



BSI Standards Publication

## Systems and software engineering — Content of life-cycle information items (documentation)

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## National foreword

This British Standard is the UK implementation of ISO/IEC/IEEE 15289:2017. It supersedes BS ISO/IEC/IEEE 15289:2011, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee IST/15, Software and systems engineering.

A list of organizations represented on this committee can be obtained on request to its secretary.

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## Systems and software engineering — Content of life-cycle information items (documentation)

*Ingénierie des systèmes et du logiciel — Contenu des articles  
d'information du cycle de vie (documentation)*



Reference number  
ISO/IEC/IEEE 15289:2017(E)

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## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Systems and software engineering*, in cooperation with the Software & Systems Engineering Standards Committee of the IEEE Computer Society, under the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

This third edition cancels and replaces the second edition (ISO/IEC/IEEE 15289:2015), of which it constitutes a minor revision. This third edition reflects ISO/IEC/IEEE 15288:2015, *Systems and software engineering—System life cycle processes*, which replaced ISO/IEC 15288:2008 (IEEE Std 15288:2008).

## Introduction

The purpose of this document is to provide requirements for identifying and planning the specific information items (information products) to be developed and revised during systems and software life cycles and service processes. This document specifies the purpose and content of all identified systems and software life-cycle information items, as well as information items for information technology service management. The information item contents are defined according to generic document types and the specific purpose of the document. Information items are combined or subdivided as needed for project or organizational purposes.

This document is based on the life-cycle processes specified in ISO/IEC 12207:2008 (IEEE Std 12207-2008), *Systems and software engineering — Software life cycle processes*; ISO/IEC/IEEE 15288:2015, *Systems and software engineering — System life cycle processes*; and the service management processes specified in ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013), *Information technology — Service management — Part 1: Service Management System Requirements*; and ISO/IEC 20000-2:2012 (IEEE Std 20000-2:2013), *Information technology — Service management — Part 2: Guidance on the application of service management systems*.

ISO/IEC 12207:2008 (IEEE Std 12207-2008) and ISO/IEC/IEEE 15288:2015 define a set of processes for managing and performing the stages of a system life cycle. They define an Information Management process, but they do “not detail information items in terms of name, format, explicit content, and recording media”. ISO/IEC/IEEE 15288:2015, and ISO/IEC 12207:2008 (IEEE Std 12207-2008) establish a common framework for systems and software life-cycle processes and identify or require a number of documentation items. Their process reference model does not represent a particular process implementation approach, nor does it prescribe a system/software life-cycle model, methodology, or technique. ISO/IEC 12207:2008 (IEEE Std 12207-2008) does not always specify when software information items are to be prepared, nor does it identify information item contents. ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013) establishes comprehensive requirements for documents and records, with some specific requirements. ISO/IEC 20000-2:2012 (IEEE Std 20000-2:2013), *Information technology — Service management — Part 2: Guidance on the application of service management systems* provides guidance on the use of Part 1.

IEEE contributed IEEE 12207.1-1997, *Industry Implementation of International Standard ISO/IEC 12207:1995. (ISO/IEC 12207) Standard for Information Technology — Software life cycle processes — Life cycle data*, as a source for the first edition of this document.



# Systems and software engineering — Content of life-cycle information items (documentation)

## 1 Scope

This document specifies the purpose and content of all identified systems and software life-cycle and service management information items (documentation). The information item contents are defined according to generic document types, as presented in Clause 7, and the specific purpose of the document (Clause 10).

This document assumes an organization is performing life-cycle processes, or practicing service management, using one or more of the following:

- ISO/IEC 12207:2008 (IEEE Std 12207-2008), Systems and software engineering — Software life cycle processes;
- ISO/IEC/IEEE 15288:2015, Systems and software engineering — System life cycle processes;
- ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013), Information technology — Service management — Part 1: Service management system requirements; and
- ISO/IEC 20000-2 (IEEE Std 20000-2:2013), *Information technology — Service management — Part 2: Guidance on the application of service management systems*.

This document provides a mapping of processes from the above standards to a set of information items. It provides a consistent approach to meeting the information and documentation requirements of systems and software engineering and IT service management.

This document does not establish a service management system.

ISO/IEC 12207:2008 (IEEE Std 12207-2008) and ISO/IEC/IEEE 15288:2015 define a set of processes for managing and performing the stages of a software or system life cycle. They define an Information Management process, but do not “detail information items in terms of name, format, explicit content, and recording media”.

ISO/IEC/IEEE 15288:2015 and ISO/IEC 12207:2008 (IEEE Std 12207-2008) establish a common framework for system and software life-cycle processes. They identify or require a number of documentation items. Their process reference model does not represent a particular process implementation approach, nor prescribe a system/software life-cycle model, methodology or technique.

ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013) establishes comprehensive requirements for documents and records, with some specific requirements.

ISO/IEC 20000-2:2012 (IEEE Std 20000-2:2013), provides guidance on the use of ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013).

