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Systems and software engineering — Life cycle management —

Part 8: Technical reviews and audits on defence programs

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Institute of Electrical and Electronics Engineers, Inc
3 Park Avenue, New York
NY 10016-5997, USA

Email: stds.ipr@ieee.org
Website: www.ieee.org

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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).

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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 24748-8:2019), which has been technically revised.

The main changes are as follows:

— aligned document structure, terminology, etc. with related ISO standards (e.g. ISO/IEC/IEEE 15288:2023);

— reorganized and consolidated text for more consistent wording and to support different acquisition life cycles and organizations;

— added information to support software using highly iterative and incremental (agile) life cycles;

— defined common processes for technical reviews and audits on defence projects;

— defined review and audit topics associated with technical reviews and audits, replacing acceptability criteria;

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— added context to support readers without significant defence industry experience;

— updated to reflect current best practices (e.g. digital engineering);

— removed selected guidance material (e.g. annexes describing optional reviews);

— updated definitions, acronyms and bibliography to be consistent with revised text.

A list of all parts in the ISO/IEC/IEEE 24748 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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Introduction

This document responds to the needs of defence projects to have more specific and detailed requirements for technical reviews and audits as part of the assessment of projects during their life cycle. The requirements and guidance in this document have been written at the most general level possible so that they can meet the needs of defence agencies in different countries, either by direct application or by tailoring for an agency's specific needs.

Defence projects can be different from typical commercial projects in several ways:

— Defence systems can have hazards to human safety, the environment and national security that make their ownership and use prohibited outside of a defence organization. This can constrain the ability of projects to develop and deploy solutions for test and operational use;

— Acquisition teams can require comprehensive, cohesive technical data for systems and system elements, particularly plans, requirements and architectural descriptions (e.g. for certification activities or organic support);

— Acquisition teams using public funds often need extensive visibility into the definition and execution of supplier processes to support their fiduciary responsibilities.

These differences can result in the need to support more stakeholders in the review and audit process (6.6) and the need to review and audit more information items than found in typical commercial projects. However, non-defence projects are encouraged to apply it if useful.

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

— by an acquirer and a supplier, to help develop an agreement on the contribution of each party to the technical reviews and audit approach;

— by a project, to help establish and execute a technical review and audit approach for that project;

— by an organization, to help establish a desired approach to technical reviews and audits that can be applied across multiple projects;

— by process assessors, to serve as a reference for use in the performance of process assessments that support organizational process improvement.

NOTE Several tables in this document include a unique identifier (ID) for each table entry. This identifier can be used as desired to support compact references to the table entry in tailoring descriptions, checklists, etc.

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Systems and software engineering — Life cycle management —

Part 8: Technical reviews and audits on defence programs

1 Scope

This document establishes the requirements for technical reviews and audits to be performed throughout the acquisition life cycle of defence projects. This document provides the purpose, timing, activities and tasks for each technical review and audit. It can be used to establish agreement between acquirers and suppliers on the technical reviews and audits that are needed for the project, as well as the focus and expectations of each technical review and audit.

This document is applicable to:

— those who implement or plan to implement technical reviews and audits in the acquisition of defence-related systems (and parts thereof) or services;

— those who are responsible for the technical management of projects concerned with the engineering of systems;

— those responsible for executing ISO/IEC/IEEE 15288 system life cycle processes for defence projects.

While primarily supporting the acquirer-supplier agreement mode, this document also can be used to support the other modes such as use by organizations, projects and process assessors.

NOTE In this document, the terms "project" and "program" are used interchangeably.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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://ieeexplore.ieee.org/xpls/dictionary.jsp

NOTE For additional terms and definitions in the field of systems and software engineering, see ISO/IEC/IEEE 24765, which is published periodically as a “snapshot” of the SEVOCAB (Systems and software Engineering Vocabulary) database and which is publicly accessible at https://www. computer. org/sevocab.

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3.1.1
agile
development approach based on iterative development, frequent inspection and adaptation, and incremental deliveries in which requirements and solutions evolve through collaboration in cross-functional teams and through continual stakeholder feedback

[SOURCE: ISO/IEC/IEEE 24748-1:2024, 3.4]

3.1.2
evaluation
systematic determination of the extent to which an entity meets its specified criteria

[SOURCE: ISO/IEC 25001:2014, 4.1]

3.1.3
increment
tested, deliverable version of a product that provides new or modified capabilities

[SOURCE: ISO/IEC 33202:2024, 3.17, modified — "software" has been removed.]

3.1.4
information
knowledge that is exchangeable amongst *users* (3.1.13), about things, facts, concepts, and so on, in a universe of discourse

[SOURCE: ISO/IEC 10746-2:2009, 3.2.6]

3.1.5
information item
information product
separately identifiable body of *information* (3.1.4) that is produced, stored, and delivered for human use

Note 1 to entry: A document produced to meet information requirements can be an information item, part of an information item, or a combination of several information items.

