

# IEEE Recommended Practice for Software Acquisition

IEEE Computer Society

Sponsored by the  
Software & Systems Engineering Standards (C/S2ESC) Committee

# **IEEE Recommended Practice for Software Acquisition**

Sponsor

**Software & Systems Engineering Standards (C/S2ESC) Committee**  
of the  
**IEEE Computer Society**

Approved 5 December 2015

**IEEE-SA Standards Board**

Currently in preview, click buy full version

**Abstract:** A set of useful quality considerations that can be selected and applied during one or more steps in a software acquisition process is described in this recommended practice. The recommended practices can be applied to software that runs on any computer system regardless of the size, complexity, or criticality of the software. The software supply chain may include integration of off-the-shelf (OTS), custom, or free and open source software (FOSS). Each organization or individual using this recommended practice will need to identify the specific quality and activities that need to be included within its acquisition process.

**Keywords:** acquirer, custom developed, end user, FOSS, IEEE 1062™, off-the-shelf, OTS, SaaS, software acquisition process, software as a service, supplier

---

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

Copyright © 2016 by The Institute of Electrical and Electronics Engineers, Inc.  
All rights reserved. Published 26 February 2016. 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 978-1-5044-0085-5 STD20506  
Print: ISBN 978-1-5044-0086-2 STDPD20506

*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 comment 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 recommended practice was completed, the RP of the Software Acquisition Working Group had the following membership:

**Marcus Hervey, *Chair***  
**Paul Bishop, *Vice Chair***  
**Philip Bernick, *Secretary***

Angela Anuszewski  
Taohong Chang  
Milton Concepcion  
Steve Cropper  
Suellen Eslinger  
Michael George  
Guy Goodwin  
Jay Griesser

Leslie Holloway  
Thomas Howard  
Kathleen Kaplan  
Ronald Kohl  
Dana Kusumo  
Mario Lozano  
Linda Martinez  
Winifred Menezes

Zvikomborero Murahwi  
Lori Naiberg-Olson  
Annette Reilly  
Alberto Sampaio  
Rob Schaaf  
Mike Smith  
Joan Williams  
Sharon Young

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

Johann Amsenga  
Bakul Banerjee  
Pieter Botman  
Susan Burgess  
Juan Carreon  
Sue Carroll  
Suresh Channarasappa  
Keith Chow  
S Claassen  
Raul Colcher  
Paul Croll  
Geoffrey Darnton  
Ronald Dean  
Sourav Dutta  
Andrew Fieldsend  
Eva Freund  
David Fuschi  
Gregg Giesler  
Randall Groves  
Louis Gullo  
John Haralaz

Mark Henley  
Richard Hilliard  
Werner Hoelzl  
Bernard Homes  
Noriyuki Ikeuchi  
Atsushi Ito  
Mark Jaeger  
Cheryl Jones  
Adri Jovin  
Peter Karocki  
Gunn Mersonsky  
Thomas Kurihara  
Dewitt Latimer  
Claire Lohr  
Edward McCall  
James W. Moore  
Michael Newman  
Olileanya Ogbonna  
Robert Peterson  
Annette Reilly  
Robert Robinson  
Randy Saunders

Bartien Sayogo  
Robert Schaaf  
Hans Schaefer  
Maud Schlich  
Carl Singer  
Michael Smith  
Kendall Southwick  
Luca Spotorno  
Thomas Starai  
Eugene Stoudenmire  
Walter Struppler  
Marcy Stutzman  
Michael Swearingen  
Thomas Tullia  
John Vergis  
David Walden  
Michael Waterman  
Stephen Webb  
Jian Yu  
Oren Yuen  
Daidi Zhong

When the IEEE-SA Standards Board approved this recommended practice on 5 December 2015, it had the following membership:

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

Masayuki Ariyoshi  
Ted Burse  
Stephen Dukes  
Jean-Philippe Faure  
J. Travis Griffith  
Gary Hoffman  
Michael Janezic

Joseph L. Koepfinger\*  
David J. Law  
Hung Ling  
Andrew Myles  
T. W. Olsen  
Glenn Parsons  
Ronald C. Petersen  
Annette D. Reilly

Stephen J. Shellhammer  
Adrian P. Stephens  
Yatin Trivedi  
Phillip Winston  
Don Wright  
Yu Yuan  
Daidi Zhong

\*Member Emeritus

## Introduction

This introduction is not part of IEEE Std 1062-2015, IEEE Recommended Practice for Software Acquisition.

This introduction provides some background on the rationale used to develop this recommended practice. This information is meant to aid in the understanding and usage of this recommended practice.

