

IEEE Standard for Documentation Schema for Repair and Assembly of Electronic Devices



IEEE Consumer Electronics Society

Sponsored by the
IEEE Consumer Electronics Standards Committee

IEEE Standard for Documentation Schema for Repair and Assembly of Electronic Devices



Sponsor

IEEE Consumer Electronics Standards Committee
of the
IEEE Consumer Electronics Society

Approved 11 December 2013

IEEE-SA Standards Board

Abstract: oManual is a standard for storing and transmitting procedural manuals. oManual's common data format can be used as an offline file package or via online RESTful API endpoints, using XML or JSON. This format is useful for documenting and describing repairs, how-to, work instructions, or any other step-by-step guides. oManual makes it easy to exchange procedural information between services while maintaining usability on mobile devices.

This specification describes the oManual data model, web services API, and bundle file format (a collection of structured files containing a category XML format, a guide XML format and related multimedia). The specification may be expanded in the future to enable additional types of documents.

Keywords: IEEE 1874™, JSON, manual, oEmbed, oManual, RESTful API, XML, ZIP

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

Copyright © 2014 by The Institute of Electrical and Electronics Engineers, Inc.
All rights reserved. Published 15 January 2014. 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 978-0-7381-8870-6 STD98507
Print: ISBN 978-0-7381-8871-3 STDPD98507

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 oManual Working Group had the following membership:

William Lumpkins, Chair
Kyle Wiens, Vice Chair

Timothy Asp
Daniel Eisenman

T. Nathan Nossal
Robert Sanitate
Mark Schaffer

Cornelius Van Rensburg
Daniel Wiens

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

Timothy Asp
Bill Brown
Keith Chow
Thomas Coughlin
Daniel Eisenman
Randall Groves

Werner Hoelzl
Yuri Khersonsky
Michael Lauxman
William Lumpkins
Charles Ngethe
Ulrich Pohl
Iulian Profir

Robert Sanitate
Bartien Sayogo
Mark Schaffer
Steven Smith
Walter Struppler
Kyle Wiens

When the IEEE-SA Standards Board approved this standard on 11 December 2013, it had the following membership:

John Kulick, Chair
David J. Law, Vice Chair
Richard H. Hulett, Past Chair
Konstantinos Karachalios, Secretary

Masayuki Ariyoshi
Peter Balma
Farooq Bari
Ted Burse
Wael William Diab
Stephen Dukes
Jean-Philippe Faure
Alexander Gelman

Mark Halpin
Gary Hoffman
Paul Houzé
Jim Hughes
Michael Janezic
Joseph L. Koepfinger*
Oleg Logvinov

Ron Petersen
Gary Robinson
Jon Walter Rosdahl
Adrian Stephens
Peter Sutherland
Yatin Trivedi
Phil Winston
Yu Yuan

*Member Emeritus

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

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

Julie Alessi
IEEE-SA Content Publishing

Michael Kipness
IEEE-SA Technical Community Programs

Introduction

This introduction is not part of IEEE Std 1874-2013, IEEE Standard for Documentation Schema for Repair and Assembly of Electronic Devices.

Manuals have always included images, parts diagrams, and references to other documents. Those links and metadata are a significant part of what makes a manual effective. The Internet is perfect for making these documents come alive, making it possible to connect guides with tools and reference specifications. Currently, the vast majority of manuals distributed online do not take advantage of this flexibility.

Most dictionaries have definitions of manuals as referring to instruction books. The working definition for this standard is: ***A manual is a document that teaches you how to do something.*** To pick a few examples, oManual is a good fit for reference manuals, instruction manuals, user manuals, owner's manuals, how-to manuals, survival guides, and service manuals—but that's just a start.

A huge amount of useful data in existing formats is in static documents where it cannot be leveraged, built upon, and repurposed. oManual is a standard for exchanging and maintaining procedural manuals across diverse systems that solves this problem. Publishing manuals as user friendly oManual files allows for the best of both worlds: manuals that retain their ease of use, but are also easy to maintain and build upon.

oManual is optimized for the creation and exchange of procedural manuals. It is intended for use by anyone who wants to publish manuals, whether they are repair manuals, manuals to create things, manuals to recycle things, how-to guides, work instructions, or any other type of manual which contains step by step instructions. oManual is designed for developers who want a flexible format that allows them to republish content in new ways.

Since documentation exists in many formats—PDFs, Word documents, and specialized formats like DITA—but often lives on a single computer, establishing a single, accurate source for these documents requires complex document management systems. Accessing these (often very large) documents from a mobile device can be challenging because it requires downloading the entire file up front.

Mobile applications usually download information as they need it, from an on-demand API. oManual bridges these two worlds by providing a common data format, and allowing the information to be transmitted via legacy offline files or made available as a web service. An example workflow would be to take XML DITA service manuals, convert them to oManual with an XSLT transform, and then load them onto a JSON server for use by mobile applications.

Contents

1. Overview	1
1.1 Scope	1
1.2 Purpose	1
2. Normative references.....	2
3. Definitions and acronyms.....	2
3.1 Definitions	2
3.2 Acronyms	3
4. Manual format	3
5. Documentation	4
5.1 Data specification	4
5.2 Transmission formats	18
6. Query parameters.....	19
7. XSD.....	20
7.1 oManual category XSD	20
7.2 oManual guide XSD	23
7.3 oManual simplified HTML XSD.....	30

IEEE Standard for Documentation Schema for Repair and Assembly of Electronic Devices

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

1.1 Scope

oManual is a standard for storing and transmitting procedural manuals. oManual’s common data format can be used as an offline file package or via online RESTful API endpoints, using XML or JSON. This format is useful for documenting and describing repairs, how-to, work instructions, or any other step-by-step procedures. oManual makes it easy to exchange procedural information between services while maintaining usability on mobile devices.

This specification describes the oManual data model, web services API, and bundle file format (a collection of structured files containing a category XML format, a guide XML format, and related multimedia). The specification may be expanded in the future to enable additional types of documents.

1.2 Purpose

IEEE 1874 file format enables documentation interoperability while allowing flexibility of presentation.