Systems and software engineering —
Software life cycle processes

Ingénierie des systèmes et du logiciel — Processus du cycle de vie du logiciel
Contents

1 Scope ........................................................................................................................................................................... 1
1.1 Overview ................................................................................................................................................................. 1
1.2 Purpose ................................................................................................................................................................. 1
1.3 Field of application .................................................................................................................................................. 1
1.4 Limitations .............................................................................................................................................................. 2
2 Normative references .................................................................................................................................................... 2
3 Terms, definitions, and abbreviated terms ................................................................................................................ 2
3.1 Terms and definitions ................................................................................................................................................ 2
3.2 Abbreviated terms .................................................................................................................................................... 11
4 Conformance .............................................................................................................................................................. 11
4.1 Intended usage ......................................................................................................................................................... 11
4.2 Full conformance ................................................................................................................................................... 12
4.2.1 Full conformance to outcomes ......................................................................................................................... 12
4.2.2 Full conformance to tasks ................................................................................................................................ 12
4.3 Tailored conformance ............................................................................................................................................. 12
5 Key concepts and application ......................................................................................................................................... 13
5.1 Introduction ............................................................................................................................................................. 13
5.2 Software system concepts ....................................................................................................................................... 13
5.2.1 Software systems ................................................................................................................................................ 13
5.2.2 Software system structure .................................................................................................................................. 13
5.2.3 Enabling systems ................................................................................................................................................ 15
5.2.4 Life cycle processes for the software system ................................................................................................. 16
5.3 Organization and project concepts ......................................................................................................................... 16
5.3.1 Organizations .................................................................................................................................................... 16
5.3.2 Organization and project-level adoption .......................................................................................................... 17
5.4 Life cycle concepts .................................................................................................................................................... 17
5.4.1 Software life cycle stages .................................................................................................................................. 17
5.4.2 Life cycle model for the software system ........................................................................................................ 17
5.5 Process concepts ..................................................................................................................................................... 19
5.5.1 Criteria for processes .......................................................................................................................................... 19
5.5.2 Description of processes ................................................................................................................................... 19
5.5.3 General characteristics of processes ............................................................................................................... 19
5.5.4 Tailoring ............................................................................................................................................................ 19
5.6 Process groups .......................................................................................................................................................... 19
5.6.1 Introduction ......................................................................................................................................................... 19
5.6.2 Agreement processes .......................................................................................................................................... 21
5.6.3 Organizational project-enabling processes ................................................................................................. 22
5.6.4 Technical Management processes .................................................................................................................. 22
5.6.5 Technical processes ............................................................................................................................................ 22
5.7 Process application .................................................................................................................................................. 22
5.8 Process reference model ........................................................................................................................................ 23
6 Software life cycle processes ......................................................................................................................................... 24
6.1 Agreement processes ................................................................................................................................................. 24
6.1.1 Acquisition process ............................................................................................................................................ 24
6.1.2 Supply process ................................................................................................................................................... 27
6.2 Organizational Project-Enabling processes ......................................................................................................... 28
6.2.1 Life cycle model management process ........................................................................................................ 29
6.2.2 Infrastructure Management process .............................................................................................................. 30
6.2.3 Portfolio Management process ....................................................................................................................... 31
6.2.4 Human Resource Management process ......................................................................................................... 33
### ISO/IEC/IEEE 12207:2017(E)

#### Table of Contents

6.3 Technical management processes
- 6.3.1 Project Planning process
- 6.3.2 Project assessment and control process
- 6.3.3 Decision Management process
- 6.3.4 Risk Management process
- 6.3.5 Configuration Management process
- 6.3.6 Information Management process
- 6.3.7 Measurement process
- 6.3.8 Quality Assurance process
- 6.4 Technical processes
- 6.4.1 Business or Mission Analysis process
- 6.4.2 Stakeholder Needs and Requirements Definition process
- 6.4.3 System/Software requirements definition process
- 6.4.4 Architecture Definition process
- 6.4.5 Design Definition process
- 6.4.6 System Analysis process
- 6.4.7 Implementation process
- 6.4.8 Integration process
- 6.4.9 Verification process
- 6.4.10 Transition process
- 6.4.11 Validation process
- 6.4.12 Operation process
- 6.4.13 Maintenance process
- 6.4.14 Disposal process

Annex A (normative) Tailoring process
- A.1 Introduction
- A.2 Tailoring process
- A.2.1 Purpose
- A.2.2 Outcomes
- A.2.3 Activities and tasks

Annex B (informative) Examples of process information items
- A.2.3 Activities and tasks

