Systems and software engineering — Systems and software assurance —

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Part 3:
System integrity levels

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

Document Preview

Partie 3: Niveaux d'intégritéd'intégrité du système

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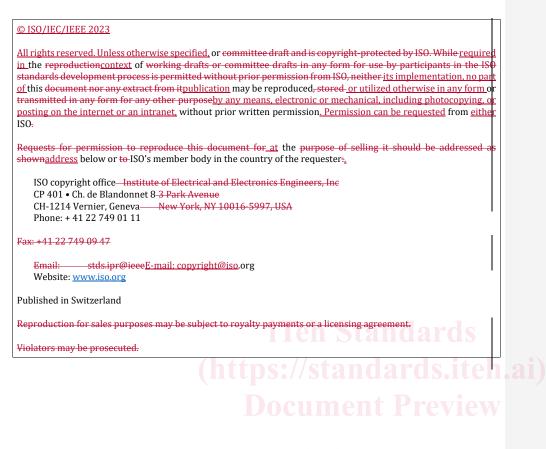https://standards.iteh.ai/catalog/standards/sist/e1d01780-eec2-4142-971c-e688b38e60ac/iso-iec-ieee-fdis-15026-3

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This document 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

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Engineering Standards Committee of the IEEE Computer Society, under the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

This third edition cancels and replaces the second edition (ISO/IEC 15026-3:2015), which has been technically revised.

The main changes are as follows:

— ——removal of duplicate terminological entries already included in ISO/IEC/IEEE 15026-1:2019 except for a few essential terms which are included in this edition for ease of reference;

— ——updates to normative references to the current edition of each reference.

A list of all parts in the ISO/IEC/IEEE 15026 series can be found on the ISO and IEC websites.

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.

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Systems and software engineering — Systems and software assurance —

Part 3:
System integrity levels

1 Scope

This document specifies the concept of integrity levels with the corresponding integrity level requirements for achieving the integrity levels. Requirements and recommended methods are provided for defining and using integrity levels and their corresponding integrity level requirements. This document covers systems, software products, and their elements, as well as relevant external dependences.

This document is applicable to systems and software and is intended for use by:

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

b) ~~b)~~ users of integrity levels such as developers and maintainers, suppliers and acquirers, system or software users, assessors of systems or software and administrative and technical support staff 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, financial, or security characteristics of a delivered system or product.

This document 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 document in Annex A~~Annex A~~.

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, *Systems and software engineering — Software life cycle processes*

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

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

3   Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC/IEEE 15026-1 and the following apply.

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

— ——ISO Online browsing platform: available at https://www.iso.org/obp/ui

— ——IEC Electropedia: available at https://www.electropedia.org

— ——IEEE Standards Dictionary Online: available at https://dictionary.ieee.org

3.1
integrity level
degree of confidence that the system-of-interest meets the associated *integrity level claim* (3.4 (3.4))

Note 1 to entry: A definition of "integrity" consistent with its use in "integrity level" has not been agreed in the relevant communities. Hence, no separate definition of "integrity" is included in this document.

Note 2 to entry: An integrity level is different from the likelihood that the integrity level claim is met, but they are closely related.

Note 3 to entry: The word "confidence" implies that the definition of integrity levels is a subjective concept.

Note 4 to entry: In this document, integrity levels are defined in terms of risk and hence cover safety, security, financial and any other dimension of risk that is relevant to the system-of-interest.

[SOURCE: ISO/IEC/IEEE 15026-Part 1:2019, 3.3.1], modified — Note 1 to entry has been revised to be more accurate and clearer; the reference to ISO/IEC 25010 has been removed; in note 4 to entry, "economic" has been replaced by "financial".]

3.2
integrity level assurance authority
independent person or organization responsible for certifying compliance with the *integrity level requirements* (3.5)

[SOURCE: ISO/IEC/IEEE 15026-Part 1:2019, 3.5.4], modified — The term has been changed from "integrity assurance authority" to "integrity level assurance authority".]

3.3
integrity level definition authority
person or organization responsible for defining integrity levels and integrity level requirements

[SOURCE: ISO/IEC/IEEE 15026-Part 1:2015, 3.9]

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3.4
integrity level claim
proposition representing a requirement ~~for~~on a risk reduction measure identified in the risk treatment process of the system-of-interest.

Note 1 to entry: In general, an integrity level claim is described in terms of requirements that, when met, would avoid, control or mitigate the consequences of dangerous conditions, and provide tolerable risk.

Note 2 to entry: The claim that can be regarded as an integrity level claim in IEC 61508~~:2010~~ is that an E/E/PE safety-related system satisfactorily performs the specified safety functions under all the stated conditions.

[SOURCE: ISO/IEC/IEEE 15026-~~Part~~1:2019, 3.3.4~~]~~, modified — Notes 1 and 2 to entry have been revised to be more accurate and clearer.]

3.5
integrity level ~~requirement~~requirements
set of requirements that, when met, will provide a level of confidence in the associated *integrity level claim* (3.4~~(3.4)~~) commensurate with the associated *integrity level* (3.1~~(3.1)~~)

[SOURCE: ISO/IEC/IEEE 15026-~~Part~~1:2019, 3.3.2~~]~~, modified — Note 1 to entry has been removed.]

4 Defining integrity levels

4.1 Users of this clause

This clause explains the process of defining a set of integrity levels for a specific system domain and general requirements for related-products, such as integrity levels, integrity level claims, and integrity level requirements. Thus, the users of this clause are organizations which develop specifications defining a set of integrity levels. The organizations, which are called integrity level definition authorities, include international or domestic standardization organizations, any other standardization organizations, arbitrary industry organizations, or a department in an organization that is responsible for the organization's policy or standard for contract management. Figure 1~~Figure 1~~ shows the overview of the process of defining integrity levels.

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│         Specifying context of integrity levels        │
│  ┌─────────────────────────────────────────────────┐ │
│  │     Specifying system-related information         │ │
│  └─────────────────────────────────────────────────┘ │
│                        ↓                              │
│  ┌─────────────────────────────────────────────────┐ │
│  │      Specifying risk-related information          │ │
│  └─────────────────────────────────────────────────┘ │
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┌─────────────────────────────────────────────────────┐
│              Specifying integrity levels              │
│  ┌─────────────────────────────────────────────────┐ │
│  │      Specifying an integrity level claim          │ │
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│  │      Specifying a set of integrity levels         │ │
│  └─────────────────────────────────────────────────┘ │
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│        Specifying integrity level requirements        │
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│  │  Specifying a set of integrity level requirements │ │
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│  │           Specifying justification                │ │
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┌─────────────────────────────────────────────────────┐
│         Specifying other related information          │
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↓   represents flow of processes. Iteration of processes
    are not shown for simplicity.

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