

# IEEE Standard for Technical Reviews and Audits on Defense Programs

IEEE Computer Society

Sponsored by the  
Software & Systems Engineering Standards Committee

---

IEEE  
3 Park Avenue  
New York, NY 10016-5997  
USA

IEEE Std 15288.2™-2014



# IEEE Standard for Technical Reviews and Audits on Defense Programs

Sponsor

**Software & Systems Engineering Standards Committee  
of the  
IEEE Computer Society**

Approved 10 December 2014

**IEEE-SA Standards Board**

**Abstract:** The requirements for technical reviews and audits to be performed throughout the acquisition life cycle for the US Department of Defense (DoD) and other defense agencies are established in this standard. This standard provides the definition, description, and intent, as well as the entry/exit/success criteria, for each technical review and audit. It is to 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.

**Keywords:** 15288, acquirer-supplier agreement, alternative systems review, critical design review, defense acquisition program, defense acquisition program life cycle, flight readiness review, functional configuration audit, IEEE 15288.2™, integration readiness review, physical configuration audit, preliminary design review, production readiness review, software requirements and architecture review, software specification review, system functional review, system requirements review, system verification review, technical audit, technical review, test readiness review

---

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

Copyright © 2015 by The Institute of Electrical and Electronics Engineers, Inc.  
All rights reserved. Published 15 May 2015. Printed in the United States of America.

IEEE is a registered trademark in the U.S. Patent & Trademark Office, owned by The Institute of Electrical and Electronics Engineers, Incorporated.

PDF: ISBN 978-0-7381-9535-3      STD20106  
Print: ISBN 978-0-7381-9536-0      STDPD20106

*IEEE prohibits discrimination, harassment, and bullying.*  
For more information, visit <http://www.ieee.org/web/aboutus/whatis/policies/p9-26.html>.  
No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

## **Important Notices and Disclaimers Concerning IEEE Standards Documents**

IEEE documents are made available for use subject to important notices and legal disclaimers. These notices and disclaimers, or a reference to this page, appear in all standards and may be found under the heading “Important Notice” or “Important Notices and Disclaimers Concerning IEEE Standards Documents.”

### **Notice and Disclaimer of Liability Concerning the Use of IEEE Standards Documents**

IEEE Standards documents (standards, recommended practices, and guides), both full-use and trial-use, are developed within IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association (“IEEE-SA”) Standards Board. IEEE (“the Institute”) develops its standards through a consensus development process, approved by the American National Standards Institute (“ANSI”), which brings together volunteers representing varied viewpoints and interests to achieve the final product. Volunteers are not necessarily members of the Institute and participate without compensation from IEEE. While IEEE administers the process and establishes rules to promote fairness in the consensus development process, IEEE does not independently evaluate, test, or verify the accuracy of any of the information or the soundness of any judgments contained in its standards.

IEEE does not warrant or represent the accuracy or content of the material contained in its standards, and expressly disclaims all warranties (express, implied and statutory) not included in this or any other document relating to the standard, including, but not limited to, the warranties of: merchantability; fitness for a particular purpose; non-infringement; and quality, accuracy, effectiveness, currency, or completeness of material. In addition, IEEE disclaims any and all conditions relating to: results; and workmanlike effort. IEEE standards documents are supplied “AS IS” and “WITH ALL FAULTS.”

Use of an IEEE standard is wholly voluntary. The existence of an IEEE standard does not imply that there are no other ways to produce, test, measure, purchase, market, or provide other goods and services related to the scope of the IEEE standard. Furthermore, the viewpoint expressed at the time a standard is approved and issued is subject to change brought about through developments in the state of the art and comments received from users of the standard.

In publishing and making its standards available, IEEE is not suggesting or rendering professional or other services for, or on behalf of, any person or entity nor is IEEE undertaking to perform any duty owed by any other person or entity to another. Any person utilizing any IEEE Standards document, should rely upon his or her own independent judgment in the exercise of reasonable care in any given circumstances or, as appropriate, seek the advice of a competent professional in determining the appropriateness of a given IEEE standard.

IN NO EVENT SHALL IEEE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO: PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE PUBLICATION, USE OF, OR RELIANCE UPON ANY STANDARD, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE AND REGARDLESS OF WHETHER SUCH DAMAGE WAS FORESEEABLE.

### **Translations**

The IEEE consensus development process involves the review of documents in English only. In the event that an IEEE standard is translated, only the English version published by IEEE should be considered the approved IEEE standard.

