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IEEE Standard Adoption of ISO/IEC 15026-3—Systems and Software Engineering—Systems and Software Assurance—Part 3: System Integrity Levels

IEEE Computer Society

Sponsored by the
Software & Systems Engineering Standards Committee

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IEEE Std 15026-3™-2013

IEEE Standard Adoption of ISO/IEC 15026-3—Systems and Software Engineering—Systems and Software Assurance—Part 3: System Integrity Levels

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Software & Systems Engineering Standards Committee
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IEEE Computer Society

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IEEE-SA Standards Board

Abstract: The concept of integrity levels with corresponding integrity level requirements that are required to be met in order to show the achievement of the integrity level are specified in this adoption of ISO/IEC 15026-3:2011. It places requirements on and recommends methods for defining and using integrity levels and their integrity level requirements, including the assignment of integrity levels to systems, software products, their elements, and relevant external dependences.

This standard is applicable to systems and software and is intended for use by the following:

— Definers of integrity levels such as industry and professional organizations, standards organizations, and government agencies;

— Users of integrity levels such as developers and maintainers, suppliers and acquirers, users, and assessors of systems or software and for the administrative and technical support of systems and/or software products.

One important use of integrity levels is by suppliers and acquirers in agreements; for example, to aid in assuring safety, economic, or security characteristics of a delivered system or product.

This standard does not prescribe a specific set of integrity levels or their integrity level requirements. In addition, it does not prescribe the way in which integrity level use is integrated with the overall system or software engineering life cycle processes.

This standard can be used alone or with other parts of ISO/IEC 15026. It can be used with a variety of technical and specialized risk analysis and development approaches. ISO/IEC TR 15026-1 provides additional information and references to aid users of IEEE Std 15026-3.

Keywords: adoption, argument, assurance case, claim, dependability, evidence, IEEE 15026-3, integrity level, property, reliability, safety, security, software assurance, software engineering, system assurance, systems engineering

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Participants

At the time this IEEE standard was completed, the Life Cycle Processes Working Group had the following membership:

James W. Moore, *IEEE Computer Society Liaison to ISO/IEC JTC 1/SC 7*

The following members of the individual balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

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Michael Janezic, *NIST Representative*

Catherine Berger
IEEE Standards Senior Program Manager, Document Development

Malia Zaman
IEEE Standards Program Manager, Technical Program Development

Introduction

This introduction is not part of IEEE Std 15026-3-2013, IEEE Standard Adoption of ISO/IEC 15026-3—Systems and Software Engineering—Systems and Software Assurance—Part 3: System Integrity Levels.

The IEEE Software and Systems Engineering Standards Committee (S2ESC) has undertaken a long-term program to harmonize its standards with those of ISO/IEC JTC 1/SC 7, the international standards committee for software and systems engineering. In areas of overlap, one organization sometimes adopts the relevant standard from the other organization, or the two organizations cooperate to produce a single joint standard. In this case, S2ESC has chosen to adopt a relevant document from SC 7.

This IEEE standard is an adoption of ISO/IEC 15026-3:2011. References to some ISO/IEC standards should be considered as references to the identical IEEE standard:

- ISO/IEC/IEEE 12207:2008 is identical to ISO/IEC 12207:2008
- ISO/IEC/IEEE 15288:2008 is identical to ISO/IEC 15288:2008
- ISO/IEC/IEEE 15289:2011 is identical to ISO/IEC 15288:2011
- ISO/IEC/IEEE 16085:2006 is identical to ISO/IEC 16085:2006
- IEEE Std 15026-1™-2011 is identical to ISO/IEC TR 15026-1:2010
- IEEE Std 15026-2™-2011 is identical to ISO/IEC 15026-2:2011
- ISO/IEC/IEEE 42010-2011 is identical to ISO/IEC 42010:2011

It should also be noted that IEEE is currently planning to ballot adoption of the other part of the 15026 series, namely, ISO/IEC 15026-4.

Errata

The following editorial corrections are made in the adopted document:

Page 5, Subclause 5.4, first line: Change “5.4” to “Clause 6”.

Page 6, Subclause 6.1, fourth line: Change “acheievement” to “achievement”.

Contents of IEEE Std 15026-3-2013

IEEE Standard Adoption of ISO/IEC 15026-3—Systems and Software Engineering—Systems and Software Assurance—Part 3: System Integrity Levels

INTERNATIONAL STANDARD

ISO/IEC 15026-3

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Systems and software engineering — Systems and software assurance —

Part 3: System integrity levels

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

Partie 3: Niveaux d'intégrité du système

Reference number
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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 15026-3 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

This first edition of ISO/IEC 15026-3 cancels and replaces ISO/IECI 15026:1998, which has been technically revised.

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*

— *Part 3: System integrity levels*

The following part is under preparation:

— *Part 4: Assurance in the life cycle*

Systems and software engineering — Systems and software assurance —

Part 3: System integrity levels

1 Scope

This part of ISO/IEC 15026 specifies the concept of integrity levels with corresponding integrity level requirements that are required to be met in order to show the achievement of the integrity level. It places requirements on and recommends methods for defining and using integrity levels and their integrity level requirements. It covers systems, software products, and their elements, as well as relevant external dependences.

This part of ISO/IEC 15026 is applicable to systems and software and is intended for use by:

a) definers of integrity levels such as industry and professional organizations, standards organizations, and government agencies;

b) users of integrity levels such as developers and maintainers, suppliers and acquirers, users, and assessors of systems or software and for the administrative and technical support of systems and/or software products.

One important use of integrity levels is by suppliers and acquirers in agreements; for example, to aid in assuring safety, economic, or security characteristics of a delivered system or product.

This part of ISO/IEC 15026 does not prescribe a specific set of integrity levels or their integrity level requirements. In addition, it does not prescribe the way in which integrity level use is integrated with the overall system or software engineering life cycle processes. It does, however, provide an example of use of this part of ISO/IEC 15026 in Annex B.

2 Normative references

The following referenced documents are indispensable for the application 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 TR 15026-1 *Systems and software engineering — Systems and software assurance — Concepts and vocabulary*