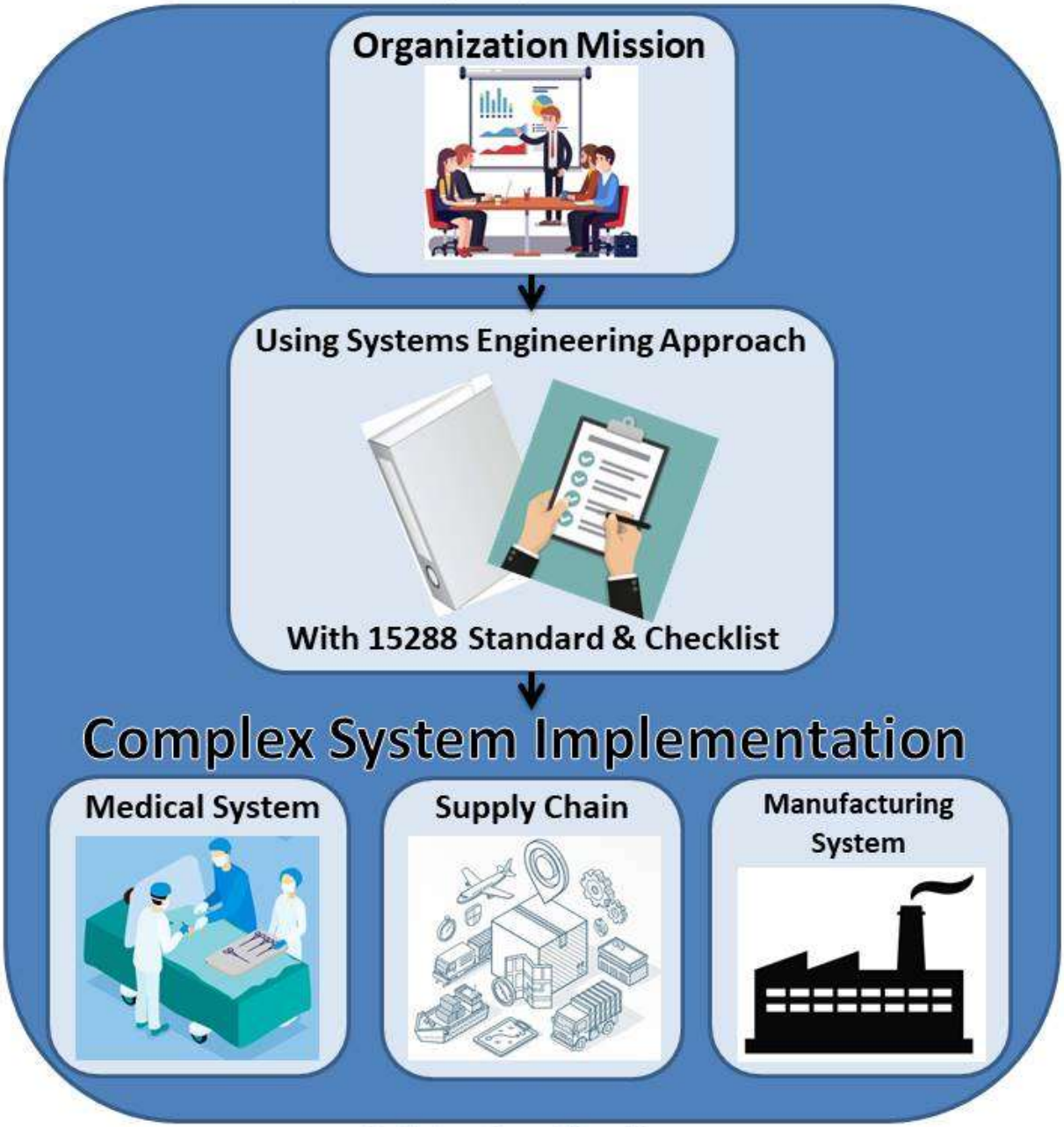
SEPT Evidence Product Checklist
For Standard ISO/IEC/IEEE 15288:2015
System Life Cycle Processes



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Checklist for Standard ISO/IEC/IEEE 15288:2015 – Systems and software engineering – System life cycle processes

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Change Page History

Date	Change	Reason
20-Feb-1997	First Version	Based on the 1995 version of ISO/IEC 15288 (Original Release)
20-Feb-2010	Second Version	Updated to the 2008 version of ISO/IEC 15288
07-APR-2020	Third Version	Updated to the 2015 version of ISO/IEC/IEEE 15288. At this update the IEEE Computer Society joined the editing process and the standard title includes IEEE to denote this. The checklist has been totally rewritten using the revised standard. The number of artifacts has increased by around 30% and most titles have changed to reflect the changes in the 2015 version

Table of Contents

Section 1: Introduction

Components of the Checklist

This checklist is composed of 10 sections:

- Section 1. Introduction.
- Section 2. Composites of all required and suggested "ISO/IEC/IEEE 15288:2015 artifacts.
- Sections 3-8. Individual checklists for each type of artifact (policies &. procedures, plans, records, documents, audits and reviews)
- Section 9. Artifact Specific Reference Look-Up List
- Sections 10. About the authors

The table of contents (TOC) provides a link to each section and within each section every page has a hyperlink back to the TOC is found on each footer.

