary in Appendix C supports both the DIPs and the conceptual data model in Appendix B (to be published). The dictionary includes the precise definitions of all the data elements, their size, format, and acceptable values. It is used to the extent that the data elements are required either by a DIP called out in a contract or by a SOW for a CM System, or a PDM System

5 DATA INTERFACE TRANSACTIONS

5.1 Types of transactions.

Two types of transactions take place to populate a database with configuration management information, and to extract data from a database:

- 5.1.1 Standard transactions, defined in this standard in the form of DIPs (Appendix D), are used to enter information into a database and to extract similar information from one database to exchange the data with another database. The DIPs streamline the effort required to obtain product data and configuration management information and eliminate redundant or overlapping data. When a DIP is entered into a database compliant with the data model, or a database mapped to the data model, it automatically populates the appropriate data fields.
- 5.1.2 Standard and ad-hoc queries to a database are a method of extracting specific intelligence from the database. Queries are a function of system input/output design and are a function of specific system tools; therefore queries are not described in this standard.

6 NOTES

(This section contains information of a general or explanatory nature, that may be helpful, but is not mandatory.)

6.1 Intended use.

- 6.1.1 This standard establishes a business rules view (database schema) for automated information systems used for configuration management of materiel items and the management of documents related to those items throughout the life cycle of the items.
- 6.1.2 This document defines a standard practice for acquiring the minimum configuration management and product data essential for support of materiel items throughout its life cycle. This data is typically ordered by the Government by means of CDRLs invoking either the content DID for the documents desired or the DIDs listed in 6.2, in conjunction with SOW, contract clause or other appropriate contract arrangement, such as a requirement for full or partial access to contractor databases via contractor integrated technical information services (CITIS).
- 6.1.3 The configuration management and product data addressed by this standard can be exchanged between multiple database platforms and between many legacy systems. This standard provides for the exchange of information in a neutral format between systems designed by different vendors. It addresses exchange requirements for the full scope of data necessary to meet the requirements for configuration management and integrated data management as stated in DoD 5000.2-R.

6.2 Associated Data Item Description (DID).

When it is necessary to obtain data, the DID may be listed on the CDRL (DD Form 1423), except where the DoD Federal Acquisition Regulation Supplement exempts the requirement for a DD Form 1423.

<u>DID Number</u>	<u>DID Title</u>	<u>Selection and Tailoring Guidance</u>
DI-CMAN-81588	Configuration Management Data Interface Transaction Data Information Packets (DIPs) – Army Materiel Command (AMC)	A.4.3

6.3 Tailoring guidance for contractual application.

This Standard defines a neutral interface for the exchange of digitized configuration management data for products and documents. DIPs in this Standard define the required data transaction formats. Selection and use of the appropriate DIPs is determined by the tasking activity. On-line delivery or on-line access to the data is preferred. Selection guidance and tailoring information for the DIPs, CDRL and SOW are provided in Appendix A.

6.4 Subject term (key word) listing.

- Application activity
- Approved document (or data)
- Configuration audit
- Configuration baseline
- Configuration control
- Configuration control board
- Configuration documentation
- Configuration identification
- Configuration item
- Configuration status accounting
- Current document change authority
- Data Information Packet
- Deviation
- Document custodian activity
- Document representation
- Engineering change proposal
- Interface control
- Lot number
- Notice of revision
- Product-tracking base-identifier
- Released document (data)
- Serial number
- Submitted document data
- Technical data package
- Working document (data)

6.5 Useful references.

Copies of Government specifications, standards and handbooks are available from the DoD Single Supply Point: Bldg. 4/Section D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, by FAX to 215-697-1462, or from the Internet at DoD's Acquisition Streamlining and Standardization Information System (ASSIST) web page at Uniform Resource Locator (URL):<http://assist.daps.mil/>. Table 1 contains additional useful references and source documents for requirements implemented herein and for domain values for various DEDs.

6.5.1 ANSI/EIA Standard -649-1998, National Consensus Standard for Configuration Management. This standard explains the major configuration management functions rather than mandates them. The explanation includes purpose, benefits, and best practices. Within each topic, the basic principles of configuration management are addressed. The principles are selectively applicable to a broad range of customers, products and industries. This standard has been DoD adopted and copies are available to Government personnel through the DoD Single Supply Point. The standard is available to industry from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112-5704, or call USA and Canada 1-800-854-7179, International (303) 397-7956.