Note 2 to entry: An information item can be produced in several versions during a project or *system* (3.1.11) life cycle.

[SOURCE: ISO/IEC/IEEE 15289:2019, 3.1.12]

3.1.6
information item content
information (3.1.4) included in an *information item* (3.1.5), associated with a *system* (3.1.11), product or service, to satisfy a requirement or need

[SOURCE: ISO/IEC/IEEE 15289:20197, 3.1.13]

3.1.7
iteration
<process> repeating the application of the same process or set of processes on the same level of the *system* (3.1.11) structure

[SOURCE: ISO/IEC/IEEE 15288:2023, 3.28]

3.1.8
recursion
<process> repeating the application of the same process or set of processes to successive levels of *system* (3.1.11) elements in the system structure

[SOURCE: ISO/IEC/IEEE 15288:2023, 3.31]

Note 1 to entry: No specific order of application is implied by this definition. For software and hardware system elements, a process may be applied at recursively lower levels for system definition and recursively higher levels for system realization.

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Note 2 to entry: This definition does not imply any specific hierarchical, vertical, or horizontal structure for the system of interest, enabling system, organization, or project.

3.1.9
software configuration item
computer software configuration item
aggregation of software that is designed for configuration management and treated as a single entity in the configuration management process

Note 1 to entry: The state of technology progression has resulted in the functionality of software code being realized by its execution while embedded in devices that are not properly described as computers (e.g. digital signal processors, field programmable gate assemblies). This document uses software configuration item to encompass the broader execution environment of software code.

[SOURCE: ISO/IEC/IEEE 24765:2017, modified — The admitted term "software configuration item" has been changed to the preferred term; the abbreviated terms have been removed; note 1 to entry has been added.]

3.1.10
specification
information item (3.1.5) that identifies, in a complete, precise, and verifiable manner, the requirements, design, behaviour, or other expected characteristics of a *system* (3.1.11), service, or process

Note 1 to entry: The more generic term is used for consistent terminology within this document and includes terms such as system performance specification, system requirements document, system or subsystem specification, or *agile* (3.1.1) backlog.

[SOURCE: ISO/IEC/IEEE 15289:2019, 3.1.26, modified — Note 1 to entry has been added.]

3.1.11
system
arrangement of parts or elements that together exhibit a stated behaviour or meaning that the individual constituents do not

Note 1 to entry: A system is sometimes considered as a product or as the services it provides.

Note 2 to entry: In practice, the interpretation of its meaning is frequently clarified by the use of an associative noun, e.g. aircraft system. Alternatively, the word “system” is substituted simply by a context-dependent synonym (e.g. aircraft), though this potentially obscures a system principles perspective.

Note 3 to entry: A complete system includes all of the associated equipment, facilities, material, computer programs, firmware, technical documentation, services, and personnel required for operations and support to the degree necessary for self-sufficient use in its intended environment.

[SOURCE: ISO/IEC/IEEE 15288:2023, 3.46]

3.1.12
technical review
systems engineering technical review
a systems engineering activity conducted at a logical transition point in a system life cycle, by which the progress of a project is assessed relative to its technical requirements using a mutually agreed-upon set of criteria

Note 1 to entry: Includes both incremental and system perspectives, as applicable, and considers technical maturity amidst programmatic constraints (cost/schedule), to ascertain readiness to proceed to subsequent activities with acceptable risk.

Note 2 to entry: Unless otherwise stated, the use of the term “review” in this document is intended to refer specifically to a technical review.

3.1.13
user
individual or group that interacts with a *system* (3.1.11) or benefits from a system during its utilization

[SOURCE: ISO/IEC/IEEE 15288:2023, 3.53]

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3.2 Abbreviated terms

ASR	alternative systems review
CDR	critical design review
ICA	incremental configuration audit
ICR	iterative capability review
ID	identifier
IPR	iterative planning review
IRR	incremental release review
IVR	incremental viability review
FCA	functional configuration audit
MVCR	minimum viable capability release
MVP	minimum viable product
PCA	physical configuration audit
PIR	project initiation review
PDR	preliminary design review
PRR	production readiness review
RASIC	responsible, accountable, supports, informed, consulted (model)
SBOM	software bill of materials
SFR	system functional review
SME	subject matter expert
SRR	system requirements review
SVR	system verification review
TRR	test readiness review

4 Conformance

Users of this document can make claims of conformance (conformance statements) to some or all requirements in this document. Users can structure the form of such claims to meet their needs, therefore this document does not prescribe the form of these claims.

Also, per ISO/IEC 17007, this document does not address specific methods or procedures for individual conformity assessment activities, nor does it address general rules or methodology for conformity assessment.

For more information about conformance, see Annex B.

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