The Need for a Checklist for Standard ISO/IEC/IEEE 15288

When building a large complex system with many sub-systems such as an airplane, oil tanker, or setting up a new type of medical delivery system, it is a daunting task with high risk. Until 1995 there was no recognized 'Best of Practice" standard that the world could agree on for building a large complex system. Then ISO developed the first standard (Best of practice) for System Engineering of large complex systems, which was ISO/IEC 15288. It initially defined about 600 artifacts to be produced in the development of a large system.

By 2015, the world was able to collect more and more "lessons learned" from many large projects that failed, or had massive cost, or schedule overruns. With this new data 15288 grew in size, to over 1050 artifacts. If an organization does not have a clear picture of what artifact (Documentation) is required in the life cycle of such a system it is easy to miss an important process step. This is why a checklist like the SEPT checklist for 15288 is so important.

The checklist defines by each clauses and subclause what is required in the standard as Procedure, Plan, Record, Document, Audit or Review.

For 20 + years System Engineering Process Technology (SEPT) has produced checklists for standards that address process issues. To reduce the fog surrounding these types of standards SEPT has produced checklists for standards since 1994. This is another checklist related to standards for the industry that will aid an organization's compliance with an international system code of practice.

Note: The official name of the standard is ISO/IEC/IEEE 15288:2015, however, it will be referred to as just 15288 in section 1 to shorten our sentences and save space (applies to ISO/IEC/IEEE 12207:2017 as well).

Overview of the Standard 15288

The complexity of man-made systems has increased to an unprecedented level. This has led to new opportunities, but also to increased challenges for the organizations that create

and utilize systems. These challenges exist throughout the life cycle of a system and at all levels of architectural detail. This International Standard provides a common process framework for describing the life cycle of systems created by humans, adopting a Systems Engineering approach. Systems Engineering is an interdisciplinary approach and means to enable the realization of successful systems. It focuses on defining stakeholder needs and required functionality early in the development cycle, documenting requirements, then proceeding with design synthesis and system validation while considering the complete problem. It integrates all the disciplines and specialty groups into a team effort forming a structured development process that proceeds from concept to production to operation. It considers both the business and the technical needs of all stakeholders with the goal of providing a quality product that meets the needs of users and other applicable stakeholders. This life cycle spans the conception of ideas through to the retirement of a system. It provides the processes for acquiring and supplying systems. It helps to improve communication and cooperation among the parties that create, utilize and manage modern systems in order that they can work in an integrated, coherent fashion. In addition, this framework provides for the assessment and improvement of the life cycle processes.

Changes in this revision of 15288 were developed in conjunction with a corresponding revision of 12207, *Systems and software engineering – Software life cycle processes*. The purpose of these revisions is to accomplish the harmonization of the structures and contents of the two International Standards, while supporting the requirements of the assessment community.

This International Standard was developed with the following goals:

- provide a common terminology between the revision of 15288 and 12207,
- where applicable, provide common process names and process structure between the revision of 15288 and 12207,
- enable the user community to evolve towards fully harmonized standards, while maximizing backward compatibility.

This revision is intended to achieve a fully harmonized view of the system and software life cycle processes.

This version of the standard has seen a 30% increase in the number of artifacts identified by SEPT. This is mainly due to additional procedures introduced in the activities and tasks sections of the standard, during its rewrite. Most titles of artifacts have also changed in the new standard. If a company implements all section of 15288 it could be very difficult without adequate resources and the backing of senior management and may take a considerable time.

Relationship to other key Standards

12207:2017 is a companion document and is harmonized with 15288. The wording in both standards is mostly the same for process titles, purpose and outcomes, although 15288 includes different Annexes, one of which shows the relationship to 15288:2008. There are a number of elaboration standards for single or groups of processes in 15288 such as ISO/IEC/IEEE 16326 Project Management and ISO/IEC/IEEE 16085 – Risk Management.

About the SEPT 15288 checklist

Identifying Physical Evidence (Artifacts)

The first step that an organization has in meeting the requirements of a standard such as Standard 15288 is to determine what is *required* and what is *suggested*. Often these types of technical standards are confusing and laborious because the directions contained in the standards are sometimes unclear to a lay person. The checklists lift this fog around a standard and state what is required and suggested by the standard in a clear and concise manner.

