

This is a preview of "BS ISO/IEC/IEEE 1528...". Click here to purchase the full version from the ANSI store.

BS ISO/IEC/IEEE 15288:2015



BSI Standards Publication

Systems and software engineering — System life cycle processes

bsi.

...making excellence a habit.™

This is a preview of "BS ISO/IEC/IEEE 15288...". [Click here to purchase the full version from the ANSI store.](#)

This British Standard is the UK implementation of ISO/IEC/IEEE 15288:2015. It supersedes BS ISO/IEC 15288:2002 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee IST/15, Software and systems engineering.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2015. Published by BSI Standards Limited 2015

ISBN 978 0 580 89613 2

ICS 35.080

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 June 2015.

Amendments issued since publication

Date	Text affected
------	---------------

This is a preview of "BS ISO/IEC/IEEE 1528...". [Click here to purchase the full version from the ANSI store.](#)

15288

First edition
2015-05-15

Systems and software engineering — System life cycle processes

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



Reference number
ISO/IEC/IEEE 15288:2015(E)



© ISO/IEC 2015
© IEEE 2015

This is a preview of "BS ISO/IEC/IEEE 1528...". Click here to purchase the full version from the ANSI store.

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat, the IEC Central Office and IEEE do not accept any liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies and IEEE members. In the unlikely event that a problem relating to it is found, please inform the ISO Central Secretariat or IEEE at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2015
© IEEE 2015

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from ISO, IEC or IEEE at the respective address below.

ISO copyright office
Case postale 56
CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland
E-mail inmail@iec.ch
Web www.iec.ch

Institute of Electrical and Electronics Engineers, Inc.
3 Park Avenue, New York
NY 10016-5997, USA
E-mail stds.ipr@ieee.org
Web www.ieee.org

Published in Switzerland

This is a preview of "BS ISO/IEC/IEEE 1528...". Click here to purchase the full version from the ANSI store.

Contents

Page

Introduction.....	vii
1 Overview.....	1
1.1 Scope.....	1
1.2 Purpose.....	1
1.3 Field of application.....	1
1.4 Limitations.....	2
2 Conformance.....	2
2.1 Intended usage.....	2
2.2 Full conformance.....	3
2.2.1 Full conformance to outcomes.....	3
2.2.2 Full conformance to tasks.....	3
2.3 Tailored conformance.....	3
3 Normative references.....	3
4 Terms, definitions, and abbreviated terms.....	3
4.1 Terms and definitions.....	3
4.2 Abbreviated terms.....	10
5 Key concepts and application of this International Standard.....	11
5.1 Introduction.....	11
5.2 System concepts.....	11
5.2.1 Systems.....	11
5.2.2 System structure.....	11
5.2.3 Enabling systems.....	12
5.3 Organization and project concepts.....	13
5.3.1 Organizations.....	13
5.3.2 Organization and project-level adoption.....	14
5.4 Life cycle concepts.....	14
5.4.1 System life cycle model.....	14
5.4.2 System life cycle stages.....	14
5.5 Process concepts.....	15
5.5.1 Criteria for processes.....	15
5.5.2 Description of processes.....	15
5.5.3 General characteristics of processes.....	15
5.5.4 Tailoring.....	15
5.6 Processes in this standard.....	15
5.6.1 Introduction.....	15
5.6.2 Agreement processes.....	17
5.6.3 Organizational project-enabling processes.....	17
5.6.4 Technical management processes.....	17
5.6.5 Technical processes.....	17
5.7 Process application.....	18
5.8 Process reference model.....	19
6 System life cycle processes.....	19
6.1 Agreement processes.....	19
6.1.1 Acquisition process.....	19
6.1.2 Supply process.....	21
6.2 Organizational project-enabling processes.....	23
6.2.1 Life cycle model management process.....	23
6.2.2 Infrastructure management process.....	25
6.2.3 Portfolio management process.....	26
6.2.4 Human resource management process.....	27
6.2.5 Quality management process.....	28
6.2.6 Knowledge management process.....	30
6.3 Technical management processes.....	31

This is a preview of "BS ISO/IEC/IEEE 15288...". Click here to purchase the full version from the ANSI store.

