IEEE Standard for Developing a Software Project Life Cycle Process

IEEE Computer Society

Sponsored by the
Software Engineering Standards Committee

1074™

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

28 July 2006

IEEE Std 1074™-2006
(Revision of
IEEE Std 1074-1997)

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Approved 30 March 2006

IEEE-SA Standards Board

Abstract: This standard provides a process for creating a software project life cycle process (SPLCP). It is primarily directed at the process architect for a given software project.
Keywords: software project life cycle, software project life cycle model, software project life cycle process

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

Print: ISBN 0-7381-4956-X SH95532
PDF: ISBN 0-7381-4957-8 SS95532

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Introduction

This introduction is not part of IEEE Std 1074-2006, IEEE Standard for Developing a Software Project Life Cycle Process.

Background

IEEE Std 1074 is a standard for the generation of the process governing software development and maintenance for a project. This standard requires selection of a user's software project life cycle model (SPLCM) based on the organization's mission, vision, goals, and resources. It is not intended to define or imply a software project life cycle (SPLC) of its own nor does it presume or suggest any particular SPLCM. This standard describes the individual activities that are to be mapped within the selected model and provides examples of mapping onto typical SPLCMs. However, this standard is not an instructional guide. In addition to providing for the generation of a project process, this standard may also be used to develop organizational processes to support software development and maintenance or to develop special, single-function processes within a project.

This standard applies to the management and support activities that continue throughout the entire project's life cycle as well as all aspects of the software life cycle from concept exploration through retirement.

The activities listed in this standard are not executable processes. They are components of processes and not intended to stand alone. The activities are generic and do not imply a sequential order. They have been administratively grouped for convenience and may be likened to a dictionary where words and meanings are arranged to allow the user to quickly locate a desired activity and its components.

This standard provides activities to be addressed in a software life cycle. It allows the user great flexibility in the manner in which activities are mapped onto the selected model and software project life cycle (SPLC) while preserving a normative standard to which to conform.

Utilization of these activities maximizes the benefits to the user when the use of this standard is initiated early in the software project's life cycle. A project that has proceeded past the initialization phase when this standard is invoked should gradually move into conformance to this standard.

This standard was written for any organization responsible for managing and conducting software projects. It will be useful to project managers, software developers, quality assurance organizations, purchasers, users, and maintainers. It can be used where software is the total system or where software is embedded in a larger system. This standard is also useful for projects that do not span the full software life cycle (i.e., developing a software specification or designing, writing, and verifying software that is based upon specifications developed by another organization, company, or previous project).

This standard allows for continuing harmonization with IEEE/EIA 12207.0 [B3][a] and its successors. The standard may be used to develop the primary and supporting life cycle processes specified in IEEE/EIA 12207. This standard supports the development of organizational standard processes and the selection of a standard, defined project process that is tailored from an organization's set of standard processes (organizational process definition) and integrated project management for each individual project.[b]

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[a] The numbers in brackets correspond to the numbers of the bibliographic references listed in Annex F.

[b] Process improvement models that meet these criteria include the SEI CMMI® model. This information is given for the convenience of users and does not constitute an endorsement by the IEEE of these models. Equivalent models may be used if they can be shown to lead to the same results.

History

Since this standard's original publication, considerable worldwide attention has been paid to software project life cycle processes (SPLCPs). Use of and comments on IEEE Std 1074-1991/1995/1997, and other quality system and life cycle standards activity, have been carefully considered in preparing this substantive revision of this standard.

The 1995 version was a minor revision to correct specific errors found in the 1991 version.

The 1997 version saw the following changes:

— Activities were rearranged into more logical groupings (called activity groups) such as placing all planning activities into the new Project Planning Activity Group, collecting all project initiation activities, and collecting and expanding all review activities.

— The term *process* as used in earlier versions of this standard was replaced with the term *activity group* to identify collections of activities. Some users of this standard were misinterpreting the collections as actual *processes* and trying to execute them as such. The term *activity group* is intended to eliminate this misconception.