6.5.2 Military Handbook (MIL-HDBK)-61, Configuration Management Guidance. This handbook provides guidance to military acquisition Program Managers and all Integrated Product Team (IPT) members on how to ensure the selective application of product and data configuration management to defense materiel items. The document can be downloaded from the Internet at URL http://www.acq.osd.mil/io/se/cm&dm/cmdm_info/mil_61.html.

6.5.3 The Software Engineering Institute's A Systems Engineering Capability Maturity Model. This model describes the role configuration management plays in the systems engineering process, and provides a reference for comparing actual practices against essential elements. The document is available from the National Technical Information Service (NTIS), U.S. Department of Commerce, Springfield, VA 22161, Phone (703) 487-4600; or from the Defense Technical Information Center (DTIC), Attn: DTIC-OCF, 8725 John J. Kingman Road, Suite 0944, Ft. Belvoir, VA 22060-6218.

6.5.4 International Standardization Organization (ISO) 10303-203, Configuration Controlled 3D Design for Mechanical Parts and Assemblies. This document is a published international standard addressing a part of the configuration management business area. In process ISO documents can be accessed on the Internet at URL: <http://www.nist.gov/sc4/>. Published ISO documents can be ordered from the USA ISO member American National Standards Institute (ANSI). ANSI may be contacted through the following:

Address:
 American National Standards Institute
 11 West 42nd Street, 13th floor
 New York, N.Y. 10036
 Email: info@ansi.org
 Internet: <http://www.ansi.org/>

6.5.5 MIL-HDBK-502, Acquisition Logistics. This handbook defines the Configuration Management and Data Management Activities in their relationship to the System Analysis and Control (Balance) Activity of the Systems Engineering Process Flow.

6.5.6 References used in the development of this standard.

Document Identifier	Title
AFI 16-401	Designating and Naming Defense Military Aerospace Vehicles
AFMCP 66-16	
ANSI Y 14.1M	Drawing Sheet Size and Format, Metric
ANSI Y14.1	Drawing Sheet Size and Format
ANSI Y14.24M	Types and Applications of Engineering Drawings
ANSI Y14.34M	Parts Lists, Data Lists, and Index Lists
ANSI Y32.16-75	See IEEE200-75

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Document Identifier	Title
ANSI/EIA-649	National Consensus Standard for Configuration Management
ANSI/IEEE STD 260	Standard Letter Symbols for Units of Measurement (SI Units, Customary Inch-Pound Units, and Certain Other Units)
ANSI/IEEE Std 610.12	IEEE Standard Glossary of Software Engineering Terminology
AR 70-50	Designating and Naming Defense Equipment, Military Aerospace Vehicles
AR 750-1	Army Materiel Maintenance Policy and Retail Maintenance Operations
Cataloging Handbook H2-1	Federal Supply Classification, Part 1, Groups and Classes
Cataloging Handbook H4/H8	Commercial and Government Entity (CAGE) Cataloging Handbook
Cataloging Handbook H6	Federal Item Name Directory for Supply Cataloging
DA PAM 738-750	Functional Users Manual for The Army Maintenance Management System (TAMMS)
DA PAM 738-751	Functional Users Manual for The Army Maintenance Management System Aviation
DFARS	Defense Department Supplement to the Federal Acquisition Regulation
DoD 4100.38-M	DoD Provisioning and Other Preprocurement Screening Manual
DoD 4100.39-M	Federal Logistics Information System (FLIS) Procedures Manual
DoD 4120.3-M	Defense Standardization Manual
DoD 5000.2-R	Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs
DoD 5010.12-L	Acquisition Management and Data Requirements Control List (AMSDL)
DoD 5010.12-M	DoD Technical Data Management Program
DoD 5105.38-M	Military Assistance Sales Manual
DoD 5220.22-M	DoD Industrial Security Manual for Safeguarding Classified Information
DoD 8320.1-M-1	DoD Data Element Standardization Procedures
DoDD 5200.1-R	Information Security Program Regulation
DoDD 5230.24	Distribution Statements on Technical Documents
DoDD 5230.25	Withholding of Unclassified Technical Data from Public Disclosure
DoDD 5230.9	Clearance of DoD Information for Public Release
DOD-HDBK-263	Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) (Metric)
DOD-STD-1700 (Cancelled)	Data Management Program
DOD-STD-2140 (Cancelled)	Machinery Alteration (MACHALT) Instructions
DOD-STD-2167 (Cancelled)	Defense System Software Development (Superseded by MIL-STD-498)
IEEE/EIA 12207	Software Life Cycle Processes
IEEE200-75	Reference Designations for Electrical and Electronic Parts and Equipment
ISO 10303-203	Configuration Controlled 3D Design for Mechanical Parts and Assemblies
ISO 10303-232	Technical Data Packaging Core Information and Exchange
ISO 10303-41	Integrated Generic Resources: Fundamentals of Product Description and Support
ISO 13584-26	Industrial Automation Systems and Integration – Logical Resource: Supplier Identification
ISO 8601	Data Elements and Interchange Formats – Information Interchange – Representation of Dates and Times
ISO 9000-3	Guidelines for the Application of ISO 9001 to the Development, Supply and Maintenance of Software Quality Management and Quality Assurance Standards – Part 3
ISO/IEC 6523	Information Technology - Structure for the Identification of Organizations and Organization Parts
MIL-D-81992	Preparation of Technical Directives
MIL-DTL-31000	Technical Data Packages
MIL-DTL-81748	Manuals, Technical: Rapid Action Changes, General Specification for Preparation of
MIL-HDBK-1812	Assignment and Method for Obtaining Type Designation