6.3.3	Decision management process	36
6.3.4	Risk management process	38
6.3.5	Configuration management process	39
6.3.6	Information management process	42
6.3.7	Measurement process	44
6.3.8	Quality assurance process	45
6.4	Technical processes	47
6.4.1	Business or mission analysis process	48
6.4.2	Stakeholder needs and requirements definition process	51
6.4.3	System requirements definition process	54
6.4.4	Architecture definition process.....	57
6.4.5	Design definition process	61
6.4.6	System analysis process	64
6.4.7	Implementation process	65
6.4.8	Integration process.....	68
6.4.9	Verification process	70
6.4.10	Transition process.....	72
6.4.11	Validation process	74
6.4.12	Operation process	77
6.4.13	Maintenance process	80
6.4.14	Disposal process	83
Annex A (normative) Tailoring Process.....		86
A.1	Introduction	86
A.2	Tailoring process	86
A.2.1	Purpose.....	86
A.2.2	Outcomes	86
A.2.3	Activities and tasks	86
Annex B (informative) Example process information items		88
B.1	Introduction	88
Annex C (informative) Process reference model for assessment purposes		90
C.1	Introduction	90
C.2	Conformance with ISO/IEC 15504-2	90
C.2.1	General.....	90
C.2.2	Requirements for process reference models	90
C.2.3	Process descriptions	91
C.3	The process reference model.....	91
Annex D (informative) Process integration and process constructs.....		92
D.1	Introduction	92
D.2	Process constructs and their usage.....	92
Annex E (informative) Process views.....		94
E.1	Introduction	94
E.2	The process view concept	94
E.3	Process viewpoint	94
E.4	Process view for specialty engineering	95
E.5	Process view for interface management.....	97
Annex F (Informative) Architecture modeling		100
F.1	Introduction	100
F.2	Viewpoints, views and model kinds used in architecture	100
F.3	Logical and physical models	100
F.3.1	Functional model	100
F.3.2	Behavioural model.....	100
F.3.3	Temporal model	101
F.3.4	Structural model	101
F.3.5	Mass model	101
F.3.6	Layout model.....	101
F.3.7	Network model	101
F.3.8	Other model considerations	101
Annex G (Informative) Application of system life cycle processes to a system of systems		102

This is a preview of "BS ISO/IEC/IEEE 15288...". [Click here to purchase the full version from the ANSI store.](#)

G.3	SE processes applied to systems or systems	103
G.3.1	General	103
G.3.2	Agreement processes	103
G.3.3	Organizational project enabling processes	103
G.3.4	Technical management processes	104
G.3.5	Technical processes	104
	Bibliography	106

This is a preview of "BS ISO/IEC/IEEE 1528...". [Click here to purchase the full version from the ANSI store.](#)

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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of ISO/IEC JTC 1 is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is called to the possibility that implementation of this standard may require the use of subject matter covered by patent rights. By publication of this standard, no position is taken with respect to the existence or validity of any patent rights in connection therewith. ISO/IEEE is not responsible for identifying essential patents or patent claims for which a license may be required, for conducting inquiries into the legal validity or scope of patents or patent claims or determining whether any licensing terms or conditions provided in connection with submission of a Letter of Assurance or a Patent Statement and Licensing Declaration Form, if any, or in any licensing agreements are reasonable or non-discriminatory. Users of this standard are expressly advised that determination of the validity of any patent rights, and the risk of infringement of such rights, is entirely their own responsibility. Further information may be obtained from ISO or the IEEE Standards Association.

ISO/IEC/IEEE 15288 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems 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 15288 cancels and replaces the ISO/IEC 15288:2008 (second edition), which has been technically revised.

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

This International Standard was developed with the following goals:

- provide a common terminology between the revision of the ISO/IEC/IEEE 15288 and ISO/IEC/IEEE 12207,
- where applicable, provide common process names and process structure between the revision of the ISO/IEC/IEEE 15288 and ISO/IEC/IEEE 12207,
- enable the user community to evolve towards fully harmonized standards, while maximizing backward compatibility.