The generic document types defined in this document are used to identify the information necessary to support the following:

- the ISO/IEC/IEEE 15288:2015 agreement;
- organizational project-enabling;
- technical management and processes;
- the ISO/IEC 12207:2008 (IEEE Std 12207-2008) primary, supporting, and organizational life-cycle processes; and

— the ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013) service management system (SMS), service delivery, relationship, resolution, and control processes.

The generic document types (which can be referred to as information item types) are used to identify the information necessary to support the ISO/IEC/IEEE 15288:2015 agreement, organizational project-enabling, technical management, and technical processes; the ISO/IEC 12207:2008 (IEEE Std 12207-2008) primary, supporting, and organizational life-cycle processes; or the ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013) service management system (SMS), service delivery, relationship, resolution, and control processes.

For each life-cycle process or service, it would be possible to prepare a policy, plan, procedures, and reports, as well as numerous records, requests, descriptions and specifications. Such an elaboration of the documentation schema would be more rigorous than specified by ISO/IEC/IEEE 15288:2015 or ISO/IEC 12207:2008 (IEEE Std 12207-2008). As ISO/IEC/IEEE 15288:2015 points out (1.4), “The users of this document are responsible for selecting a life cycle model for the project and mapping the processes, activities, and tasks in this document into that model. The parties are also responsible for selecting and applying appropriate methodologies, methods, models and techniques suitable for the project.” Thus, information items are combined or subdivided consistent with the life cycle model, as needed for project or organizational purposes, as further defined in Clause 4, Applicability, and Clause 5, Conformance.

The scope of this document does not include the following:

- a) the format or content of recommended input data or input information items, except for the content of those input items that are also output information items;
- b) instructions on combining or subdividing information items and information item contents of a similar nature;
- c) guidance on selecting an appropriate presentation format, delivery media, and maintenance technology for systems or software life-cycle data, records, information items, or documentation, such as electronic publishing systems, content management systems, or data repositories;

NOTE 1 ISO/IEC 12207:2008 (IEEE Std 12207-2008) does not always specify when software information items are to be prepared, nor does it identify information item contents.

NOTE 2 ISO/IEC/IEEE 26531, System and software engineering – Content management for product life-cycle, user, and service management documentation, provides requirements for content management and component content management systems.

- d) detailed content for information items related to general business, contractual, organizational, and financial management that is not specific to systems and software engineering and information technology service management, such as business strategies, contract change notices, human resources and investment policies, personnel selection criteria, financial budgeting and accounting policies and procedures, cost reports, or payroll data;
- e) information items showing only approval of an ISO/IEC 12207:2008 (IEEE Std 12207-2008) subclause, such as ISO/IEC 12207:2008 (IEEE Std 12207-2008), 6.1.2.3.4.5;
- f) any ISO/IEC/IEEE 15288:2015 or ISO/IEC 12207:2008 (IEEE Std 12207-2008) subclause not explicitly or implicitly identifying the recording of information about a process, activity or task, for example, ISO/IEC 12207:2008 (IEEE Std 12207-2008), 6.4.4;
- g) work products, models, software, and other artifacts of life-cycle products and services that are not information items or records used in information items.

NOTE 3 ISO/IEC 26514:2008, Systems and software engineering — Requirements for designers and developers of user documentation, provides guidance on formats for user documentation.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- ISO/IEC 12207:2008 (IEEE Std 12207-2008), *Systems and software engineering — Software life cycle processes*
- ISO/IEC/IEEE 15288:2015, *Systems and software engineering — System life cycle processes*
- ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013), *Information technology — Service management — Part 1: Service management system requirements*

## 3 Terms, definitions, and abbreviated terms

For the purposes of this document, the terms and definitions given in ISO/IEC/IEEE 24765 (available at [www.computer.org/sevocab](http://www.computer.org/sevocab)) apply.

ISO, IEC, and IEEE maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/>
- IEEE Standards Dictionary Online: available at <http://ieeexplore.ieee.org/xpls/dictionary.jsp>

NOTE ISO/IEC 20000-1:2011 contains different definitions for the terms document, procedure, record and service request. Those definitions are applicable when conforming to that document.

### 3.1 Terms and definitions

#### 3.1.1

##### **approval**

notification by an authorized representative that a deliverable item appears to satisfy requirements and is complete

Note 1 to entry: Such approval does not shift responsibility from the supplier to meet requirements under a two-party situation.

#### 3.1.2

##### **complaint**

record of perceived non-compliance with a service level agreement or customer dissatisfaction with service

#### 3.1.3

##### **complete [documentation]**

including all critical information and any necessary, relevant information for the intended audience

#### 3.1.4

##### **consistent**

without internal conflicts

#### 3.1.5

##### **Commercial-Off-The-Shelf**

##### **COTS**

product available for purchase and use without the need to conduct development activities

#### 3.1.6

##### **criteria**

rules on which a judgment or decision can be based, or by which a product, service, result, or process can be evaluated

### 3.1.7

#### **critical information**

information describing the safe use of the software, the security of the information created with the software, or the protection of the sensitive personal information created by or stored with the software

[SOURCE: ISO/IEC 26514:2008]

### 3.1.8

#### **database**

collection of data organized according to a conceptual structure describing the characteristics of the data and the relationships among their corresponding entities, supporting one or more application areas

### 3.1.9

#### **description**

information item that represents a planned or actual concept, function, design, or object

### 3.1.10

#### **document**

uniquely identified unit of information for human use

EXAMPLE A report, specification, manual or book, in printed or electronic form.

