Checklist for Standard ISO/IEC/IEEE 12207:2017

Systems and Software Engineering – Software Life Cycle Processes

The World Standard for Developing Quality Software Systems

Waterfall

Spiral

Agile

This Checklist Defines:

- The physical evidence, policies, procedures, plans, records, documents, audits, and reviews necessary for compliance with the 12207 software standard
- The processes that must be validated and verified to ensure compliance
- The life cycle suited to your business

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Change Page History

Date	Change	Reason
January 2004	First Version	Based on the 1995 version of ISO/IEC 12207 (Original Release
May 2009	Second Version	Updated to the 2008 version of ISO/IEC 12207
March 2018	Third Version	Updated to the 2017 version of ISO/IEC/IEEE 12207. 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 remained almost the same, but most titles have changed to reflect the changes in the 2017 version

Contents

Note –Section 2-9 references above were manually generated.

Section 1
Introduction

Components of the Checklist

This checklist is composed of 9 sections:

- •Section 1. Introduction
- •Section 2. Composites of all required and suggested "ISO/IEC/IEEE 12207:2017 artifacts.
- •Sections 3-8. Individual checklists for each type of artifact (policies &. procedures, plans, records, documents, audits and reviews)
- •Sections 9. About the authors

Information on ISO/IEC/IEEE 12207:2017 (Base Standard)

Scope

ISO/IEC/IEEE 12207:2017 establishes a common framework for software life cycle processes, with well-defined terminology, that can be referenced by the software industry. It contains processes, activities, and tasks that are to be applied during the acquisition of a software system, product or service and during the supply, development, operation, maintenance and disposal of software products. This is accomplished through the involvement of stakeholders, with the ultimate goal of achieving customer satisfaction. The Standard applies to the acquisition of software systems, products and services, to the supply, development, operation, maintenance, and disposal of software products and the software portion of any system, whether performed internally or externally to an organization. Software includes the software portion of firmware. Those aspects of system definition needed to provide the context for software products and services are included. The Standard also provides processes that can be employed for defining, controlling, and improving software life cycle processes within an organization or a project. The processes, activities and tasks of this International Standard may also be applied during the acquisition of a system that contains software, either alone or in conjunction with ISO/IEC/IEEE 15288, Systems and software engineering--System life cycle processes. In the context of this International Standard and ISO/IEC/IEEE 15288, it is recognized that there is a continuum of human-made systems from those that use little or no software to those in which software is the primary interest. It is rare to encounter a complex system without software, and all software systems require physical system components (hardware) to operate, either as part of the software system of interest or as an enabling system or infrastructure. Thus, the choice of whether to apply the Standard for the software life cycle processes, or ISO/IEC/IEEE 15288:2015, Systems and software engineering--System life cycle processes, depends on the system of interest. Processes in both standards have the same process purpose and process outcomes, but differ in activities and tasks to perform software engineering or systems engineering, respectively.

Purpose of ISO/IEC/IEEE/ 12207:2017
The purpose of ISO/IEC/IEEE 12207:2017 is to provide a defined set of processes to facilitate communication among acquirers, suppliers and other stakeholders in the life cycle of a software system. The Standard is written for acquirers of software systems, products and services and for suppliers, developers, integrators, operators, maintainers, managers, quality assurance managers, and users of software systems and products. It can be used by a single organization in a self-imposed mode or in a multi-party situation. Parties can be from the same organization or from different organizations and the situation can range from an informal agreement to a formal contract. The processes in the Standard can be used as a basis for establishing business environments, e.g., methods, procedures, techniques, tools and trained personnel. Annex A provides normative direction regarding the tailoring of these software life cycle processes

Relationship to other key Standards

ISO/IEC/IEEE 12207:2017 is a companion document and is harmonized with ISO/IEC/IEEE 15288:2015. The wording in both standards is mostly the same although ISO/IEC/IEEE 12207:2017 includes many different Annexes, one of which shows the relationship to ISO/IEC/IEEE/ 12207:2008.
There are a number of elaboration standards for single or groups of processes in ISO/IEC/IEEE 12207:2017 such as ISO/IEC/IEEE/IEEE 16326 Project Management and ISO/IEC/IEEE/IEEE 16085 – Risk Management.

SEPT checklist for ISO/IEC/IEEE/ 12207:2017

Purpose
Getting software life cycle processes under control for an organization is a daunting task. The last thing an organization wants in its management operation is to call in a Notified Body for certification and to find out that the organization is lacking the correct records or documents for the auditor to examine. If you do not read the standard correctly it could cause a problem or could increase the cost to become certified. That is why we believe a checklist is important.

For 20 + years Software Engineering Process Technology (SEPT) has produced checklists for standards that address software 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 IT industry that will aid an organization's compliance with an international software code of practice.

The first step that an organization has in meeting the requirements of a standard such as Standard ISO/IEC/IEEE 12207:2017 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, “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 ISO/IEC/IEEE 12207:2017 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 Data Rights 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.

Exclusions

In compiling the checklist the authors decided not to include any item referenced in Notes to any clause of the Standard for two reasons:

1. There are over 1000 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 – 981 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.

Annex B

In the second review of the base line standard by our engineering department they recommended that we include 33 artifacts from Annex B as suggested items to give the checklist more continuity to the old base standard (ISO/IEC 12207:2008). And what our customers are using today to be in conformance with 12207.

General Principles of the Checklist for ISO/IEC/IEEE Standard 12207:2017

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 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 1000 artifacts included in the SEPT ISO/IEC/IEEE 12207:2017 checklist of which 696 are "Required".

Using the Checklist

When a company is planning to use ISO/IEC/IEEE 12207:2017 standard, the company should review the evidence checklist. If the company's present process does not address an ISO/IEC/IEEE 12207:2017 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).

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
Software 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 12207:2017 Evidence Products Checklist by Clause

ISO/IEC/IEEE 12207:2017 Clause Number and Name	**Policies** and Procedures	Plans	Records	Documents	**Audits** and Reviews
6 Software life cycle processes					
6.1 Agreement processes					

Section 2
ISO/IEC/IEEE 12207:2017 Evidence Products Checklist by Clause

ISO/IEC/IEEE 12207:2017 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 Data Rights Procedure* • Acquisition Licensing Rights Procedure* • Acquisition Procedure • Acquisition Strategy Document Procedure* • Acquisition Trade Off Procedure* • Agreement and Acceptance Criteria Development 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 • Supplier Selection Notification Records* • Supplier Selection 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* • Requirements for Supply Request Document Review* • Supply Request Document Review*

Section 2
ISO/IEC/IEEE 12207:2017 Evidence Products Checklist by Clause

ISO/IEC/IEEE 12207:2017 Clause Number and Name	**Policies** and Procedures	Plans	Records	Documents	**Audits** and Reviews
6.1.1 Acquisition process (Cont. 1)	• Agreement Change Request Document Procedure* • Agreement Change Request Procedure* • Agreement Execution Assessment Procedure • Agreement Update Procedure • Product or Service Acceptance Procedure • Requirements for Supply Request Document Procedure*				