## **Official statements**

A statement, written or oral, that is not processed in accordance with the IEEE-SA Standards Board Operations Manual shall not be considered or inferred to be the official position of IEEE or any of its committees and shall not be considered to be, or be relied upon as, a formal position of IEEE. At lectures, symposia, seminars, or educational courses, an individual presenting information on IEEE standards shall make it clear that his or her views should be considered the personal views of that individual rather than the formal position of IEEE.

## **Comments on standards**

Comments for revision of IEEE Standards documents are welcome from any interested party, regardless of membership affiliation with IEEE. However, IEEE does not provide consulting information or advice pertaining to IEEE Standards documents. Suggestions for changes in documents should be in the form of a proposed change of text, together with appropriate supporting comments. Since IEEE standards represent a consensus of concerned interests, it is important that any responses to comments and questions also receive the concurrence of a balance of interests. For this reason, IEEE and the members of its societies and Standards Coordinating Committees are not able to provide an instant response to comments or questions except in those cases where the matter has previously been addressed. For the same reason, IEEE does not respond to interpretation requests. Any person who would like to participate in revisions to an IEEE standard is welcome to join the relevant IEEE working group.

Comments on standards should be submitted to the following address:

Secretary, IEEE-SA Standards Board  
445 Hoes Lane  
Piscataway, NJ 08854 USA

## **Laws and regulations**

Users of IEEE Standards documents should consult all applicable laws and regulations. Compliance with the provisions of any IEEE Standards document does not imply compliance to any applicable regulatory requirements. Implementers of the standard are responsible for observing or referring to the applicable regulatory requirements. IEEE does not, by the publication of its standards, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

## **Copyrights**

IEEE draft and approved standards are copyrighted by IEEE under U.S. and international copyright laws. They are made available by IEEE and are adopted for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of engineering practices and methods. By making these documents available for use and adoption by public authorities and private users, IEEE does not waive any rights in copyright to the documents.

## **Photocopies**

Subject to payment of the appropriate fee, IEEE will grant users a limited, non-exclusive license to photocopy portions of any individual standard for company or organizational internal use or individual, non-commercial use only. To arrange for payment of licensing fees, please contact Copyright Clearance Center, Customer Service, 222 Rosewood Drive, Danvers, MA 01923 USA; +1 978 750 8400. Permission to photocopy portions of any individual standard for educational classroom use can also be obtained through the Copyright Clearance Center.

## **Updating of IEEE Standards documents**

Users of IEEE Standards documents should be aware that these documents may be superseded at any time by the issuance of new editions or may be amended from time to time through the issuance of amendments, corrigenda, or errata. An official IEEE document at any point in time consists of the current edition of the document together with any amendments, corrigenda, or errata then in effect.

Every IEEE standard is subjected to review at least every ten years. When a document is more than ten years old and has not undergone a revision process, it is reasonable to conclude that its contents, although still of some value, do not wholly reflect the present state of the art. Users are cautioned to check to determine that they have the latest edition of any IEEE standard.

In order to determine whether a given document is the current edition and whether it has been amended through the issuance of amendments, corrigenda, or errata, visit the IEEE-SA Website at <http://ieeexplore.ieee.org/xpl/standards.jsp> or contact IEEE at the address listed previously. For more information about the IEEE-SA or IEEE's standards development process, visit the IEEE-SA Website at <http://standards.ieee.org>.

## **Errata**

Errata, if any, for all IEEE standards can be accessed on the IEEE-SA Website at the following URL: <http://standards.ieee.org/findstds/errata/index.html>. Users are encouraged to check this URL for errata periodically.

## **Patents**

Attention is called to the possibility that implementation of this standard may require use of subject matter covered by patent rights. By publication of this standard, no position is taken by the IEEE with respect to the existence or validity of any patent rights in connection therewith. If a patent holder or patent applicant has filed a statement of assurance via an Accepted Letter of Assurance, then the statement is listed on the IEEE-SA Website at <http://standards.ieee.org/about/sasb/patcom/patents.html>. Letters of Assurance may indicate whether the Submitter is willing or unwilling to grant licenses under patent rights without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination to applicants desiring to obtain such licenses.

Essential Patent Claims may exist for which a Letter of Assurance has not been received. The IEEE is not responsible for identifying Essential Patent Claims for which a license may be required, for conducting inquiries into the legal validity or scope of Patents Claims, or determining whether any licensing terms or conditions provided in connection with submission of a Letter of Assurance, 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 the IEEE Standards Association.

