
**Systems and software engineering —
Systems and software assurance —**

**Part 2:
Assurance case**

*Ingénierie du logiciel et des systèmes — Assurance du logiciel et des
systèmes —*

Partie 2: Cas d'assurance

Withhold

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 accepts no 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. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

Withdrawn

**COPYRIGHT PROTECTED DOCUMENT**

© ISO/IEC 2011

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 either ISO at the address below or ISO's member body in the country of the requester.

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

Published in Switzerland

Contents

Page

Foreword	iv
Introduction.....	v
1 Scope	1
2 Conformance	1
3 Normative references	1
4 Terms and definitions	1
5 Use of this part of ISO/IEC 15026.....	1
6 Structure and contents of an assurance case	2
6.1 General	2
6.2 Overall structure.....	3
6.3 Claims.....	5
6.3.1 Form of claim	5
6.3.2 Claim contents.....	5
6.3.3 Coverage of conditions.....	5
6.3.4 Justification of the choice of top-level claims	5
6.4 Arguments.....	6
6.4.1 Argument characteristics	6
6.4.2 Justification of argument's method of reasoning.....	6
6.5 Evidence.....	6
6.5.1 Evidence contents.....	6
6.5.2 Associated information.....	6
6.5.3 Associated assumptions	6
6.6 Assumptions	7
6.6.1 Form of Assumption	7
6.6.2 Assumption contents.....	7
6.6.3 Associated evidence	7
6.7 Justifications	7
6.8 Combining assurance cases	7
7 Required outcomes of using Part 2 assurance case.....	7
7.1 Outcomes	7
7.2 Mapping to this part of ISO/IEC 15026	8
Bibliography.....	9

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

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

The main task of the joint technical committee 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 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.

ISO/IEC 15026-2 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

ISO/IEC 15026 consists of the following parts, under the general title *Systems and software engineering — Systems and software assurance*:

- *Part 1: Concepts and vocabulary* [Technical Report]
- *Part 2: Assurance case*

System integrity levels and assurance in the life cycle will form the subjects of future parts.

Introduction

The purpose of this part of ISO/IEC 15026 is to ensure the existence of types of assurance case content and restrictions on assurance case structure, thereby improving consistency and comparability among instances of assurance cases and facilitating stakeholder communications, engineering decisions, and other uses of assurance cases.

Existing standards addressing different application areas and topics related to assurance cases might use differing terminology and concepts when addressing common themes. This part of ISO/IEC 15026 is based on experience drawn from these many specialized standards and guidelines. It is applicable to any property of a system or product.

NOTE It is intended that ISO/IEC TR 15026-1 will be transformed into an International Standard.

In addition to concepts and terminology, ISO/IEC TR 15026-1 provides background and a list of related standards that could be useful in understanding and using this part of ISO/IEC 15026. Assurance cases are generally developed to support claims in areas such as safety, reliability, maintainability, human factors, operability, and security, although these assurance cases are often called by more specific names, e.g. safety case or reliability and maintainability (R&M) case.

This part of ISO/IEC 15026 uses the terminology and concepts consistent with ISO/IEC 12207:2008, ISO/IEC 15288:2008, and ISO/IEC 15289:2006. This part of ISO/IEC 15026 does not presume or require that it is applied in conjunction with ISO/IEC 12207:2008 or ISO/IEC 15288:2008.

Systems and software engineering — Systems and software assurance —

Part 2: Assurance case

1 Scope

This part of ISO/IEC 15026 specifies minimum requirements for the structure and contents of an assurance case. An assurance case includes a top-level claim for a property of a system or product (or set of claims), systematic argumentation regarding this claim, and the evidence and explicit assumptions that underlie this argumentation. Arguing through multiple levels of subordinate claims, this structured argumentation connects the top-level claim to the evidence and assumptions.

This part of ISO/IEC 15026 does not place requirements on the quality of the contents of an assurance case. Rather, it places requirements on the existence of the contents and structure of an assurance case. While several notations and slightly varying terminologies are currently used in practice, this part of ISO/IEC 15026 does not require the use of a particular terminology or graphical representation. Likewise, it places no requirements on the means of physical implementation of the data, including no requirements for redundancy or co-location.

2 Conformance

An assurance case conforms to this part of ISO/IEC 15026 if it meets the requirements of Clause 6 and Clause 7.

3 Normative references

The following referenced documents are indispensable for the application of this document.

ISO/IEC TR 15026-1, *Systems and software engineering — Systems and software assurance — Part 1: Concepts and vocabulary*

ISO/IEC 15289, *Systems and software engineering — Content of systems and software life cycle process information products (Documentation)*