Note 1 to entry: A document can be a single information item, or part of a larger information item.

### 3.1.11

#### **documentation plan**

plan identifying the documents to be produced during the system or software life cycle

### 3.1.12

#### **include [information]**

having either the information or a reference to the information present in the document

### 3.1.13

#### **information item**

separately identifiable body of information that is produced, stored, and delivered for human use

Note 1 to entry: "Information product" is a synonym. A document produced to meet information requirements can be an information item, or part of an information item, or a combination of several information items.

Note 2 to entry: An information item can be produced in several versions during a project or system life cycle.

### 3.1.14

#### **information item content**

information included in an information item, associated with a system, product or service, to satisfy a requirement or need

### 3.1.15

#### **information item type**

group of information items consistent with a pre-arranged set of generic criteria

Note 1 to entry: A "generic document type" is a synonym.

EXAMPLE A "plan" is the information item type for all plans and "report" is the information item type for all reports.

### 3.1.16

#### **modifiable**

structured and has a style such that changes can be made completely, consistently, and correctly while retaining the structure

**3.1.17****plan**

information item that presents a systematic course of action for achieving a declared purpose, including when, how, and by whom specific activities are to be performed

**3.1.18****policy**

clear and measurable statement of preferred direction and behavior to condition the decisions made within an organization

[SOURCE: ISO/IEC 38500:2008]

**3.1.19****presentable**

retrievable and viewable

**3.1.20****procedure**

information item that presents an ordered series of steps to perform a process, activity, or task

Note 1 to entry: A procedure defines an established and approved way or mode of conducting business in an organization. It details permissible or recommended methods in order to achieve technical or managerial goals or outcomes.

Note 2 to entry: According to ISO 9000:2015, procedures can be documented or not.

**3.1.21****process**

set of interrelated or interacting activities which transforms inputs into outputs

**3.1.22****record**

set of related data items treated as a unit

**3.1.23****report**

information item that describes the results of activities such as investigations, observations, assessments, or tests

**3.1.24****request**

information item that initiates a defined course of action or change to fulfill a need

**3.1.25****service request**

request for information, or for a routine change or procedure with previously evaluated risk

EXAMPLE A request to provide access to a controlled application, a request to move hardware.

**3.1.26****software item**

identifiable part of a software product

EXAMPLE Identification and descriptions of the software product, source code, software life-cycle data, archive and release data, and instructions for building the executable object code.

**3.1.27****specification**

information item that identifies, in a complete, precise, and verifiable manner, the requirements, design, behavior, or other expected characteristics of a system, service, or process

**3.1.28**

**traceable**

having components whose origin can be determined

**3.1.29**

**unambiguous**

described in terms that allow only a single interpretation, aided, if necessary, by a definition

**3.1.30**

**verifiable**

can be checked for correctness by a person or tool

**3.2 Abbreviated terms**

CFP Call for Proposals

CM Configuration management

COTS Commercial-Off-The-Shelf

ITT Invitation to Tender

RFP Request for Proposal

SLA Service level agreement

SMS Service management system

**4 Applicability**

**4.1 Purpose**

The purpose of this document is to provide requirements for users of ISO/IEC 12207:2008 (IEEE Std 12207-2008), ISO/IEC/IEEE 15288:2015, and ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013) for identifying and planning the specific information items (information products) to be developed and revised during systems and software life cycles and service management processes. This document is intended for use as follows:

- a) To address the technical information needed by those involved in ISO/IEC/IEEE 15288:2015 and ISO/IEC 12207:2008 (IEEE Std 12207-2008) processes;
- b) To specify information in an agreement process as described in ISO/IEC/IEEE 15288:2015 or a two-party situation as described in ISO/IEC 12207:2008 (IEEE Std 12207-2008), ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013) and ISO/IEC 20000-2:2012 (IEEE Std 20000-2:2013). The two-party situation may range from an informal agreement within an organization to a legally binding contract between organizations;
- c) To develop information items that provide evidence for process assessment performed with respect to ISO/IEC 33001, and to guide process improvement activities; and
- d) To guide a single party in self-imposed tasks.

**4.2 Intended users of this document**

This document is applicable for use by the following:

- a) project managers responsible for the Information Management process of ISO/IEC/IEEE 15288:2015 (6.3.6) during a system life cycle;

- b) project managers responsible for identifying information item requirements and document contents when using ISO/IEC 12207:2008 (IEEE Std 12207-2008), or any other software engineering life-cycle process, to help determine what should be documented, when the documentation should be developed, and what the contents of the documents should be;
- c) acquirers responsible for determining what information items are needed to help ensure the quality of the project, or delivered system, product or service;
- d) individuals who write or support the design and development of service, systems and software information items;
- e) individuals responsible for identifying information items required to claim conformance with ISO/IEC 12207:2008 (IEEE Std 12207-2008), ISO/IEC/IEEE 15288:2015, or ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013); and
- f) individuals undertaking service, systems or software process improvement in their organizations.

