
Systems and software engineering — Software life cycle processes

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



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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Institute of Electrical and Electronics Engineers, Inc
3 Park Avenue, New York
NY 10016-5997, USA

stds.ipr@ieee.org
www.ieee.org

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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.

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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.