— The importance of risk management led to the addition of a new activity, manage risks.

— The recognition that software can be acquired from other sources, for use in the system being developed, led to the addition of the Software Importation Activity Group.

The following changes are among those included in this current version:

— The focus of the standard was more clearly centered on a single process for a given project.

— The term *compliance* was changed to *conformance* to reflect international standards usage.

— Recognition of the importance of release management led to the addition of release management activities.

— The emerging importance of, and increased attention to, software security led to the addition of two activities: determine security objectives and confirm security accreditation.

Notice to users

Errata

Errata, if any, for this and all other standards can be accessed at the following URL: http://standards.ieee.org/reading/ieee/updates/errata/index.html. Users are encouraged to check this URL for errata periodically.

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Participants

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Keith R. Middleton, *Chair*
Tom E. Starai, *Vice Chair*
John W. Horch, *Editor*

Bar Biszick-Lockwood
Ronald F. Dean, Sr.
Christof Ebert
Carol A. Long
Michael T. McCaffrey
John Napier
Cathie L. Neel
Robert J. Schaaf
Bob Shillato
Jan Van Moll
Charlene C. Walrad

The following individuals also contributed to the development of this standard by attending one meeting or providing comments on one or two drafts:

Dave Bachman
Marisa Burt
Geoffrey Darnton
Peter Hantos
Bernard Homes
Susan K. Land
Denis Meredith
James W. Moore
David J. Schultz

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

Edward A. Addy
T. Scott Ankrum
Butch Anton
Ali Al Awazi
Adam J. Bagby
William D. Bartholomew
Edward E. Bartlett
Richard E. Biehl
Bar Biszick-Lockwood
Juris Borzovs
David G. Bowen
Curtis Browne
Dino Butorac
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Howard W. Penrose
Robert A. Peterson
Donivan R. Porterfield
Cam K. Posani
Vikram Punj
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Robert J. Schaaf
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Carl A. Singer
David Singleton
James M. Sivak
Mitchell W. Smith

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Friedrich Stallinger
Thomas E. Starai
Doug Steele
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K. S. Subrahmanyam
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Charlene C. Walrad
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Paul R. Work
Oren Yuen
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Jennie Steinhagen
IEEE Standards Project Manager, Document Development

Angela Ortiz
IEEE Standards Program Manager, Technical Program Development

Contents

IEEE Standard for Developing a Software Project Life Cycle Process

1. Overview

1.1 Scope

This standard provides a process for creating a software project life cycle process (SPLCP). It is primarily directed at the process architect for a given software project. It is the function of the process architect to develop the SPLCP.

This methodology begins with the selection of an appropriate software project life cycle model (SPLCM) for use on the specific project. It continues through the definition of the software project life cycle (SPLC), using the selected SPLCM, the activities provided in Annex A, and the portion of the software life cycle that is relevant to the project. The methodology concludes with the augmentation of the software life cycle with organizational process assets (OPAs) to create the SPLCP.

The activities that are provided in Annex A cover the entire life cycle of a software system, from concept exploration through the eventual retirement of the software system. This standard does not address nonsoftware activities, such as contracting, purchasing, or hardware development. It also does not mandate the use of a specific SPLCM, nor does it provide a selection of, or a tutorial on, SPLCMs. This standard presumes that the process architect is already familiar with a variety of SPLCMs, with the criteria for choosing among them and with the criteria for determining the attributes and constraints of the desired end system and the development environment that affects this selection. Finally, this standard does not prescribe how to perform the software activities in Annex A.

1.2 Purpose

This standard defines the process by which an SPLCP is developed. It is useful to any organization that is responsible for managing and performing software projects. It can be used where software is the total system or where software is part of a larger system.

1.3 Product of standard

The product of an application of this standard is the software project life cycle process (SPLCP) required for a specific software project.

1.4 Intended audiences

This standard is written to provide direction and guidance to process architects and other project personnel concerned with the implementation or performance of project processes.