To aid in determining what is "required" by the document in the way of physical evidence (artifact) of compliance, the experts at SEPT have produced this checklist. The SEPT checklists are constructed around a classification scheme of physical evidence comprised of policies, procedures, plans, records, documents, audits, and reviews. There must be an accompanying record of some type when an audit or review has been accomplished. This record would define the findings of the review or audit and any corrective action to be taken. For the sake of brevity this checklist does not call out a separate record for each review or audit. All procedures should be reviewed but the checklist does not call out a review for each procedure, unless the standard calls out the procedure review. In this checklist, "engineering drawings, manuals, reports, scripts and specifications" are included in the document category. In the procedure category, guidelines are included when the subject standard references another standard for physical evidence. The checklist does not call out the requirements of the referenced standard.

The authors have carefully reviewed the Standard 15288 and defined the physical evidence required based upon this classification scheme. SEPT's engineering department has conducted a second review of the complete list and baseline standard to ensure that the documents' producers did not leave out a physical piece of evidence that a "reasonable person" would expect to find. It could certainly be argued that if the document did not call it out then it is not required; however, if the standard was used by an organization to improve its process, then it would make sense to recognize missing documents. Therefore, there are documents specified in this checklist that are implied by the standard, though not specifically called out by it, and they are designated by an asterisk (*) throughout this checklist. If a document is called out more than one time, only the first reference is stipulated.

There are occasional situations in which a procedure or document is not necessarily separate and could be contained within another document. For example, the " Acquisition Advertisement Document Procedure " could be a part of the "Acquisition Procedure." The authors have called out these individual items separately to ensure that the organization does not overlook any facet of physical evidence. If the organization does not require a separate document, and an item can be a subset of another document or record, then this fact should be denoted in the detail section of the checklist for that item. This should be done in the form of a statement reflecting that the information for this

document may be found in section XX of Document XYZ. If the organizational requirements do not call for this physical evidence for a project, this should also be denoted with a statement reflecting that this physical evidence is not required and why. The reasons for the evidence not being required should be clearly presented in this statement. Further details on this step are provided in the Detail Steps section of the introduction. The size of these documents could vary from paragraphs to volumes depending upon the size and complexity of the project or business requirements.

Artifacts Called Out in 15288 but not included in the checklist

In compiling the checklist, the authors decided not to include any item referenced in Notes (most clauses of the standard have 1 or more Notes specifying additional detail and examples which are not normative) to any clause of the Standard for two reasons:

1. There are over 1050 artifacts identified which the authors considered onerous for an organization to digest (without including probably 600 based on suggestions from the Notes).
2. The Notes contain no normative contents.

Some clauses go to a fourth level of list e.g., 6.4.1.3a)1)i), but these fourth level artifacts have not been included in the checklist for two reasons:

1. The large number of artifacts – over 1050 previously mentioned
2. This fourth level only occurs on a limited number of sections, usually a detailed list of a "Strategy" where the Strategy itself contains the listed items.

Artifacts Called Out in Annex B of 15288

In the various clauses of the standard we identified artifacts that where either required or suggested and also appeared in Annex B. To show these we have identified them with a #. In the second review of the base line standard by our engineering department they recommended that we include a number of artifacts from Annex B as suggested items that were not identified in the checklist with a # to give the checklist more continuity to the old base standard (ISO/IEC 15288:2008). And what our customers are using today to be in conformance with 15288. These are included at the end of each section 2-8 as Annex B items.

General Principles of the Checklist for Standard 15288

This checklist was prepared by analyzing each clause of the Standard for the key words that signify a:

- Policy
- Procedure (Including Guidelines)
- Plan
- Records
- Document (Including Engineering Drawings, Manuals, Reports, Scripts and Specifications)
- Audit
- Review

This checklist specifies evidence that is unique. After reviewing the completed document, the second review was conducted from a common sense "reasonable person" approach. If a document or other piece of evidence appeared to be required, but was not called out in the document, then it is added with an asterisk (*) after its notation in the checklist. The information was transferred into checklist tables based on the type of product or evidence.

In total, there are over 1050 artifacts included in the SEPT 15288 checklist of which over 700 are "Required".

Artifact Type	Total
Procedures/ Policies	577
Plans	23
Records	126
Documents	130
Audits	2
Reviews	219
Total:	**1077**

Using the Checklist

When a company is planning to use the 15288 standard, the company should review the evidence checklist. If the company's present process does not address a 15288 standard product, then the following question should be asked: "Is the evidence product required for the type of business of the organization?" If, in the view of the organization, the evidence is not required, the rationale should be documented and inserted in the checklist and quality manual. This rationale should pass the "reasonable person" rule. If the evidence is required, plans should be prepared to address the missing item(s).