### 4.3 Applicability to work efforts

Use of this document is not limited by size, complexity or criticality of the project. It may be applied to the following:

- a) any type of project and life-cycle process;
- b) any of the activities and tasks of a project and system or software product or service life cycle;
- c) all forms of information items, information item content and document delivery media; and
- d) documentation in Commercial-Off-The-Shelf (COTS) products when the COTS product is specified as a deliverable under a two-party situation.

NOTE See ISO/IEC 12207:2008 (IEEE Std 12207-2008), 1.2.

### 4.4 Applicability to information item audiences

Users of this document should determine the relationship of the requirements in this document to the requirements and needs of their audience (customers or users of information), or project and organizational procedures. The type of decision to be made, or the work to be performed, by users of the information should be considered before an information item is prepared. Reviewing and understanding the requirements, needs, and background of users and stakeholders are essential to applying this document accurately and economically, since some information items are designed for various purposes and user groups:

- a) To provide information to specialized types of users who may not be a part of a particular project;
- b) To address the same type of user but in environments not normally coexisting in the same effort; and
- c) To aid both users who are expected to understand technical concepts and terminology, and users who may not have this background.

## 5 Conformance

### 5.1 Definition of conformance

This document may be used as a conformance or a guidance document for projects and organizations claiming conformance to ISO/IEC/IEEE 15288:2015, ISO/IEC 12207:2008 (IEEE Std 12207-2008), or ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013).

NOTE 1 Service providers can refer to ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013) and ISO/IEC TR 20000-3:2012 regarding claims of conformance for a defined certification scope, for example, organizational units, services, location.

NOTE 2 ISO/IEC 20000-1:2011 is a management system standard stating requirements for service providers. Some requirements of this document are not requirements of ISO/IEC 20000-1. Some requirements of ISO/IEC 20000-1 are not requirements of this document.

If the selected systems or software life-cycle processes have been tailored in conformance with ISO/IEC 15288 or ISO/IEC 12207, to claim conformance to this document, the user of this document shall prepare the information items identified in this document applicable to the selected and tailored ISO/IEC/IEEE 15288:2015 or ISO/IEC 12207:2008 (IEEE Std 12207-2008), processes.

The generic and specific record and information item titles and contents in Clauses 7, 9, and 10 of this document may be tailored to satisfy requirements of an organization, its projects, or agreements based on the tailored conformance to ISO/IEC/IEEE 15288:2015 or ISO/IEC 12207:2008 (IEEE Std 12207-2008). In tailoring, information items provided in this document may be modified (added to, combined or retitled). The contents of the information items shall correspond to the selected and tailored processes.

NOTE 3 Annex A of ISO/IEC/IEEE 15288:2015 and ISO/IEC 12207:2008 (IEEE Std 12207-2008) provide requirements for the Tailoring process.

In this document, for simplicity of reference, each information item is described as if it were published as a separate document. However, information items shall be considered as conforming if they are unpublished but available in a repository for reference, divided into separate documents or volumes, or combined with other information items into one document. Use of the nomenclature of the specific records in Clause 9 or the information item titles in Clause 10 is not required to claim conformance with this document.

Throughout this document, “shall” is used to express a provision that is normative, “should” to express a recommendation among other possibilities, and “may” to indicate a course of action permissible within the limits of this document.

The verb “include” used in this document indicates that either (1) the information is present or (2) a reference to the information is given.

## 5.2 Conformance situations

Conformance may be claimed for organizations, projects, multi-supplier projects, services, and information items, as identified in the claim of conformance:

- a) When conformance is claimed for an organization or a service provider, the organization or service provider shall produce a document declaring its tailoring of the records and information items, and its interpretation of any clauses of this document that reference “the contract.”
- b) When conformance is claimed for a project (or program), the project plans or the contract shall document the tailoring of the records and information items, and the interpretation of any clauses of this document that reference “the contract.”
- c) When conformance is claimed for multi-supplier projects, it may be the case that no individual project can claim conformance because no single contract calls for all the required records and information items. Nevertheless, the projects, as a whole, may claim conformance if each of the required records and information items is produced by an identified party. The program plans shall document the tailoring of the records and information items, and their assignment to the various parties, as well as the interpretation of any clauses of this document that reference “the contract.”
- d) When conformance is claimed for an information item, the item shall contain the generic contents required in Clause 7 of this document and the specific content required in Clause 10.

NOTE 1 One possible way for an organization to deal with clauses that cite “the contract” is to specify that they will be interpreted in the project plans for any particular project. A project’s claim of conformance is typically specified with respect to the organization’s claim of conformance.

