INTERNATIONAL STANDARD

ISO/ IEC/IEEE 24748-6

First edition
2023-07

Systems and software engineering — Life cycle management —

Part 6: System and software integration

Ingénierie des systèmes et du logiciel — Gestion du cycle de vie — Partie 6: Intégration du système et du logiciel

Reference number
ISO/IEC/IEEE 24748-6:2023(E)

COPYRIGHT PROTECTED DOCUMENT

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

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

Email: stds.ipr@ieee.org
Website: www.ieee.org

Published in Switzerland

Contents

Page

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO/IEC documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

IEEE Standards documents are developed within the IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association (IEEE-SA) Standards Board. The IEEE develops its standards through a consensus development process, approved by the American National Standards Institute, which brings together volunteers representing varied viewpoints and interests to achieve the final product. Volunteers are not necessarily members of the Institute and serve without compensation. While the IEEE administers the process and establishes rules to promote fairness in the consensus development process, the IEEE does not independently evaluate, test, or verify the accuracy of any of the information contained in its standards.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see https://patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

ISO/IEC/IEEE 24748-6 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*, in cooperation with the Systems and Software Engineering Standards Committee of the IEEE Computer Society, under the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

This first edition cancels and replaces ISO/IEC TS 24748-6:2016, which has been technically revised.

The main changes are as follows:

— changed from a Technical Specification to an International Standard;

— updated to reflect the process requirements of ISO/IEC/IEEE 12207:2017 and ISO/IEC/IEEE 15288:2023;

— added material specific to software integration and systems-of-systems integration, as well as system aggregation.

A list of all parts in the ISO/IEC/IEEE 24748 series can be found on the ISO and IEC website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

Introduction

Both ISO/IEC/IEEE 15288 and ISO/IEC/IEEE 12207 include an integration process that focuses on aggregating the elements comprising a system. The integration process depends on a clear understanding of interfaces of all kinds and the use, possibly repeated, of the verification process and the validation process.

Systems that this document are concerned with are as described in ISO/IEC/IEEE 12207 and ISO/IEC/IEEE 15288, i.e. systems that are human-made, comprised of any mixture of products and services and can be configured with one or more of the following: hardware, software, data, humans, processes (e.g. a review process or processes for providing service to users), procedures (e.g. operator instructions), facilities, materials and naturally occurring entities (e.g. water, organisms, minerals).

The purpose of this document is to elaborate and facilitate the usage of the integration process given in ISO/IEC/IEEE 12207 and ISO/IEC/IEEE 15288 by providing requirements and guidance for the planning and performing of that process, including requirements for the information items to be provided for systems and software integration, considering:

— the underlying concepts of aggregation, integration, interface, synthesis, verification, and validation;

— the possible composition of that human-made system;

— the life cycle stages of a system at which one or more parts of the integration process can occur;

— the context of the domain in which the system functions.

For life cycle process information items (documentation) described in ISO/IEC/IEEE 15288 and ISO/IEC/IEEE 12207, ISO/IEC/IEEE 15289 summarises requirements for their content and provides guidance on their development. Although this document identifies additional required information items with related content for the integration process, it does not require a specific name, format, recording media or explicit details for population of the information item's required content.

NOTE This document is intended to be consistent with the other parts of the ISO/IEC/IEEE 24748 series.

Systems and software engineering — Life cycle management —

Part 6: System and software integration

1 Scope

This document:

— provides supplemental requirements and guidance for the planning and performing of the integration processes given in ISO/IEC/IEEE 15288 and ISO/IEC/IEEE 12207;

— provides guidance on the relationship between the integration process and other life cycle processes.

— specifies requirements for information items to be produced as a result of using the integration process, including the content of the information items.

This document is applicable to:

— those who use or plan to use ISO/IEC/IEEE 12207 or ISO/IEC/IEEE 15288, or both, on projects dealing with human-made systems, software-intensive systems, and products and services related to those systems, regardless of the project scope, methodology, size, or complexity;

— anyone planning or performing integration activities to aid in ensuring that the application of the integration process and its relationships to other system life cycle processes conform to ISO/IEC/IEEE 15288 or ISO/IEC/IEEE 12207.

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/IEEE 12207:2017, *Systems and software engineering — Software life cycle processes*

ISO/IEC/IEEE 15288:2023, *Systems and software engineering — System life cycle processes*