Section 9 of the Checklist – Artifact Specific Reference Look-Up list

Since this standard has over 1050 artifacts and this number increases the amount of manhours to implement this standard without a data base to identify and track artifacts. SEPT have constructed a table in section 9 that references the sub-clause to the first time an artifact is called out in the standard. The MSWord customers can sort this data in any way, e.g., by artifact name, clause or subclause to address this size (1050) problem. For PDF customers we have elected to sort this data base by clause, sub clause and then artefact type (the same order as in sections 2-8). This table will allow a user to find a specific sub-clause reference for an artifact and then look this up in the standard. This section (9) should help in reducing the manhours required to implement this standard.

Detail Steps

An organization should compare the proposed output of their organization against the checklist. In doing this, they will find one of five conditions that exist for each item listed in the checklist. The following five conditions and the actions required by these conditions are listed in the table below.

Condition	Action Required
1. The title of the documented evidence specified by the checklist (document, plan, etc.) *agrees* with the title of the evidence being planned by the organization.	Record in checklist that the organization is compliant.
2. The title of the documented evidence specified by the checklist (document, etc.) *disagrees* with the title of the evidence planned by the organization but the content is the same.	Record in the checklist the evidence title the organization uses and record that the organization is compliant, and the evidence is the same although the title is different.
3. The title of the documented evidence specified by the checklist (document, etc.) is *combined* with another piece of evidence.	Record in the checklist the title of the evidence (document, etc.) in which this information is contained.
4. The title of the documented evidence specified by the checklist (document, etc.) *is not planned* by the organization because it is not required.	Record in the checklist that the evidence is not required and the rationale for this decision.
5. The title of the documented evidence called out by the checklis*t* (document, etc.*) is not planned* by the organization and *should be* planned by it.	Record in the checklist when this evidence will be planned and reference a plan for accomplishing the task.

Product Support

All reasonable questions concerning this checklist, or its use will be addressed by SEPT free of charge for 60 days from time of purchase, up to a maximum of 4 hours consultation time.

Guarantees and Liability

System Engineering Process Technology (SEPT) makes no guarantees implied or stated with respect to this checklist, and it is provided on an "*as is"* basis. SEPT will have no liability for any indirect, incidental, special, or consequential damages or any loss of revenue or profits arising under, or with respect to the use of this document.

Section 2
ISO/IEC/IEEE 15288:2015 Evidence Products Checklist by Clause

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ISO/IEC/IEEE 15288:2015 Clause Number and Name	**Policies** and Procedures	Plans	Records	Documents	**Audits** and Reviews
6 System life cycle processes					
6.1 Agreement processes					

Section 2
ISO/IEC/IEEE 15288:2015 Evidence Products Checklist by Clause

ISO/IEC/IEEE 15288:2015 Clause Number and Name	**Policies** and Procedures	Plans	Records	Documents	**Audits** and Reviews
6.1.1 Acquisition process	• Acquirer and Supplier Agreement Document Procedure* • Acquisition Advertisement Document Procedure* • Acquisition Procedure • Acquisition Strategy Document Procedure* • Agreement and Acceptance Criteria Development Procedure • Agreement Change Request Procedure • Agreement Change Request Document Procedure*#		• Acquirer Obligation Satisfaction Records • Agreement Closure Records • Confirmation of the Agreed Delivered Product or Service Records • Payment or Other Agreed Consideration for the Product Records • Suppliers Selection Notification Records*	• Acquirer and Supplier Agreement Document# • Acquisition Advertisement Document • Acquisition Strategy Document • Agreement Change Request Document • Requirements for Supply Request Document# • Supply Request Document	• Acquirer and Supplier Agreement Document Review* • Acquisition Advertisement Document Review* • Acquisition Strategy Document Review* • Agreement Change Impact Evaluation Review • Agreement Change Request Document Review*

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ISO/IEC/IEEE 15288:2015 Evidence Products Checklist by Clause

ISO/IEC/IEEE 15288:2015 Clause Number and Name	**Policies** and Procedures	Plans	Records	Documents	**Audits** and Reviews
6.1.1 Acquisition process (Cont. 1)	• Agreement Execution Assessment Procedure • Agreement Update Procedure • Product or Service Acceptance Procedure • Requirements for Supply Request Document Procedure* • Requirements for Supply Request Prepared by a Supplier Procedure* • Supplier Agreement Negotiation Procedure • Supplier Data Needs Procedure		• Suppliers Selection Records*#		• Requirements for Supply Request Document Review* • Supply Request Document Review*

Section 2
ISO/IEC/IEEE 15288:2015 Evidence Products Checklist by Clause

ISO/IEC/IEEE 15288:2015 Clause Number and Name	**Policies** and Procedures	Plans	Records	Documents	**Audits** and Reviews
6.1.1 Acquisition process (Cont. 2)	• Supplier Issue Resolution Procedure • Supplier Product or Service Acceptance Procedure • Supplier Selection Procedure • Supply Request Document Procedure*				