## Participants

At the time this IEEE standard was completed, the DoD Systems Engineering Standardization Joint Working Group had the following membership:

**Garry Roedler, Chair**  
**David Davis, Vice Chair**

Bill Bearden  
Dave Berwald  
Tom Channell  
Dan Christensen  
Stephen Christensen  
Luke Daniels  
Geoff Draper

John Evers  
Ronald Fradenburg  
Mark Henley  
Theresa Hunt  
Cheryl Jones  
Ed Matheson  
Revis Napier

Larry Pennell  
Chris Ptachik  
Bob Scheurer  
John Schnackenberg  
Brian Shaw  
Zachary Taylor  
Gan Wang

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

Bill Bearden  
Bill Brown  
Susan Burgess  
William Byrd  
Tom Channell  
Dan Christensen  
Stephen Christensen  
Luke Daniels  
David Davis  
Robert Epps  
Alan Fitzmorris  
Ronald Fradenburg  
Randall Groves  
Denise Haskins  
Mark Henley  
Theresa Hunt  
Noriyuki Ikeuchi

Hannibal Iyob  
Cheryl Jones  
Piotr Karocki  
Yuri Khersonsky  
Dewitt Latimer  
James Moore  
Edward Moshinsky  
Revis Napier  
Olileanya Ogbonna  
Larry Pennell  
Chris Ptachik  
Annette Reilly  
William Riski  
Garry Roedler  
Bartien Sayogo  
Bob Scheurer  
John Schnackenberg

Brian Shaw  
Carl Singer  
David Singleton  
John Snoderly  
Eugene Stoudenmire  
Walter Struppel  
Marcy Stutzman  
Michael Swearingen  
Zachary Taylor  
David Walden  
Gan Wang  
Nancy Weaver  
Clifford Whitcomb  
Michael Yokell  
Matthew Young  
Kenneth Zemrowski  
David Zhong

When the IEEE-SA Standards Board approved this standard on 10 December 2014, it had the following membership:

**John Kulick, Chair**  
**Jon Walter Rosdahl, Vice Chair**  
**Richard H. Hulett, Past Chair**  
**Konstantinos Karachalios, Secretary**

Peter Balma  
Farooq Bari  
Ted Burse  
Clint Chaplain  
Stephen Dukes  
Jean-Philippe Faure  
Gary Hoffman

Michael Janezic  
Jeffrey Katz  
Joseph L. Koepfinger\*  
David J. Law  
Hung Ling  
Oleg Logvinov  
T. W. Olsen  
Glenn Parsons

Ron Peterson  
Adrian Stephens  
Peter Sutherland  
Yatin Trivedi  
Phil Winston  
Don Wright  
Yu Yuan

\*Member Emeritus

Also included are the following nonvoting IEEE-SA Standards Board liaisons:

Richard DeBlasio, *DOE Representative*  
Michael Janezic, *NIST Representative*

Catherine Berger  
*IEEE-SA Content Production and Management*

Malia Zaman  
*IEEE-SA Technical Program Operations*

## **Introduction**

This introduction is not part of IEEE Std 15288.2-2014, IEEE Standard for Technical Reviews and Audits on Defense Programs.

For effective and efficient application of ISO/IEC/IEEE 15288 on defense programs, additional requirements are needed for the assessment of those programs. ISO/IEC/IEEE 15288 is written in a general manner to address all types of systems and different modes of application. Thus, it does not have requirements specific to the use by defense projects that facilitate effective implementation of an acquirer-supplier agreement, such as use in DoD contracts. This standard responds to the needs of DoD and other defense agencies to have more specific and detailed requirements for technical reviews and audits as part of the assessment of projects during the life cycle.

The requirements and guidance in this standard have been written at the most general level possible so that they might meet not only DoD's needs but also those of other defense agencies, either by direct application or by tailoring for an agency's specific needs.

This standard was developed with input from government and non-government resources. This standard does not supersede or supplant any other law, regulation, directive, contractual provision, or requirement. Accordingly, users of this standard must verify, conform and complete the technical review and audit of any governmental programs to meet the requirements specified by the government at the time of the technical review and audit. The user is instructed to consult the governmental contact or commissioning party for specific instructions and requirements, which may be different from this standard. Users may also have to comply with other applicable laws, regulations, and agency requirements in the undertaking and completion of any such technical reviews and audits, including but not limited to confidentiality, security clearance, access to protected areas, and document management. It is the user's responsibility to determine all applicable laws and requirements.