This recommended practice describes the management and execution of software acquisition activities. It is intended for the following:

- Individuals or organizations that acquire software from suppliers
- Individuals or organizations that acquire software from a developer for resale to other individuals or organizations
- Individuals or organizations that influence how software is acquired from suppliers
- Suppliers interested in providing high-quality software to acquirers

This recommended practice is designed to help organizations and individuals:

- Incorporate quality considerations during the definition, evaluation, selection, and acceptance of supplier software for operational use
- Determine how supplier software should be evaluated, tested, and accepted for delivery to end users

This recommended practice is intended to satisfy the following objectives:

- Promote consistency within organizations in acquiring third-party software from software suppliers
- Provide useful practices on including quality considerations during software acquisition planning
- Provide useful practices on evaluating and qualifying supplier capabilities to meet user software requirements
- Provide useful practices on evaluating and qualifying supplier software
- Assist individuals or organizations judging the quality of supplier software for referral to end users

## Contents

1. Overview .....	11
1.1 Scope .....	11
1.2 Purpose .....	12
2. Normative references.....	12
3. Definitions and terms .....	13
3.1 Definitions .....	13
3.2 Use of should, may, and can.....	13
4. Software acquisition alternatives.....	13
4.1 Introduction .....	13
4.2 Custom-developed software .....	14
4.3 Off-the-shelf (OTS) software.....	14
4.4 Software as a service (SaaS).....	15
5. Software acquisition process .....	18
5.1 Purpose .....	18
5.2 Eight steps in acquiring quality software.....	19
5.3 Step 1: Planning the software acquisition strategy .....	22
5.4 Step 2: Defining the acquisition and software requirements .....	24
5.5 Step 3: Identifying potential suppliers .....	26
5.6 Step 4: Preparing contract requirements .....	28
5.7 Step 5: Evaluating proposals and selecting the supplier.....	30
5.8 Step 6: Managing for supplier performance .....	32
5.9 Step 7: Accepting the software .....	33
5.10 Step 8: Evaluating the process and identifying improvement opportunities.....	34
6. Quality assurance for software acquisition.....	36
6.1 Objectives of quality assurance in software acquisition .....	36
6.2 Implementing quality assurance in software acquisition .....	36
Annex A (informative) Checklists for quality software acquisition processes.....	38
A.1 Checklist 1: Organizational strategy.....	39
A.2 Checklist 2: Define the software.....	40
A.3 Checklist 3: Supplier selection evaluation .....	42
A.4 Checklist 4: Supplier and acquirer obligations .....	44
A.5 Checklist 5: Quality and maintenance plans .....	45
A.6 Checklist 6: User survey .....	46
A.7 Checklist 7: Supplier performance standards.....	49
A.8 Checklist 8: Contract payments .....	50
A.9 Checklist 9: Monitor supplier progress.....	51
A.10 Checklist 10: Software evaluation .....	52
A.11 Checklist 11: Software testing .....	55
A.12 Checklist 12: Software acceptance .....	56
Annex B (informative) Software safety assurance and software information security assurance.....	57
B.1 Software safety assurance .....	57
B.2 Software information security assurance .....	58
Annex C (informative) Rights in technical data and software usage.....	61

Annex D (informative) Acquisition plan guidelines.....	62
D.1 (AP Section 1) Introduction.....	62
D.2 (AP Section 2) References.....	63
D.3 (AP Section 3) Definitions.....	63
D.4 (AP Section 4) Software acquisition overview .....	63
D.5 (AP Section 5) Software acquisition process.....	64
D.6 (AP Section 6) Software acquisition reporting requirements.....	64
D.7 (AP Section 7) Software acquisition management requirements.....	64
D.8 (AP Section 8) Software acquisition documentation requirements.....	65
Annex E (informative) Bibliography.....	66

# IEEE Recommended Practice for Software Acquisition

***IMPORTANT NOTICE: IEEE Standards documents are not intended to ensure safety, security, health, or environmental protection, or ensure against interference with or from other devices or networks. Implementers of IEEE Standards documents are responsible for determining and complying with all appropriate safety, security, environmental, health, and interference protection practices and all applicable laws and regulations.***

***This IEEE document is made available for use subject to important notices and legal disclaimers. These notices and disclaimers appear in all publications containing this document and may be found under the heading “Important Notice” or “Important Notices and Disclaimers Concerning IEEE Documents.” They can also be obtained on request from IEEE or viewed at <http://standards.ieee.org/IPR/disclaimers.html>.***

## 1. Overview

This recommended practice is divided into six clauses. Clause 1 provides the scope of this recommended practice. Clause 2 lists references to other standards that are essential in applying this recommended practice. Clause 3 provides definitions that are either not found in other standards, or have been modified for use with this recommended practice. Clause 4 describes the options for acquiring software. Clause 5 describes the eight steps in a software acquisition process and the related quality practices that apply to acquiring software. Clause 6 describes how quality assurance can be applied to software acquisition.

This recommended practice also contains five annexes. Annex A provides a set of checklists that individuals or organizations may elect to adapt to their specific needs, Annex B provides software acquisition guidelines with respect to Software Safety Assurance and Software Information Security Assurance, Annex C provides guidelines with respect to rights in technical data software usage, Annex D provides acquisition plan guidelines, and Annex E is the bibliography.

### 1.1 Scope

This recommended practice describes a set of useful quality considerations that can be selected and applied during one or more steps in a software acquisition process. The recommended practices can be applied to software that runs on any computer system regardless of the size, complexity, or criticality of the software. The software supply chain may include integration of commercial-off-the-shelf (COTS), custom, or free and open source software (FOSS). Each organization or individual using this recommended practice will need to identify the specific quality and activities that need to be included within the organization's acquisition process. Security will be included as a quality attribute considered during the acquisition.