

SÜSTEEMI- JA TARKVARATEHNIKA
Süsteemi elutsükli protsessid

Systems and software engineering
System life cycle processes
(ISO/IEC/IEEE 15288:2023, identical)

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

See Eesti standard EVS-ISO/IEC/IEEE 15288:2023 sisaldab rahvusvahelise standardi ISO/IEC/IEEE 15288:2023 „Systems and software engineering. System life cycle processes“ identset ingliskeelset teksti.	This Estonian Standard EVS-ISO/IEC/IEEE 15288:2023 consists of the identical English text of the International Standard ISO/IEC/IEEE 15288:2023 „Systems and software engineering. System life cycle processes“.
Ettepaneku rahvusvahelise standardi ümbertrüki meetodil ülevõtuks on esitanud EVS/TK 4, standardi avaldamist on korraldanud Eesti Standardimis- ja Akrediteerimiskeskus.	Proposal to adopt the International Standard by reprint method has been presented by EVS/TK 4, the Estonian Standard has been published by the Estonian Centre for Standardisation and Accreditation.
Standard EVS-ISO/IEC/IEEE 15288:2023 on jõustunud sellekohase teate avaldamisega EVS Teatajas.	Standard EVS-ISO/IEC/IEEE 15288:2023 has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	This standard is available from the Estonian Centre for Standardisation and Accreditation.

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See dokument rajab ühise protsessikirjelduste karkassi, millega kirjeldada tehissüsteemide elutsüklit. Ta määratleb tehnilisest vaatepunktist ühe protsessistiku ja sellega seotud terminoloogia. Neid protsesse saab rakendada huvialustele süsteemidele, nende süsteemielementidele ja süsteemide süsteemidele. Nende protsesside valikkogumeid saab rakendada süsteemi elutsükli kõigile järkudele. Seda tehakse kõiki huvipooli kaasates, kusjuures lõppeesmärk on kliendi rahulolu saavutamine.

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Contents

Page

Foreword	iv
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms, definitions, and abbreviated terms	1
4 Conformance	10
4.1 Intended usage	10
4.2 Full conformance	11
4.2.1 Full conformance to outcomes	11
4.2.2 Full conformance to tasks	11
4.3 Tailored conformance	11
5 Key concepts and their application	11
5.1 General	11
5.2 System concepts	12
5.2.1 Systems	12
5.2.2 System structure	12
5.2.3 Interfacing, enabling, and interoperating systems	14
5.2.4 Concepts related to the system solution context	14
5.2.5 Product line engineering (PLE)	15
5.3 Organizational concepts	16
5.3.1 Organizations	16
5.3.2 Organization and project-level adoption	17
5.3.3 Organization and collaborative activities	17
5.4 System of systems concepts	17
5.4.1 Differences between systems and SoS	17
5.4.2 Managerial and operational independence	18
5.4.3 Taxonomy of SoS	18
5.4.4 SoS considerations in life cycle stages of a system	18
5.4.5 Application of this document to SoS	19
5.5 Life cycle concepts	19
5.5.1 System life cycle model	19
5.5.2 System life cycle stages	19
5.6 Process concepts	20
5.6.1 Criteria for processes	20
5.6.2 Description of processes	20
5.6.3 General characteristics of processes	20
5.7 Processes in this document	21
5.7.1 General	21
5.7.2 Agreement processes	23
5.7.3 Organizational project-enabling processes	23
5.7.4 Technical management processes	24
5.7.5 Technical processes	25
5.8 Process application	27
5.8.1 Overview	27
5.8.2 Process iteration, recursion, and concurrency	28
5.8.3 Process views	29
5.9 Concept and system definition	29

5.10	Assurance and quality characteristics	31
5.11	Process reference model	31
6	System life cycle processes.....	32
6.1	Agreement processes.....	32
6.1.1	Acquisition process.....	32
6.1.2	Supply process	34
6.2	Organizational project-enabling processes	36
6.2.1	Life cycle model management process	36
6.2.2	Infrastructure management process	38
6.2.3	Portfolio management process	39
6.2.4	Human resource management process	40
6.2.5	Quality management process	42
6.2.6	Knowledge management process	43
6.3	Technical management processes.....	45
6.3.1	Project planning process	45
6.3.2	Project assessment and control process	47
6.3.3	Decision management process.....	49
6.3.4	Risk management process	51
6.3.5	Configuration management process.....	54
6.3.6	Information management process.....	57
6.3.7	Measurement process.....	59
6.3.8	Quality assurance process.....	60
6.4	Technical processes.....	62
6.4.1	Business or mission analysis process.....	62
6.4.2	Stakeholder needs and requirements definition process	65
6.4.3	System requirements definition process.....	70
6.4.4	System architecture definition process.....	73
6.4.5	Design definition process	76
6.4.6	System analysis process.....	79
6.4.7	Implementation process	82
6.4.8	Integration process.....	84
6.4.9	Verification process	86
6.4.10	Transition process.....	89
6.4.11	Validation process.....	92
6.4.12	Operation process.....	95
6.4.13	Maintenance process.....	98
6.4.14	Disposal process.....	102
Annex A	(normative) Tailoring process	105
Annex B	(informative) Example process artefacts and information items.....	107
Annex C	(informative) Process reference model for assessment purposes	112
Annex D	(informative) Model-based systems and software engineering (MBSSE)	114
IEEE notices and abstract.....		122

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialised 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 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.