## Contents

1. Overview .....	1
1.1 Scope .....	1
1.2 Purpose .....	1
1.3 Field of application.....	2
1.4 Organization of this standard.....	2
1.5 Conformance .....	3
2. Normative references.....	4
3. Definitions, acronyms, and abbreviations .....	4
3.1 Definitions .....	4
3.2 Acronyms and abbreviations .....	5
4. Overview of technical reviews and audits .....	9
4.1 Technical reviews and audits defined.....	9
4.2 The role of technical reviews and audits in the US DoD acquisition life cycle .....	9
4.3 Technical reviews and audits in the context of Technical Management processes .....	9
4.4 Key participants for technical reviews and audits .....	10
4.5 Program considerations for technical reviews and audits .....	11
4.6 Media selection for products discussed in this standard.....	17
5. Requirements for technical reviews and audits .....	17
5.1 General .....	17
5.2 Alternative systems review (ASR) .....	19
5.3 System requirements review (SRR).....	21
5.4 System functional review (SFR).....	24
5.5 Preliminary design review (PDR).....	26
5.6 Critical design review (CDR) .....	29
5.7 Test readiness review (TRR) .....	32
5.8 Functional configuration audit (FCA) .....	34
5.9 System verification review (SVR).....	36
5.10 Production readiness review (PRR) .....	38
5.11 Physical configuration audit (PCA) .....	40
6. Detailed criteria to be addressed for each technical review and audit .....	43
6.1 General .....	43
6.2 Alternative systems review (ASR) detailed criteria.....	43
6.3 System requirements review (SRR) detailed criteria.....	48
6.4 System functional review (SFR) detailed criteria.....	55
6.5 Preliminary design review (PDR) detailed criteria .....	60
6.6 Critical design review (CDR) detailed criteria .....	69
6.7 Test readiness review (TRR) detailed criteria .....	77
6.8 Functional configuration audit (FCA) detailed criteria.....	83
6.9 System verification review (SVR) detailed criteria .....	87
6.10 Production readiness review (PRR) detailed criteria .....	92
6.11 Physical configuration audit (PCA) detailed criteria .....	98
7. Technical review and audit application guidance for defense programs .....	103
7.1 General .....	103
7.2 Alternative systems review (ASR) application guidance.....	103
7.3 System requirements review (SRR) application guidance.....	104

7.4 System functional review (SFR) application guidance.....	105
7.5 Preliminary design review (PDR) application guidance.....	105
7.6 Critical design review (CDR) application guidance .....	106
7.7 Test readiness review (TRR) application guidance .....	107
7.8 Functional configuration audit (FCA) application guidance .....	110
7.9 System verification review (SVR) application guidance.....	111
7.10 Production readiness review (PRR) application guidance.....	112
7.11 Physical configuration audit (PCA) application guidance.....	113
 Annex A (informative) Software requirements and architecture review (SAR).....	115
A.1 General.....	115
A.2 Annex A purpose .....	115
A.3 Annex A tailoring .....	115
A.4 Application of Annex A content .....	115
A.5 Requirements for a SAR .....	115
A.6 SAR detailed criteria.....	118
A.7 SAR application guidance .....	124
 Annex B (informative) Software specification review (SSR) .....	126
B.1 General.....	126
B.2 Annex B purpose.....	126
B.3 Annex B tailoring.....	126
B.4 Application of Annex B content .....	126
B.5 Requirements for an SSR .....	126
B.6 SSR detailed criteria .....	129
B.7 SSR application guidance .....	134
 Annex C (informative) Integration readiness review (IRR) .....	135
C.1 General.....	135
C.2 Annex C purpose.....	135
C.3 Annex C tailoring.....	135
C.4 Application of Annex C content .....	135
C.5 Requirements for an IRR .....	135
C.6 IRR detailed criteria .....	138
C.7 IRR application guidance .....	143
 Annex D (informative) Flight readiness review (FRR) .....	145
D.1 General.....	145
D.2 Annex D purpose .....	145
D.3 Annex D tailoring .....	145
D.4 Application of annex D content .....	145
D.5 Requirements for an FRR .....	145
D.6 FRR detailed criteria.....	148
D.7 FRR application guidance.....	152
 Annex E (informative) Bibliography .....	154