NOTE 2 In accordance with ISO/IEC 17000:2004, *Conformity assessment — Vocabulary and general principles*, an organization or a project or a multi-supplier program can be said to comply with this document when its products (the information items) fulfill the requirements, but the organization, project or program has not met the specific requirements for conformance stated in items (a), (b) or (c) above.

### 5.3 Type of conformance

One of the following types of conformance shall be asserted. The selected type shall be identified in the claim of conformance:

- a) Tailored: The minimum set of required information items is determined by tailoring of processes and activities in accordance with Annex A of ISO/IEC 12207:2008 (IEEE Std 12207-2008) or Annex A of ISO/IEC/IEEE 15288:2015.
- b) Absolute: The minimum set of required information items is all of those specified as normative (that is, clauses containing “shall”) in the text of the normative reference standards.

Absolute conformance may be claimed for selected processes or information items even if absolute conformance with all requirements of this document is not claimed.

## 6 Life-cycle data and information items

### 6.1 Life-cycle data characteristics

This document specifies how life-cycle data is managed in information items. The required data from the life-cycle or service process shall be organized into records and presented in one or more information items, and shall be consistent with an information item generic type. An information item shall include its generic information item contents (Clause 7).

Each set of records and each information item produced as a document described in this document shall support the following life-cycle data characteristics:

- a) unambiguous;
- b) complete;
- c) verifiable;
- d) consistent;
- e) modifiable;
- f) traceable; and
- g) presentable.

### 6.2 Records compared to information items (documents)

A record is a special type of documented information containing a set of structured data treated as a unit. Table 4 in Clause 9 identifies records. Consistent with ISO 9000:2015, the purpose of a record is to state results achieved or to provide evidence of activities performed. In fact, ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013) considers any document or information item to be a record. However, this document distinguishes between records of data and documents (information items).

Data records gain their value from being combined with other records in a set, typically by inclusion in structured databases, registers, or repositories where the individual records are available for retrieval and analysis. Records hold the factual data (evidence) for the other generic information types. Data can be aggregated into records, and these records may be included in a report which is already defined as a particular information item (e.g. test report), or they may exist separately for other uses defined by the project. A single record, a selection of records, or a complete listing of the repository's contents is not suitable for issuance as a complete communication product as are the information items (documents) such as a plan or procedure. The information items (documents) are produced and communicated for human use and contain formal elements (such as purpose, scope, and summary), intended to make them usable by their intended audience.

### 6.3 Management of life-cycle data (records)

Life-cycle data results from the execution of the process or service management system activities and tasks. Data can be a work product or an element in other information items. Many of the clauses in ISO/IEC/IEEE 15288:2015 and ISO/IEC 12207:2008 (IEEE Std 12207-2008) require life-cycle data to be produced or recorded. However, the clauses of ISO/IEC/IEEE 15288:2015 and ISO/IEC 12207:2008 (IEEE Std 12207-2008) do not dictate the content, location, format, or media to be used to record and maintain the data. When choosing appropriate data to be recorded, record managers should also determine where in the organization or project's record-keeping systems the data should be recorded. Records may be maintained in databases, registers, repositories, archives, or other data management systems. Organizations or projects shall establish record retention policies in consideration of system life-cycle and organizational or service management needs for the data. Clause 9 defines the content of generic records and recommends content for specific records.

**NOTE** Requirements and guidance for records management are found in ISO/IEC 16175:2010, *Information and documentation — Principles and functional requirements for records in electronic office environments — Part 1: Overview and statement of principles*.

### 6.4 Management of information items (documents)

The management of information items shall be performed by applying the Information Management process of ISO/IEC 12207:2008 (IEEE Std 12207-2008) and ISO/IEC/IEEE 15288:2015, the Documentation Management and Software Documentation Management processes of ISO/IEC 12207:2008 (IEEE Std 12207-2008), including the knowledge management activities of ISO/IEC/IEEE 15288:2015 clause 6.2.4, or the documentation management activities of ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013). The Information Management process should support the needs of a project and the related product or service. It should include procedures for preparing, collecting, identifying, classifying, distributing, storing, updating, archiving, and retrieving information.

Annex A of this document provides a summary procedure for identifying and planning for information items and their contents. Information items should be defined to be applicable to multiple related processes used by a project or organization, or to related services (such as incident and problem management). Information items may be combined or subdivided consistent with the project, service, or system processes, phases, and stakeholder needs.

The information management process shall produce these outcomes:

- a) Information to be managed is identified.
- b) Information representations are defined.
- c) Information is obtained, developed, transformed, stored, validated, presented, and disposed of.
- d) The status of information is identified.
- e) Information is available to designated stakeholders.

#### 6.4.1 Developing the documentation plan

The tasks to be performed in the Information Management process shall be identified in a Documentation Plan. When developing the Documentation Plan, consideration should be given to policies and procedures of the acquirer and supplier. The Information Management process for each project should be considered as part of a

repeatable process for the acquirer and supplier. A Documentation Plan may be created for an entire organization or for multiple projects and services that reuse document content.