This document was prepared by Joint Technical Committee ISO/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 second edition cancels and replaces the first edition (ISO/IEC/IEEE 15288:2015), which has been technically revised.

The main changes are as follows:

- improvements to selected technical processes including business or mission analysis, system architecture definition, system analysis, implementation, integration, operations, and maintenance;
- improvements to selected technical management processes including risk management and configuration management;

- updates to Clause 5, key concepts, including a better description of iteration, recursion, system-of-systems, quality characteristics, etc.;
- new content in Clause 5 on concept and system definition, and expanded content on process application and system concepts;
- updates to the terms and definitions;
- a new annex addressing model-based systems engineering (MBSE).

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

The complexity of systems continues to increase to unprecedented levels. This has led to new opportunities, but also to increased challenges for the organizations that create and utilise 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, adopting a systems engineering approach. This document concerns systems that can be configured with one or more of the following system elements: hardware elements, software elements, data, humans, processes, services, procedures, facilities, materials, and naturally occurring entities.

This document focuses on defining stakeholder needs, concerns, priorities, and constraints for the required functionality early in the development cycle, establishing 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 conception through production to operation. It considers the needs of all stakeholders with the goal of providing a quality product that meets the needs of users and other applicable stakeholders. It provides the processes for acquiring and supplying systems. It helps to improve communication and cooperation among the parties that create, utilise, and manage modern systems in order that they can work in an integrated, coherent fashion. Finally, this document provides the framework for assessment and improvement of the life cycle processes.

There is a wide variety of systems in terms of their purpose, domain of application, complexity, size, novelty, adaptability, quantity, location, life span, and evolution. The processes in this document form a comprehensive set from which an organization can construct system life cycle models appropriate to its products and services. An organization, depending on its purpose, can select and apply an appropriate subset to fulfil that purpose.

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

- 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 systems through their life cycle stages. In this mode this document is used to assess conformance of a declared, established environment to its provisions. 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.
- 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.
- 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.
- By process assessors — to serve as a process reference model for use in the performance of process assessments that can be used to support organizational process improvement.

In the context of this document and ISO/IEC/IEEE 12207, 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. When software is the predominant system or element of interest, ISO/IEC/IEEE 12207 should be used. Both documents have the same process model, share most activities and tasks, and differ primarily in descriptive notes.

Although this document does not establish a management system, it is intended to be compatible with the quality management system provided by ISO 9001, the service management system provided by ISO/IEC 20000 series, the IT asset management system provided by the ISO/IEC 19770 series, and the information security management system provided by ISO/IEC 27000.

Systems and software engineering — System life cycle processes

1 Scope

This document establishes a common framework of process descriptions for describing the life cycle of systems created by humans, defining a set of processes and associated terminology from an engineering viewpoint. These processes can be applied to systems of interest, their system elements, and to systems of systems. Selected sets of these processes can be applied throughout the stages of a system's life cycle. This is accomplished through the involvement of stakeholders, with the ultimate goal of achieving customer satisfaction.

This document defines a set of processes to facilitate system development and information exchange among acquirers, suppliers, and other stakeholders in the life cycle of a system.

This document specifies processes that support the definition, control, and improvement of the system life cycle processes used within an organization or a project. Organizations and projects can use these processes when acquiring and supplying systems.

This document applies to organizations in their roles as both acquirers and suppliers.

This document applies to the full life cycle of systems, including conception, development, production, utilization, support and retirement of systems, and to the acquisition and supply of systems, whether performed internally or externally to an organization. The life cycle processes of this document can be applied iteratively and concurrently to a system and recursively to the system elements.

This document applies to one-of-a-kind systems, mass-produced systems, and customised, adaptable systems. It also applies to a complete stand-alone system and to systems that are embedded and integrated into larger more complex and complete systems.

This document does not prescribe a specific system life cycle model, development methodology, method, modelling approach or technique.

This document does not detail information items in terms of name, format, explicit content, and recording media. ISO/IEC/IEEE 15289 addresses the content for life cycle process information items (documentation).

2 Normative references

There are no normative references in this document.

3 Terms, definitions, and abbreviated terms

For the purposes of this document, the following terms and definitions apply.

ISO, IEC, and IEEE maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>
- IEEE Standards Dictionary Online: available at: <https://dictionary.ieee.org/>

NOTE Definitions for other system and software engineering terms can be found in ISO/IEC/IEEE 24765, available at www.computer.org/sevocab.