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

This is a preview of "BS ISO/IEC/IEEE 15288...". [Click here to purchase the full version from the ANSI store.](#)

The complexity of man-made 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 International Standard provides a common process framework for describing the life cycle of systems created by humans, adopting a Systems Engineering approach. Systems Engineering is an interdisciplinary approach and means to enable the realization of successful systems. It focuses on defining stakeholder needs and required functionality early in the development cycle, documenting 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 concept to production to operation. 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 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 International Standard 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 fulfill that purpose.

This International Standard 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 International Standard is used to assess conformance of a declared, established environment to its provisions.
- By a project — to help select, structure and employ the elements of an established environment to provide products and services. In this mode this International Standard 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 International Standard are selected, negotiated, agreed to and performed. In this mode this International Standard 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 may be used to support organizational process improvement.

This is a preview of "BS ISO/IEC/IEEE 1528...". Click here to purchase the full version from the ANSI store.

This introduction is not part of IEEE Std 15288™-2015, Systems and Software Engineering — Systems Life Cycle Processes.

This standard replaces ISO/IEC/IEEE Std 15288™-2008, Systems and software engineering—System life cycle processes. That standard replaced IEEE Std 15288™-2004, Adoption of ISO/IEC 15288:2002, Systems and software engineering—System life cycle processes. The original ISO/IEC 15288 was published in November 2002 and was the first international standard to provide a comprehensive set of life cycle processes for systems.

This new revision of ISO/IEC/IEEE 15288 is the product of a coordinated effort by IEEE and ISO/IEC JTC 1/SC 7. The base document for the revision is the ISO/IEC/IEEE standard. Development of this revision was carefully coordinated with the parallel revision of ISO/IEC/IEEE 12207:2015 to align structure, terms, and corresponding organizational and project processes.

This revised standard is a step in the SC7 harmonization strategy to achieve a fully integrated suite of system and software life cycle processes and guidance for their application. It is also an important step in the shared strategy of ISO/IEC JTC 1/SC 7 and the IEEE to harmonize their respective collections of standards.

Notice to users

Errata

Errata, if any, for this and all other standards can be accessed at the following URL: <http://standards.ieee.org/reading/ieee/updates/errata/index.html>. Users are encouraged to check this URL for errata periodically.

Interpretations

Current interpretations can be accessed at the following URL: <http://standards.ieee.org/reading/ieee/interp/index.html>.

This is a preview of "BS ISO/IEC/IEEE 1528...". [Click here to purchase the full version from the ANSI store.](#)

processes

1 Overview

1.1 Scope

This International Standard establishes a common framework of process descriptions for describing the life cycle of systems created by humans. It defines a set of processes and associated terminology from an engineering viewpoint. These processes can be applied at any level in the hierarchy of a system's structure. Selected sets of these processes can be applied throughout the life cycle for managing and performing the stages of a system's life cycle. This is accomplished through the involvement of all stakeholders, with the ultimate goal of achieving customer satisfaction.

This International Standard also provides 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 International Standard concerns those systems that are man-made and may be configured with one or more of the following system elements: hardware, software, data, humans, processes (e.g., processes for providing service to users), procedures (e.g., operator instructions), facilities, materials and naturally occurring entities.

When a system element is software, the software life cycle processes in ISO/IEC/IEEE 12207:2015 may be used to implement that system element. The two standards are harmonized for concurrent use on a single project or in a single organization.

1.2 Purpose

The purpose of this International Standard is to provide a defined set of processes to facilitate communication among acquirers, suppliers and other stakeholders in the life cycle of a system.

This International Standard applies to organizations in their roles as both acquirers and suppliers. 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 this International 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 system life cycle processes.

1.3 Field of application

This International Standard 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 International Standard can be applied concurrently, iteratively and recursively to a system and incrementally to its elements.

There is a wide variety of systems in terms of their purpose, domain of application, complexity, size, novelty, adaptability, quantities, locations, life spans and evolution. This International Standard describes the processes that comprise the life cycle of man-made systems. It therefore applies to one-of-a-kind systems, mass-produced systems and customized, 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 International Standard provides a process reference model characterized in terms of the process purpose and the process outcomes that result from the successful execution of the activity tasks. Annex B lists examples of artifacts and information items that may be associated with various processes. This International Standard can therefore be used as a reference model to support process assessment as specified in ISO/IEC