#### 6.4.2 Managing and controlling information items

Projects, organizations, and services may include their record descriptions and tailored information item descriptions in a data dictionary or work breakdown structure. This practice helps the document management, development, and maintenance activities. An established hierarchy of information items should be prescribed and a mechanism developed for resolving conflicts between items. For example, there should be one master schedule for the entire suite of plans relating to a single project, and schedule information given in specific plans should relate to this master schedule.

Commercial or other existing information items may be substituted for all or part of an information item if they contain the desired information, meet applicable quality characteristics, and are properly referenced. When existing information items are readily available to users, organizations should consider providing a reference to these information items rather than reproducing the information.

## 7 Generic types of information items

### 7.1 General

The use of generic types simplifies the application of consistent structure, content, and formats for similar information items (records and documents), to support usability. This document defines the life-cycle data of ISO/IEC 12207:2008 (IEEE Std 12207-2008), ISO/IEC/IEEE 15288:2015, and ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013) and ISO/IEC 20000-2:2012 (IEEE Std 20000-2:2013) by relating tasks and activities to the following generic types of information items:

- a) description;
- b) plan;
- c) policy;
- d) procedure;
- e) report;
- f) request; and
- g) specification.

NOTE 1 Clause 9 identifies the generic content of data records.

NOTE 2 In ISO/IEC 20000, documents, except for records, state the intent to be achieved.

The generic information item contents shall be included in each applicable information item. Generic information item (document) contents are mapped to the identified output information items shown in column 3 of Tables 1, 2, and 3.

The lists of contents of generic types of information items do not specify a normative sequence, structure of parts, or a list of section titles.

### 7.2 Description – generic content

Purpose: Represent a planned or actual context of use, function, design, service, or item

NOTE A description of something that is required is a specification. The level of detail involved and the presentation for human use or for data storage determine whether information is presented as a description or as a preformatted record.

A description shall include the following elements:

- a) Date of issue and status;
- b) Scope;
- c) Issuing organization;
- d) References;
- e) Context;
- f) Notation for description;
- g) Body;
- h) Summary;
- i) Glossary; and
- j) Change history.

**Identified information items:**

- Concept of operations (operational concept);
- Database design description;
- Interface description;
- Proposal;
- Service catalog;
- Software architecture description;
- Software design description;
- Software unit description;
- System architecture description; and
- System element description.

### **7.3 Plan – generic content**

Purpose: Define when, how, and by whom specific processes or activities are to be performed.

A plan shall include the following elements:

- a) Date of issue and status;
- b) Scope;
- c) Issuing organization;
- d) References (applicable policies, laws, standards, contracts, requirements, and other plans and procedures);
- e) Approval authority;
- f) Introduction, containing the purpose, audience, and scope of the plan;

- g) Planned activities and tasks;
- h) Identification of tools, methods, and techniques;
- i) Schedules;
- j) Budgets and cost estimates;
- k) Resources and their allocation, including human resources, technical resources (infrastructure), and tools;
- l) Responsibilities and authority, including the senior responsible owner and immediate process or service owner;
- m) Interfaces among parties involved;
- n) Risks and risk identification, assessment and mitigation activities;
- o) Quality assurance and performance measures;
- p) Environment, infrastructure, security, and safety;
- q) Training;
- r) Approach for technical and management review and reporting;
- s) Other plans (plans or task descriptions that expand on the details of a plan);
- t) Glossary;
- u) Change procedures and history; and
- v) Termination process.

**Identified information items:**

- Acceptance plan;
- Acquisition plan;
- Asset management plan;
- Audit plan;
- Capacity plan;
- Configuration management plan and policy;
- Development plan;
- Disposal plan;
- Documentation plan;
- Domain engineering plan;
- Improvement plan (process improvement plan, service improvement plan);
- Information management plan;

- Information security plan;
- Installation plan;
- Integration plan (implementation plan);
- Maintenance plan;
- Measurement plan;
- Project management plan;
- Quality management plan (quality assurance plan);
- Release plan (deployment plan);
- Reuse plan;
- Risk management policy and plan;
- Service continuity and availability plan;
- Service management plan;
- Service plan (plan for new or changed services);
- Training plan;
- Validation plan; and
- Verification plan.

#### 7.4 Policy – generic content

Purpose: Establish an organization's high-level intention and approach to achieve objectives for, and ensuring effective control of, a service, process, or management system.

A policy shall include the following elements:

- a) Date of issue, effective date, and status;
- b) Scope;
- c) Issuing organization;
- d) Approval authority and identification of those accountable for enforcing the policy;
- e) Authoritative references for compliance or conformance (such as policies, laws and regulations, standards, contracts, requirements, and vision or mission statements);
- f) Body, including objectives;
- g) Glossary; and
- h) Change history.

Policies may be communicated in various media or included in plans, procedures, specifications, or other documents. Policies are implemented through Plans and Procedures. Policies may be defined for any life-cycle process or service process.

**Identified information items:**

- Budgeting and accounting policy (out of scope for this document);
- Configuration management plan and policy (change management policy);
- Improvement plan (and continual improvement policy);
- Information security policy;
- Life-cycle policy and procedure;
- Quality management policy and procedure;
- Release plan (and policy);
- Risk management policy and plan; and
- Service management plan (and policy).