Annex C (informative) Process Reference Model for assessment purposes
- C.1 Introduction
- C.2 Conformance with ISO/IEC 33004
- C.2.1 General
- C.2.2 Requirements for process reference models
- C.2.3 Process descriptions
- C.3 The process reference model

Annex D (informative) Process integration and process constructs
- D.1 Introduction
- D.2 Process constructs and their usage

Annex E (informative) Process views
- E.1 Introduction
- E.2 The process view concept
- E.3 Process viewpoint
- E.4 Process view for specialty engineering
- E.5 Process view for interface management
- E.6 Process view for software assurance (Information security)

Annex F (informative) Software system architecture modelling
- F.1 Introduction
- F.2 Views, models and model kinds used in software system architecture
- F.2.1 Functional model
- F.2.2 Static model
- F.2.3 Data model
- F.2.4 Behavioral model
- F.2.5 Temporal model
- F.2.6 Structural model
Annex G (informative)  Application of software life cycle processes to a system of systems .............................................. 123
G.1 Introduction .................................................................................................................................................. 123
G.2 SoS characteristics and types ..................................................................................................................... 123
G.3 SE processes applied to systems of systems ................................................................................................. 124
G.3.1 General .................................................................................................................................................... 124
G.3.2 Agreement processes ............................................................................................................................. 124
G.3.3 Organizational project enabling processes ............................................................................................... 124
G.3.4 Technical management processes ......................................................................................................... 125
G.3.5 Technical processes ................................................................................................................................ 125

Annex H (informative)  Application of Agile ........................................................................................................ 127


Bibliography ......................................................................................................................................................... 143

List of Illustrations

Figure 1 — Software system and software system element relationship ................................................................. 14
Figure 2 — Example of software system-of-interest structure .................................................................................. 14
Figure 3 — Software system-of-interest, its operational environment and enabling systems .............................. 15
Figure 4 — Software life cycle processes ............................................................................................................ 21
Table B.1 — Sample information items by process .............................................................................................. 104
Figure D.1 — ISO/IEC/IEEE 12207:2017 and ISO/IEC/IEEE 15288:2015 process constructs ............................. 110
Table G.1 — System of Systems types ................................................................................................................. 123
Table I.1 — Comparison of processes in ISO/IEC/IEEE 12207:2017 and the previous edition ......................... 129
Table I.2 — Comparison of process outcomes in ISO/IEC/IEEE 12207:2017 and software-related outcomes in the previous edition ........................................................................................................ 131
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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 IEEE Computer Society Systems and Software Engineering Standards Committee, under the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

This first edition of ISO/IEC/IEEE 12207 cancels and replaces ISO/IEC 12207:2008 (second edition), which has been technically revised.

Changes in this revision of ISO/IEC/IEEE 12207 were developed in conjunction with a corresponding revision of ISO/IEC/IEEE 15288:2015, Systems and software engineering – System life cycle processes. The purpose of these revisions is to accomplish the harmonization of the structures and contents of the two documents, while supporting the requirements of the engineering and assessment communities.

This document was developed with the following goals:

— provide a common terminology between the revision of ISO/IEC/IEEE 15288 and ISO/IEC/IEEE 12207;

— where applicable, provide common process names and process structure between the revision of ISO/IEC/IEEE 15288 and ISO/IEC/IEEE 12207; and

— enable the user community to evolve towards fully harmonized standards, while allowing backward compatibility.

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

The complexity of software 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 document provides a common process framework for describing the life cycle of systems created by humans, adopting a Software Engineering approach. Software Engineering is an interdisciplinary approach and means to enable the realization of successful software systems. It focuses on defining stakeholder needs and required functionality early in the development cycle, documenting requirements, and performing 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 and maintenance. 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 software 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.

The processes in this document form a comprehensive set from which an organization can construct software life cycle models appropriate to its products and services. An organization, depending on its purpose, can select and apply an appropriate subset to fulfill that purpose.

This document can be used in one or more of the following modes:

a) By an organization — to help establish an environment of desired processes. These processes can be supported by an infrastructure of methods, procedures, techniques, tools and trained personnel. The organization may then employ this environment to perform and manage its projects and progress software systems through their life cycle stages. In this mode, this document is used to assess conformance of a declared, established environment to its provisions.

b) By a project — to help select, structure and employ the elements of an established environment to provide products and services. In this mode, this document is used in the assessment of conformance of the project to the declared and established environment.

c) By an acquirer and a supplier — to help develop an agreement concerning processes and activities. Via the agreement, the processes and activities in this document are selected, negotiated, agreed to and performed. In this mode, this document is used for guidance in developing the agreement.

d) By process assessors — to serve as a process reference model for use in the performance of process assessments that may be used to support organizational process improvement.