AMC-STD-2549A

Document Identifier	Title
MIL-HDBK-2164	Environmental Stress Screening Process for Electronic Equipment
MIL-HDBK-502	Acquisition Logistics
MIL-HDBK-59, (Cancelled)	Continuous Acquisition and Life-Cycle Support (CALs) Program Implementation Guide
MIL-HDBK-61	Configuration Management Guidance
MIL-I-8500 (Cancelled)	Interchangeability and Replaceability of Component Parts for Aerospace Vehicles
MIL-M-81748	Technical Manuals: General Specification for Preparation of Rapid Action Changes
MIL-PRF-28001	Markup Requirements and Generic Style Specification for Exchange of Text and Its Presentation
MIL-PRF-38804	Time Compliance Technical Orders Preparation
MIL-PRF-49506	Logistics Management Information
MIL-STD-100	Engineering Drawings
MIL-STD-1388-2B (Cancelled)	DoD Requirements for a Logistic Support Analysis Record
MIL-STD-1464(AR)	Army Nomenclature System
MIL-STD-1661(OS)	MARK and MOD Nomenclature System
MIL-STD-1662	Preparation of Ordnance Alteration (ORDALT) Instructions
MIL-STD-1686	Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)
MIL-STD-196	Joint Electronics Type Designation System
MIL-STD-2039	Preparation of Field Changes and Field Change Kits
MIL-STD-38784	Standard Practice for Manuals, Technical: General Style and Format Requirements
MIL-STD-490 (Cancelled)	Specification Practices (Superseded by MIL-STD-961)
MIL-STD-498 (Cancelled)	Software Development and Documentation (Superseded by IEEE/EIA 12207)
MIL-STD-787 (Cancelled)	Joint Optical Range Instrumentation Type Designation System
MIL-STD-882	System Safety
MIL-STD-961	Standard Practice for Defense Specifications
MIL-STD-962	Standard Practice: Defense Standards and Handbooks
MIL-STD-963	Data Item Descriptions (DIDs)
MIL-STD-974	Contractor Integrated Technical Information Services (CITIS)
NAVAIR 00-25-300	Naval Aviation Technical Directive (TD) Process Instruction
NAVAIR 00-25-700	
NAVAIRINST 5215.10D	Processing of Rapid Action Minor Engineering Changes
NAVMATINST 8800.4	Military Aerospace Equipment
OPNAVINST 4720.2G	Fleet Modernization Program (FMP) Policy
Public Law 102-484	National Defense Authorization Act for Fiscal Year 1993
Public Law 98-94	Department of Defense Authorization Act, 1984
SD-1	Standardization Directory
SECMM	Systems Engineering Capability Maturity Model
STANAG 4159	NATO Materiel Configuration Management Policy and Procedures for Multinational Joint Programs
TO 00-20-2	Maintenance Data Collection
TO 00-5-16	Software Manager's Manual: USAF Automated Computer Program Identification Numbering System (ACPINS)
TO 00-5-17	Users Manual: USAF Computer Program Identification Numbering System (CPINS)
U.S. GPO Style Manual	United States Government Printing Office Style Manual