**7.5 Procedure – generic content**

ISO/IEC/IEEE 15288:2015, reference: 5.5.1

ISO/IEC 20000-1:2011 (IEEE Std 20000- 1:2013) reference: 5.3

Purpose: Define in detail when and how to perform certain processes, activities or tasks, including tools needed. A procedure shall include the following elements:

- a) Date of issue and status;
- b) Scope;
- c) Issuing organization;
- d) Approval authority;
- e) Relationship to plans and other procedures;
- f) Authoritative references;
- g) Inputs and outputs;
- h) Ordered description of steps to be taken by each participant;
- i) Error and problem resolution;
- j) Glossary; and
- k) Change history.

**Identified information items:**

- Audit procedure;

- Capacity management procedure;
- Communication procedure;
- Complaint procedure;
- Configuration management procedure (asset management procedure, change management procedure, release and deployment procedure);
- Documentation procedure;
- Implementation procedure;
- Improvement procedure;
- Incident management procedure;
- Information management procedure;
- Information security procedure;
- Life-cycle policy and procedure;
- Maintenance procedure;
- Measurement procedure;
- Operational test procedure
- Problem management procedure;
- Process assessment procedure;
- Qualification test procedure;
- Quality management policy and procedure;
- Software unit test procedure;
- Supplier management procedure;
- Supplier selection procedure;
- Training documentation;
- User documentation;
- Validation procedure; and
- Verification procedure.

## 7.6 Report – generic content

Purpose: Describe the results of activities such as investigations, assessments, and tests. A report communicates decisions.

A report shall include the following elements:

- a) Date of issue and status;

- b) Scope;
- c) Issuing organization;
- d) Contributors;
- e) Summary;
- f) Introduction, including the purpose, audience, and scope of the report;
- g) Context (assumptions);
- h) Body (including methods of obtaining results);
- i) Conclusions and recommendations;
- j) References;
- k) Bibliography;
- l) Glossary; and
- m) Change history.

**Identified information items:**

- Acceptance report;
- Audit acknowledgement report;
- Audit report;
- Configuration status report;
- Evaluation report;
- Incident report;
- Installation report;
- Integration and test report;
- Monitoring and control report;
- Problem report;
- Process improvement report;
- Product need assessment;
- Progress report;

- Qualification test report;
- Review minutes;
- Service report;
- Software unit test report;
- User notification;
- Validation report; and
- Verification report.

### 7.7 Request – generic content

Purpose: Record information needed to solicit a response.

A request shall include the following elements:

- a) Date of initiation;
- b) Scope;
- c) Subject;
- d) Originator of request;
- e) Identification of requested item, service, or response;
- f) Detailed description of requested item, service, or response, including due date;
- g) Justifications.

NOTE The identification of the requested item can be a Specification.

#### Identified information items:

- Change request;
- Customer satisfaction survey;
- Request for proposal (RFP);
- Resource request;
- Risk action request; and
- Service request (record).

### 7.8 Specification – generic content

Purpose: provide requirements for a required service, product, or process.

Specifications should use a well-defined syntax. Specifications should be internally consistent in terminology, definitions, and constraints. Unique specifications should be defined once to prevent inconsistent updates. A specification shall include the following elements:

- a) Date of issue and status;
- b) Scope;
- c) Issuing organization;
- d) References;
- e) Approval authority;
- f) Body;
- g) Assurance requirements;
- h) Conditions, constraints, and characteristics;
- i) Glossary; and
- j) Change history.

**Identified information items:**

- Contract;
- Service level agreement (SLA);
- Software requirements specification;
- System requirements specification (or service requirements); and
- Validation test specification.

## 8 Mapping of information items to the life cycle and service management processes

In Tables 1, 2, and 3, column 3, information items are identified and mapped to the process where they are identified as output in ISO/IEC/IEEE 15288:2015 or ISO/IEC 12207:2008 (IEEE Std 12207- 2008) or ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013) and ISO/IEC 20000-2:2012 (IEEE Std 20000-2:2013). These references may be normative requirements, recommended output, informative material, examples, or notes. This document identifies information items that are not explicitly specified by title in the base standards. In these cases, the base standards explicitly call out information to be documented, described, planned, specified, reported, recorded, requested or specified. Annex B, Table B.1, compares information items by source.

Table 1 maps ISO/IEC/IEEE 15288:2015 clauses (column 2), processes, and output information items.

Table 2 maps ISO/IEC 12207:2008 (IEEE Std 12207-2008) clauses (column 2), processes, and output information items.

Table 3 maps ISO/IEC 20000-1:2011 (IEEE Std 20000-1:2013) and ISO/IEC 20000-2:2012 (IEEE Std 20000-2:2013) clauses (column 2), processes, and output information items.

Tables 1, 2, and 3 also list recommended input information items (source documents and data) in column 1 to help produce the output information items. Tables 1, 2, and 3 do not show all the possible inputs, nor all the required outputs for a process. They show the recommended input information items for each output information item developed or revised during the process. Tables 1, 2, and 3 also show the specific reference citations from the base standards for each specified information item, not all references for a process.

In numerous clauses, the base standards indicate that something (for example, a strategy) is to be “defined.” However, definition does not in itself indicate that a specific information item is produced. Similarly, clauses indicating that ‘communication is maintained’ do not necessarily mean that an information item (a document) is produced.

For nearly every process, ISO/IEC/IEEE 15228:2008 and ISO/IEC 12207:2008 (IEEE Std 12207-2008) specify that organizational policies and procedures are a source for process activities and outputs. In Tables 1, 2, and 3

“organizational policies and procedures” are not listed, but should be considered as input for every information item. In contractual work, the contract/agreement and requirements should also be considered as input for every information item, whether or not the source standard states that the process should be performed “as specified in the contract.”

This document does not specify the format or content of recommended input data or input information items, except for the content of those items that are also output information items.

## **8.1 Mapping of information items to the system life cycle**

As defined in ISO/IEC/IEEE 15288 and shown in Table 1 headings, in addition to the Tailoring process, there are two Agreement processes, six Organizational Project-Enabling processes, eight Technical Management processes, and fourteen Technical processes:

### **Agreement processes**

1. Acquisition
2. Supply

### **Organizational Project-Enabling processes**

1. Life Cycle Model Management
2. Infrastructure Management
3. Portfolio Management
4. Human Resource Management
5. Quality Management
6. Knowledge Management

### **Technical Management processes**

1. Project Planning
2. Project Assessment and Control
3. Decision Management
4. Risk Management
5. Configuration Management
6. Information Management
7. Measurement
8. Quality Assurance

### **Technical processes**

1. Business or Mission Analysis
2. Stakeholder Needs and Requirements Definition
3. System Requirements Definition

4. Architecture Definition
5. Design Definition
6. System Analysis
7. Implementation
8. Integration
9. Verification
10. Transition
11. Validation
12. Operation
13. Maintenance
14. Disposal

**Table 1 — Mapping of ISO/IEC/IEEE 15288:2015, clauses to information items for each system life-cycle process**

| Typical Input information items                                                                                                                                                    | ISO/IEC/IEEE 15288:2015 reference       | Output information item                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------------------------------------------------------|
| <b>ACQUISITION</b>                                                                                                                                                                 |                                         |                                                                          |
| Proposal, other contracts, needs assessment, requirements specification                                                                                                            | 6.1.1.2.c), 6.1.1.3.c), B.1             | Contract (agreement)                                                     |
| Concept of operations, system requirements specification, software requirements specification, acceptance strategy, other requests for proposal                                    | 6.1.1.2.a), 6.1.1.3.a.2), B.1           | Request for proposal (RFP) (Request for supply)                          |
| Request for proposal, Proposal, Contract                                                                                                                                           | 6.1.1.3.b), 6.1.1.3.d), B.1             | Evaluation Report (Supplier selection report, Supply assessment report). |
| Problem report, monitoring and control report, complaint                                                                                                                           | 6.1.1.3.c)2)                            | Change Request                                                           |
| Release report                                                                                                                                                                     | 6.1.1.3.e)1), B.1                       | Acceptance Report (Acceptance Record)                                    |
| <b>SUPPLY</b>                                                                                                                                                                      |                                         |                                                                          |
| Request for proposal, other proposals                                                                                                                                              | 6.1.2.2.b), 6.1.2.3.b), B.1             | Proposal                                                                 |
| Proposal, other contracts and agreements                                                                                                                                           | 6.1.2.2.c), 6.1.2.3.c), B.1             | Contract (agreement)                                                     |
| Problem report, monitoring and control report, complaint                                                                                                                           | 6.1.2.1, 6.1.2.3.c)2), B.1              | Change Request                                                           |
| <b>LIFE CYCLE MODEL MANAGEMENT</b>                                                                                                                                                 |                                         |                                                                          |
| Organizational procedure                                                                                                                                                           | 6.2.1.1, 6.2.1.2a), 6.2.1.3a), B.1      | Life-cycle policy and procedures                                         |
| Assessment report, organizational procedure                                                                                                                                        | 6.2.1.3.c)                              | Improvement plan                                                         |
| Organizational procedure, process assessment procedure, process assessment results, audit report, customer satisfaction report, assessment report, progress report, problem report | 6.2.1.3.c), B.1                         | Process improvement report                                               |
| <b>INFRASTRUCTURE MANAGEMENT</b>                                                                                                                                                   |                                         |                                                                          |
| Organizational procedure, other system requirements specification, project management plan                                                                                         | 6.2.2.2.a), 6.2.2.3.a), 6.2.2.3.b), B.1 | System requirements specification                                        |
| System architecture description                                                                                                                                                    | 6.2.2.2.b)                              | System element description                                               |
| System architecture description, problem report, monitoring and control report                                                                                                     | B.1                                     | Change Request                                                           |